

**Comprehensive
Textbook of
PSYCHIATRY**

Edited by

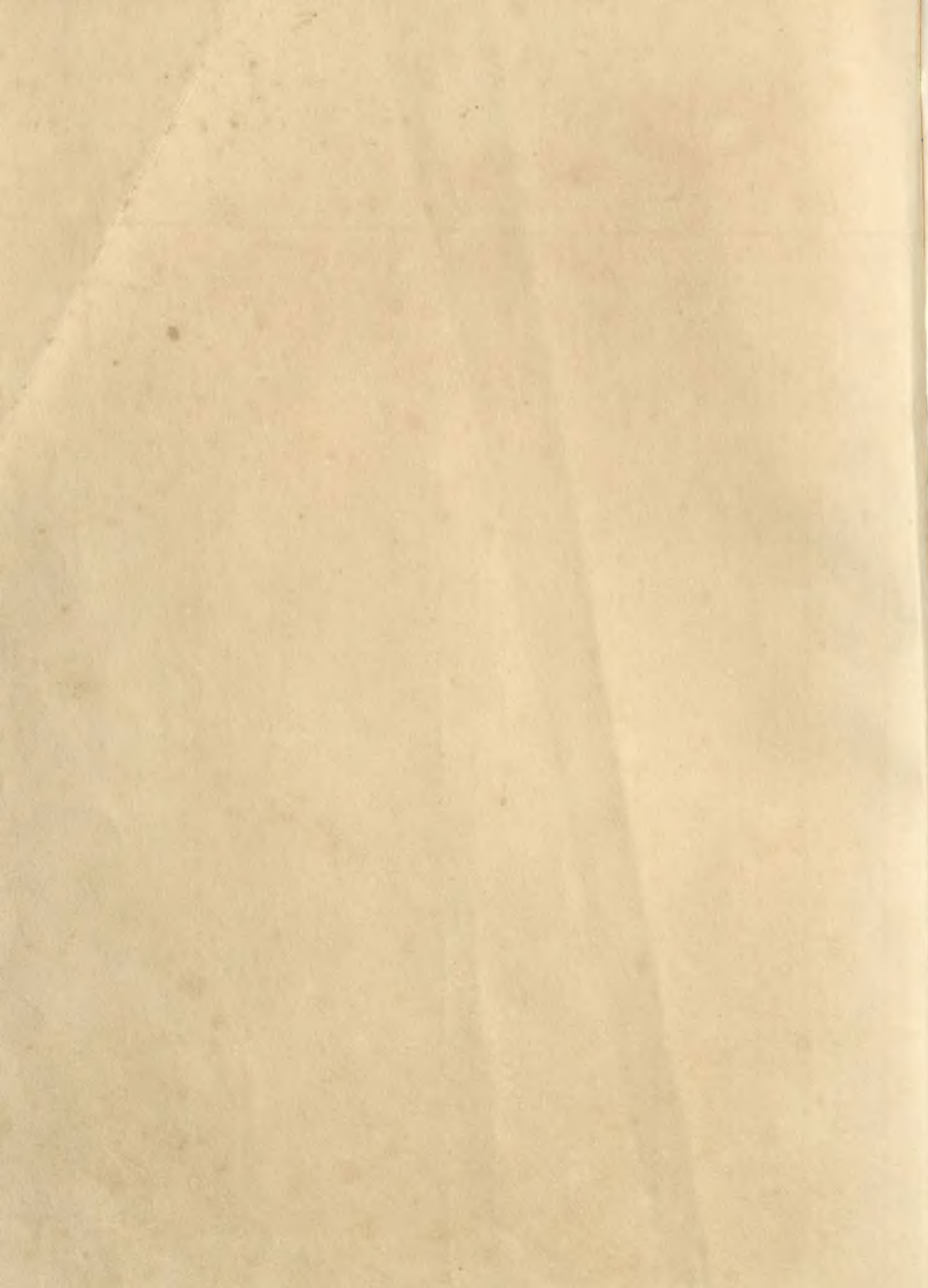
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Comprehensive
Textbook of
PSYCHIATRY



Compendium
of
PSYCHIATRY



*Comprehensive
Textbook of*
PSYCHIATRY

Edited by

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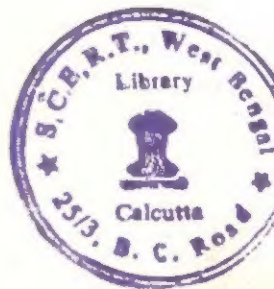
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Preface

Philosophy. The *Comprehensive Textbook of Psychiatry* has emerged from our experiences in establishing an undergraduate and graduate program in psychiatry. The responsibility for teaching students psychiatry has made us acutely conscious of the expansion of the field, of the many relevant additions to the traditional corpus of the discipline. Recent progress in psychiatry has come about not only as a result of the continuing search for etiologies, but also because of the flexibility afforded by new treatment modalities in a variety of settings.

The underpinnings of clinical psychiatry have increased both in number and in strength; the practitioner now has at his disposal large amounts of new knowledge in three major areas of behavioral science which must be incorporated within the existing theoretical and therapeutic knowledge in psychiatry. These three areas are the basic sciences, such as neurophysiology and neuropharmacology; those social sciences which deal with individuals; and those which deal with the behavior of groups and of systems. Knowledge in those fields is not to be viewed as a kind of intellectual veneer to cover over the student's rough edges. It is in fact a prerequisite for clinical competence. The perplexing array of drugs, for example, not only invites comprehension of their mode of action on the central nervous system; it demands such understanding to obviate the mechanical dispensing of preparations in the manner of a tradesman.

Similarly, the increasing awareness of the contribution of social factors to the development as well as the maintenance of mental illness calls for systematic training of the student in relevant aspects of the social sciences. The interplay between individual and social structure is especially important in disorders like addiction, alcoholism, delinquency, and educational disabilities, problem areas that psychiatry can no longer avoid.

While the limits of concern for psychiatry are not yet fixed or clear, the extension of the boundaries is reflected in such events as the passage of the Community Mental Health Centers Act of 1963, which mandates an increasing involvement by the mental health professions in the milieu of the patient in addition to the traditional focus on the individual and his family. Moreover, implementation of the Act requires some insight into the political process of the stated goal if comprehensive care is to be achieved.

Thus, modern psychiatric practice can develop only along the lines of a model sufficiently complex to allow

for new inputs and sufficiently flexible to adapt to a rapidly changing social scene. Such a model should at least take into account certain features of American life that distinguish it from that in other highly developed countries.

The organizing principles for this textbook are derived from certain distinctive characteristics of American life that are rooted in our history and form the guidelines for the development of our social institutions. The first of these is *pluralism*. American communities are composed of a multitude of governmental structures and private groups, each with a measure of power and strength, sometimes cooperating, but often acting competitively. Each has its own responsibilities out of whose fulfillment arises still more diffuse goals. The operations of such groups are seldom conducive to the formation of unified conceptual systems, and the history of American psychiatric schools is no exception to this rule. To present this diversity in all its richness and contradiction, it is necessary to be truly eclectic. It has been our aim in this volume to include all the major contributions and trends that are now influencing the directions of the field. The genesis of this diversity is based not only on the steady growth of knowledge within the United States but also the constant enrichment of American intellectual life through immigration. New ideas brought here by our colleagues from abroad have taken root and flourished. Many such notions are now incorporated in the body of American psychiatry, which has been in this way enhanced immeasurably.

If pluralism is a feature of American life that demands recognition, *pragmatism* is one requiring compensation. While truth needs testing by the practical consequences of belief, everyday American pragmatism often goes beyond empiricism to a disregard for theory. Thus, American psychiatry has shown strength in the development and application of treatment methods while neglecting nosology and clinical description. Nosology is of relatively minor interest when psychiatric therapies are nonspecific; and indeed classification is not of practical use for those who are wedded to single general purpose therapies. To compensate for these weaknesses, we have stressed the development of theoretical models, the presentation of adequate clinical description, and the importance of classification schemes. To the same end, we have emphasized the behavioral science materials the full comprehension of which is required not only for practice but for expansion of theoretical understanding.

Where more traditional societies have revered what is old, Americans are typically engaged only by what is new. What amounts to a *veneration for change* gives rise not only to built-in obsolescence in a technological sense but also to a kind of galloping faddism in intellectual life. We have attempted to deal with this problem conservatively by preserving significant knowledge developed over time while presenting new approaches, not only to treatment but also to theoretical issues that are not immediately translated into therapeutic technique.

The fascination exercised by change results in a kind of *accretion* of ideas parallel to the proliferation of groups and structures. New hypotheses and treatment methods spread before older ones have been either validated or discarded. The coexistence of these notions necessitates their presentation even at the risk of cluttering. American psychiatry cannot be presented adequately in a simple statement. To oversimplify what is complex would be a disservice to the student and a backward step in the field. Hopefully, a comprehensive textbook of psychiatry can serve as an organizing statement for the multitude of relevant variables and as a first approach to what must be a complex model. More parsimonious statements must await further research and developments in the field. In the meantime, the premature closure of any aspect of psychiatry should be avoided and the evaluation of methods constantly encouraged.

Implementation. The organization and orientation of this book were determined, in large measure, by our assessment of the distinctive characteristics of modern American psychiatry and philosophy as expressed above. In addition, our efforts were guided by certain practical considerations. As a manual of instruction, the prescribed aim of this textbook is to foster professional competence. Accordingly, the content of this volume follows the psychiatric curriculum recommendations of the National Board of Medical Examiners and the American Board of Psychiatry and Neurology. On the other hand, presentation of the data which were noted earlier as essential to competence in this field was subject to certain restrictions, imposed by limitations of time and space.

In brief, in order to translate our ideals into the reality of a textbook, many practical problems had to be resolved and this, in turn, required some basic decisions. Specifically, it was decided (1) that the text would be multi-authored; (2) that the approach would be eclectic and multidisciplinary; and (3) that the book would be comprehensive in scope; i.e., it would include contributions on topics fundamental to psychiatry in addition to the traditional clinical material.

Authorship. A book written by a single author or by a few collaborators has certain indisputable advantages. Unity and continuity of text and consistency of viewpoint are thereby assured. On the other hand, while it may have been possible for a single Renaissance

man to acquire all the scientific knowledge accumulated in the Western world of his day so that he was qualified to write a comprehensive text on a specific subject, clearly this is no longer possible. Similarly, in psychiatry too, we seem to have passed, irrevocably, that point in time when a single individual could assimilate all the information necessary to write a textbook which covered the relevant material in sufficient depth to be of value to the serious student. We decided, because of these considerations, to follow the model of the great textbooks in clinical medicine and ask many authors to contribute to this textbook.

More specifically, invitations to participate in this book were directed to those authors who had made an original contribution to a particular aspect of psychiatry and who are acknowledged experts in that phase of theory or practice. We sought thereby to attain an authoritative and original approach to each area covered in the text. Viewed from this perspective, the use of multiple contributors appears to represent a solution to the problems created by the rapid expansion of knowledge in psychiatry. However, despite the advantages, this approach carried with it the potential danger that we might produce a loose collection of overlapping and discordant papers, rather than the integrated, unified textbook which was our goal. We attempted to deal with this problem in various ways. For one, we exerted editorial control by asking our collaborators to follow a specific outline in preparing their contributions. By so doing, we hoped to retain each author's unique, creative approach but at the same time ensure that each contribution formed an integrated part of a single text. This procedure was followed throughout, but, for obvious reasons, our task was more difficult—and, perhaps, our efforts less successful—in some areas of the volume than in others.

We used two other devices to achieve unification of this multi-authored venture: introductory statements by the editors appear at the beginning of each major area in the book, and a list of suggested cross references appears at the end of each section. The editors' introductions consist of a general statement of the current status of the specific topic under consideration, and a résumé of the contributions included within that area, with particular emphasis on the diversity in viewpoint. The suggested cross references attempt to guide the reader to relevant, related, and contrasting viewpoints presented in other parts of the book. It is hoped that this device will prove particularly helpful when the reader is faced with the difficult problem of correlating data derived from the basic behavioral sciences with clinical material.

Eclectic orientation. As mentioned above, we feel that psychiatry is currently in a state of rapid development and change. Therefore, commitment to any one approach would be unwise at this time and, in our opinion, would constitute a disservice to the discipline and to the young student who bears the

responsibility for its future progress. To preclude any tendency toward premature closure, authors committed to different theoretical models or schools of thought, as well as experts from various related disciplines such as neurophysiology, psychology, and sociology, were invited to contribute to the textbook and to present their respective approaches in depth. In the editors' introductions, we have discussed the value and potential power of each theoretical model and have indicated, when relevant, in the suggested cross references, the existence of alternate hypotheses.

We have tried to pursue this eclectic orientation throughout the volume, although our approach has varied, depending on the material under consideration. For example, in that part of the book which deals with the fundamental topics, the various theoretical models and disciplines stand side by side, and their very juxtaposition transmits the message of eclecticism. In the areas on clinical material each contributor can, of course, be expected to discuss the dynamics and treatment of a given disorder from the perspective of his particular theoretical orientation. In addition, however, in each instance the contributor has been asked to specify the existence of alternate approaches and assumptions.

Comprehensive scope. Again, we feel that psychiatry can no longer be taught as a "technical trade." Obviously, clinical competence is an essential goal of training, but it is not the only goal. As stated earlier, knowledge of the behavioral sciences and of underlying theoretical models is fundamental to theoretical understanding and clinical skills in psychiatry. Moreover, psychiatry is currently faced with the challenge of distributing its services to hitherto unreached populations. Therefore, in addition to clinical material on the description and treatment of the various disorders which constitute the content of the traditional psychiatric text, this book includes relevant biological, psychological, and sociological material, presentations of current concepts and theoretical models, and discussions of various aspects of community psychiatry.

Organization. The volume has been organized into eleven *areas* which deal with three basic aspects of the field of psychiatry—fundamentals, clinical issues, and related topics.

The first part of the book is concerned with fundamental aspects of psychiatry: thus, Area A contains a discussion of the history of psychiatry. In Area B, which deals with the basic behavioral sciences, the physiological, psychological, and social determinants of behavior are discussed by experts in these fields. An attempt was made to emphasize the relevance of these data for psychiatry. However, inclusion of an area on the basic behavioral sciences in a textbook of psychiatry is an innovation which is not without risk: while the material has great potential, and theoretical and practical value, some of it has not yet been explicitly assimilated into the main body of psychiatric knowl-

edge. The danger of including nonintegrated or seemingly irrelevant material, in terms of the confusion which this might engender, posed many difficult editorial problems.

Area C, on current concepts of personality and psychopathology, also deals with a fundamental aspect of psychiatry—the basic theoretical model. And Area C also represents an innovation in a psychiatric text in that it contains sections written by leading proponents of the various schools of thought whose concepts are part of the mainstream of current psychiatry. For the sake of comparison and uniformity, each contributor to Area C was asked to present the basic concepts of his model, as well as assumptions regarding the structure and development of normal personality, the determinants of various forms of psychopathology, and the implications for treatment of the theory to which he subscribed.

The clinical aspects of psychiatry comprise the major part of the text. Area D focuses on those aspects of neurology which have special relevance for psychiatry. Area E, on assessment in psychiatry, includes sections on the psychiatric examination, as well as on ancillary diagnostic procedures such as the psychological evaluation. In addition, Area E contains a chapter devoted to discussion of the cardinal manifestations of psychiatric disorders. Psychiatric symptoms are described therein with reference to specific diagnostic syndromes, in order to present these to the student in detail and at the same time obviate the need for their repeated description in connection with the discussion of each specific disorder. Essentially, Area F, which deals with the psychiatric disorders of adults, has been organized according to the *Standard Nomenclature* of the American Psychiatric Association. However, problems inherent in the current nosology are emphasized, and several topics which are not listed in the official system are discussed in this area. These include psychiatric emergencies, including suicide, as well as the unusual psychiatric syndromes that are seen in exotic cultural settings. The various forms of psychiatric treatment—psychological, organic, and milieu therapy—are dealt with in Area G. Child psychiatry has received extensive coverage in Area H, to the degree that we have attempted, in a sense, to organize a textbook within a textbook. The detailed treatment of this subspecialty reflects our conviction that this field will assume increasing importance in the near future.

The psychiatric subspecialties are covered in Area I, on community psychiatry, and in Area J, which deals with forensic psychiatry, geriatric psychiatry, military psychiatry, and industrial psychiatry. Finally, Area K covers fields related to psychiatry and includes chapters on clinical psychology, psychiatric social work, and psychiatric nursing.

Format. For many reasons, we decided to keep the text within the confines of a single volume. In view of the massive amount of data which had to be pre-

sented, this decision necessitated careful selection of material to be included and stringent limitations on the length of each contribution; and, finally, it became evident that if we wanted to include all the material which appeared to be important, we would be forced to resort to certain space-saving measures. One such measure was to limit the bibliography appended to each section, so that it contained mainly basic references to classic contributions in the literature. In addition, in order to retain all the important content of some of the longer sections, at times we found it necessary to print some portions of the material in smaller type. Admittedly, the use of "extract" type is not an ideal solution; however, no better alternative seemed to be available.

We have devoted four years to the preparation of this text, and it has been a deeply meaningful experience. The interaction with our distinguished and creative colleagues has been most gratifying, not only because it provided a unique opportunity to engage in a stimulating interchange of ideas on many levels, but

because of the rewarding personal relationships we have established.

We have received dedicated and valuable help from many people to whom we wish to express our deep appreciation. Of these, we would mention, in particular, Daniel Berson, Elizabeth Berson, Elaine Cohen, Nancy O'Shea, Irvin B. Schwartz, and Joan C. Welsh, who all played an especially important role in assisting us in our editorial and production work. In addition, we wish to thank Ann Cohen, Frieda Greer, Arthur Lohman, Carol Rodman, Ruth Van Buskirk, and Arthur Uhlman for their untiring efforts. Our publisher, Williams and Wilkins, has been very cooperative and we have appreciated the help of members of their editorial staff—James Gallagher, Dick Hoover, Mary Hutchinson, and James L. Sangston.

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A R E A

A

HISTORY OF PSYCHIATRY

Chapter 1

History of Psychiatry

1.1 • • •

GEORGE MORA, M.D.

The history of psychiatry has become an increasingly popular subject for many laymen. However, it is of particular importance to psychiatrists who recognize that knowledge of the historical developments in the field can enhance their understanding of current psychiatric concepts and practices. In recent years this interest in the history of psychiatry has led to historical sessions at national psychiatric conventions and commemorative exhibits at such meetings. Libraries include reprints of important works of the past and, most important of all, there has been a rapid growth of literature focusing on the historical evolution of psychiatry.

Nevertheless, the history of psychiatry remains a very difficult subject to deal with, and only a few publications of the many which have appeared in recent years have contributed substantially to our better understanding in this area. Traditionally, the history of psychiatry had been conceived of as a series of biographies of those men who had fought to free mental patients from their chains on the basis of their optimistic view of man's potentialities, and, in the late 18th century, their belief in the perfectibility of man and in the progress of society. During the second half of the 19th century, this benevolent attitude toward mental patients arose from the conviction that psychic phenomena did not stem from supernatural forces, but were the result of physiological factors. Specifically, those presentations of German derivation emphasized these trends to account for future developments.

In retrospect, it was inevitable that in due time increasing acceptance of psychoanalysis, leading to the psychodynamic orientation currently predominant in psychiatry, should have eventually brought about a focus on historical and developmental matters, since psychoanalysis is concerned with the genetic-historic study of personality. Freud and his early pupils, however, were so engrossed in establishing a clinical basis

for their new science that they overlooked its historical foundations. Furthermore, like any new intellectual movement, a sufficient time had to elapse before psychoanalysis could be viewed in historical perspective. Gregory Zilboorg's *A History of Medical Psychology*, which appeared 25 years ago as the first modern work on this subject, is still considered by many to be the finest presentation of the development of psychiatry from the psychoanalytic viewpoint. That is, Zilboorg's volume emphasized the role and contribution of those scientists who anticipated the evolution of psychoanalytic concepts.

A few years earlier, in 1937, a book by Albert Deutsch, a layman, entitled *The Mentally Ill in America*, which soon became a classic, had appeared. Here, unlike its historical, scientific antecedents, Deutsch emphasized current social, cultural, and religious factors which created conditions favorable, or unfavorable, to psychiatric progress. The description of these factors permitted a better understanding of personality and of its aberrations and, more concretely permitted elaboration of more effective treatment methods for ambulatory as well as hospitalized mental patients.

In a broad sense, this polarity in emphasis on individual personality development versus the mental health of a society may be compared to the polarity of neurosis versus psychosis. The treatment of the neurosis is based primarily on psychodynamic understanding of the "unconscious," which is the repository of the individual's psychological experiences throughout his life time. On the other hand, treatment of psychosis, while it may involve specific techniques, will depend above all on the dedicated understanding and the care-taking facilities provided by an enlightened society. Thus the history of psychiatry can be presented from either of these orientations in much the same way as history in general: one may emphasize the personalities who, breaking with tradition, came to shape the scientific future, or the social events which favored the emergence of such personalities.

Regardless of how basic this antithesis remains in any historical presentation, including psychiatry, modern historiography is attempting to bridge the

gap between these two essential categories. As far as the history of psychiatry is concerned, the moment now seems ripe for the integration of these areas of emphasis—the individual personalities which shaped the progress of psychiatry and the complex social and cultural background which made possible such progress. The components of this background include religious beliefs and rituals (expressions of collective psychopathology) and literary and figurative productions, which must be understood particularly in relation to advances in anthropology, ethnology, and the history of religions, as well as advances in other behavioral sciences.

The presentation of the history of psychiatry which follows has been chronologically assembled. It should be pointed out that these chronological divisions do not denote definite interruptions or changes in the stream of events; rather, they represent didactic landmarks which are designed to facilitate the comprehension of the subject matter.

Finally, it was possible to withstand the temptation to emphasize only those events which anticipated current psychiatric concepts and to disregard those events which we now know have not added significantly to our present psychiatric knowledge. Thus, every effort was made to avoid a clear cut antinomy of “discoveries” and “errors,” an attitude that in the history of science is labeled “presentism” or “inductivism.” Rather, an effort has been made to present these events within the framework of a “continuity theory,” according to which scientific progress develops on the basis of the indebtedness of all contributors to their predecessors, the truth finally emerging from this scientific continuity. This is not easy to achieve; since psychodynamic thinking is prevalent in psychiatry, the pendulum tends to swing only toward events of the past which have anticipated this psychodynamic orientation. Because this is a general textbook of psychiatry, however, and not a textbook on psychodynamics, events which anticipated modern methods of physical psychiatric therapy, psychopharmacology, hospital care, etc., as well as those which led to the psychodynamic focus, have been given due recognition.

In brief, each reader will be able to identify the historical antecedents of his own philosophy of psychiatry.

Psychiatry in Primitive Cultures

Methodological considerations. In the last 2 decades, coinciding with the achievement of independence and the progressive “acculturation” of many Afro-Asian countries, the status of mental health and conversely of mental disease of many ethnic groups has been the focus of increasing attention. In the past, ethnologists, such as Taylor, Morgan, and Frazer, in describing the mores of primitive cultures, tended to stress their peculiarities and differences in relation to Western culture. In contrast, today anthropologists are making a greater effort to understand psychologi-

cal manifestations of primitive cultures in the context of a general theory of human behavior. Since the term “primitive cultures” is somewhat vague and has been used interchangeably to refer to ethnic groups of the past as well as to some underdeveloped areas of the present, Ackerknecht’s suggestion to use the term “paleo medicine” to refer to ancient man and “primitive medicine” to refer to contemporary tribes appears to have merit. Thus, “paleo psychiatry” may be differentiated from “primitive” or “folk psychiatry.”

Origins of mental illness. There is ample evidence that concepts of the etiology of physical and mental disorders, both in “paleo” and in “primitive” medicine, were influenced by the universal belief in supernatural phenomena, specifically the influence of spirits of the ancestors of the clan. For example, trepanation of skulls, remnants of which were found in Peru, in probable cases of epilepsy or other violent behavioral expressions could be understood as an attempt to liberate the afflicted patient from the evil spirits in his head. Aside from the use of amulets, talismans, etc., which reflect the belief in the influence of spirits, there are no other remnants directly related to mental and nervous conditions in paleopathology. Further evidence must be gathered through study of the current practices of primitive cultures.

However, the study of contemporary primitive cultures poses two difficult methodological problems. First, Western researchers have been unable to modify substantially their “*forma mentis*,” with a consequent tendency toward naïveté and ethnocentrism in investigating other cultures. Secondly, most primitive cultures have undergone a process of acculturation with a consequent stratification of Western mores by indigenous ethnic groups. In order to overcome these difficulties, at least in part, a differentiation was introduced recently between: (1) autonormal and autopathological as applied to individuals regarded as normal or pathological, respectively, by their own society; and (2) heteronormal and heteropathological as applied to individuals regarded as normal or pathological, respectively, by members of another society observing them. As a result, the concept of normality as applied to primitive cultures has become a much more flexible and relative one, leaving room for a variety of manifestations which would be considered pathological according to the standards of Western culture. When it is considered in this light, the magical-religious system which influences the philosophy of primitive healing methods may be seen as an attempt to introduce rationality, and to meet socially expected needs in the apparently chaotic psychological experience of primitive man. Mental diseases represented a breakdown of the magical-religious system and were mainly attributed to violation of the taboo, neglect of ritual obligations, and demonic possessions.

Treatment of mental illness. In the study of the treatment of mental diseases in primitive man, the

4 History of Psychiatry

person encountered most frequently was the shaman (a word derived from the Tungus language of Northern Siberia). The shaman emerges as an inspirational type of medicine man, who was most vulnerable to possession by spirits, and through whom the spirits spoke. Early anthropological reports emphasized the dramatic aspects of the shaman's performance, that is, the actual appearance of the spirits in the course of highly emotionally charged séances. However, more recent studies emphasize the leading social role of the shaman, as well as his psychotherapeutic function. Typically, the shamanic séance took place in the presence of a selected group of participants. It involved a progressively increasing state of excitement on the part of the shaman, which was induced by heavy smoking, drinking, and drugs accompanied by rhythmic music (especially drums), to the point of paroxysm, characterized by partial loss of consciousness and unusual movements. The shaman revealed the presence of the spirits through utterances and violent actions. The mentally disturbed patients, in the course of active participation in the ceremony, might confess their sins or ask for the removal of certain disturbances specifically attributed to an evil spirit. The excursion of the shaman into the realm of the spirits was symbolic of the restoration of the patient's peace of mind (through sacrifices and other symbolic means). Frequently the liberation of the evil causes of disturbance from the body of the patient was expressed concretely through the actual expulsion of an object (stone, insect, hair) from the mouth of the shaman.

The personality of both the shaman and the mental patient treated by him have been the focus of much controversy. The opinion most commonly held is that the shaman was not psychotic or epileptic as originally believed but was essentially neurotic. As such, he might find an outlet for his own emotional instability through the séance, which represented almost an unconscious attempt at self-healing. Eligibility for the role of shaman required a particular state of receptivity to dreams and other psychological phenomena, elicited with the help of drugs and medicinal plants, and required a period of novitiate in isolation from the community. With regard to the patient who asked for the shaman's help, though difficult to translate into current psychiatric terminology, his symptoms appeared to range widely, from depression to withdrawal, and, for the most part, to be acute.

Shamanistic versus modern psychotherapeutic techniques. On the basis of these data, a comparison between shamanistic and modern psychotherapeutic procedures can be advanced. In both cases, the candidates for the role of healer have to undergo a period of relative seclusion from the community. While this carries a literal interpretation with regard to the shaman, it is comparable to the period of intensive study implied in all psychotherapeutic training, and particularly in psychoanalysis. Similarly, in both

cases, the acquisition of healing powers was facilitated by the interpretation of the dreams of the potential healer and other unconscious life events in the highly ambivalent context of the candidate-teacher relationship. Further, the healing process undergone by the patient could only be effective in an atmosphere of high social expectation in which roles and rituals were rigidly established and had the intrinsic purpose of guarding society from inner disintegrating forces. Concomitantly, recent studies have served to underscore the social aspect of the role of the shaman, i.e., to exploit and channel existing neurotic leanings in the community and relieve mental stress, in addition to his psychotherapeutic role in the treatment of individual patients.

Psychiatry at the Dawn of Civilization

Our present civilization had its beginnings in various areas of the Middle East at different times during the first two thousand years B.C. The remnants of these early civilizations have made it possible for researchers to reconstruct the high level of knowledge which was achieved in many fields of science; however, there is much less certainty about concepts of mental health and disease during this period because psychological concepts are closely interwoven with religious concepts, making their study and differentiation difficult. In spite of this, there is evidence of early attempts to describe mental phenomena, albeit in less concrete terms than those employed in primitive cultures.

The nature of existence. In Egyptian culture, life was viewed as a balance between man's static experience and his relationship to the universe, that is, an interaction between internal and external forces. This balance gave rise to rhythmic and cyclic happenings from birth to death, probably related to the cyclic result of the harvest caused by the Nile. The total personality was the result of seven forces, and included emotional, intellectual, and creative components. Emphasis on the supernatural, and especially communication with the dead, e.g., the spirits of the Pharaohs, was possible through a healing sleep induced by incubation techniques. (Of particular historical significance is Joseph's interpretation of the Pharaoh's dream of the seven fat and of the seven lean cows, reported in detail in the *Genesis*.) It is likely that treatment of mental disorders involved the integration of physical, psychic, and spiritual factors; this was accomplished through identification with positive constructive forces.

Interpretation of dreams. Of the various techniques possibly used to approach and modify personality, no other method in antiquity is more outstanding than the interpretation of dreams. According to the well documented study by Oppenheim on the Assyrian books of dreams, three types of dream experiences can be differentiated: (1) dreams which served as a vehicle for the revelation of a deity, and

which might or might not require interpretation; (2) dreams reflecting the state of mind of the dreamer, which were implied, but never recorded; and (3) dreams which foretold future events.

The message dream. Included in the first category is the "message dream," which appeared within a conventional "frame." Characteristically, the circumstances of the dream were reported with emphasis on the shocking experience undergone by the dreamer in the presence of the "deity" (who was usually represented as standing near his head and giving him a message). These reports then emphasized his surprise at awakening and, finally, mention is made of the fulfillment of the prediction or promise revealed in the dream. The message was expressed clearly (as in the Old Testament), or presented symbolically, in which cases the dreamer would require the services of an interpreter capable of "decoding" it. This decoding had to be accomplished as quickly as possible, so that the dreamer might not suffer unnecessarily from the "enigma" of the dream. Thus, the decoding of dreams served much the same purpose as the analysis of dreams does today. The difference lies in the fact that during this period dreams were always considered to refer to the future. In contrast, psychoanalysis has clearly established that dreams refer to the patient's past experiences.

Subjective dreams. The subjective state of mind of the dreamer, as reflected by the impact of physiological functions, such as sex, thirst, hunger (or indigestion), on the dream experience, is seldom mentioned, for fear that a description of the content of unpleasant dreams would make the evil things they portray come true.

Prophetic (or "mantic") dreams. The belief that the excursion of the sleeper into the nether world could reveal the future, which originated with the Greeks, is, once again, directly opposed to the psychoanalytic interpretation of dreams as related to individual past experiences. Yet, this belief in the prophetic function of the dream persists even today. In antiquity, dream content might be understood directly by the subject or he might require the help of dream interpreters. (The Egyptians were considered particularly skillful in this area, for example.) Of particular interest in this context is the fact that the later literature (especially Artemidorus Daldianus) did not concern itself with the philosophical implications of prognostics (in relation to individual religious and moral responsibility). Rather, it was concerned essentially with the collection of "dream-omina"; that is, dream content was classified and interpreted in a stereotyped way, very much in the same vein as today books on the interpretation of dreams which form part of the popular "literature."

Mental Illness in the Bible

In one of the oldest books of the Bible (*Deuteronomy*) it is said that God will punish those who violate

his commands with "madness, and blindness, and astonishment of heart," that is to say with mania, dementia and stupor.

Perhaps the most famous episode of insanity in the Bible refers to the case of Saul, who, following some disturbed behavior early in life, developed abnormal irritability, great suspiciousness and uncontrollable impulses which ended in suicide; apparently his was a case of manic-depressive psychosis.

Also worth remembering is the case of Nebuchadnezzar, King of Babylon, who became very depressed, irritable, uncontrollable, and finally fell into a condition called "lycanthropy" (a form of mental disorder in which the patient imagines himself to be a wolf or other wild beast, reported in the literature until the 17th century), which is probably a form of melancholia.

Later on, in the Jewish *Talmud*, insanity and epilepsy were considered as definite diseases, rather than supernatural phenomena, to be treated by the doctor and not by the priest; strangely enough, however, treatment consisted not of drugs, but of charms.

Psychiatry in Greek and Roman Culture

During the second part of the 19th century, as a concomitant of the philological and archeological investigations of the Greek world, several studies, among which Rhode's is particularly prominent, touched upon psychological and psychiatric concepts. The initial interest engendered by these studies gradually declined. Recently, however, it has been revived by modern psychodynamic theories which follow Jung's and Rank's early applications of mythological concepts to human behavior. The studies of Snell, Onians, and Jaeger and, more recently, the work of Dodds are particularly significant in this connection.

The Greek concept of "madness." Essentially, the description of "madness" in Greek culture derives from three main sources: popular opinion, medical knowledge, and literary-philosophical works. Each of these viewpoints prevailed at certain times and in turn, inevitably, they influenced each other. Consequently, a systematic presentation is almost impossible.

The popular conception. The popular concept of "madness" which was evident in primitive times (as represented in the vase paintings of that period) persisted throughout the development of the Greek culture, and, in fact, acquired further impetus during the Hellenistic era. Characteristic of the popular view was the belief in the supernatural causation of mental disorders. More specifically, individuals who were so afflicted were believed to be possessed by evil spirits (personified by the dread goddesses Mania and Lyssa), who had been sent by the gods in a state of anger. A particularly violent attack indicated more direct participation by the gods. At the same time, however, there is some indication that those individuals who manifested behavioral aberrations, and

were therefore believed to be possessed by evil spirits, may also have been regarded as sacred, as was the case in primitive cultures. Presumably, this was based on an unconscious fear of death, for the spirits represented the cult of the dead, and their persisting influence on the living.

As might be expected, this "popular" view provided no facilities for the treatment of the mentally ill. Milder cases were simply left to fare for themselves as objects of contempt, ridicule, and abuse. Those who were considered violent were kept at home, often in chains, on the assumption that the same gods who made people mad could cure them of it (in line with the homeopathic trend of Greek medical thinking). With regard to therapeutic techniques, in addition to the various cures by purification and participation in the mysteries, especially those of the Corybantes, a number of animal and vegetable substances were considered specific for the treatment of "madness" and epilepsy. Finally, no clear legal status was outlined for the mentally ill individual. Since his antisocial behavior was viewed as punishment by the gods (administered either directly or by their emissaries), the mentally ill criminal was relieved of any legal responsibility for his actions. Rather, the person convicted of a crime by reason of insanity was, as suggested by Plato, exiled from his city voluntarily, or forced to flee and to undergo purification rites. There was no psychiatric examination, except in cases involving slaves; in controversial cases, e.g., marriage, divorce, or adoption, appeal on psychiatric grounds was made to the "guardians of the law," rather than to physicians.

The medical conception. The medical concept of "madness," as elaborated in the Hippocratic writings (4th century B.C.), centered around the interaction of the four bodily humours (blood, black bile, yellow bile, and phlegm) which resulted from the combination of the four basic qualities in nature (heat, cold, moisture, and dryness). Individuals were classified according to four corresponding temperaments—sanguine, choleric, melancholic, or phlegmatic—which classification was considered to indicate their prevailing emotional orientation. Personality functioning reached an optimum level when "crasis," that is, the appropriate interaction of internal and external forces, had been achieved. Conversely, conflict between these forces, termed "discrasia," indicated the presence of excessive bodily humour, which had to be removed by purging.

Of greater significance, however, were the initial indications of a radical change in the concept of "madness," in the sense of diseases of the nervous system, which began to emerge at this time. This was first expressed by Hippocrates (460–355 B.C.) in the introduction to his treatise on epilepsy, *The Sacred Disease*. Even after many centuries, the viewpoint elaborated therein has not lost its philosophical value: "I do not believe that the 'sacred disease' is any

more divine or sacred than any other disease but, on the contrary, has specific characteristics and a definite cause. Nevertheless, because it is completely different from other diseases, it has been regarded as a divine visitation by those who, being only human, view it with ignorance and astonishment."

In Hippocrates' classic work other clinical pictures, apart from epilepsy, are today recognizable, namely, cases of psychoses (i.e., delusions due to distortions in sensory perceptions); impulse behavior disorders; melancholia; and, possibly, phobias. However, in the light of modern diagnostic criteria, these distinctions appear superficial and uncritical. All too frequently, "case histories" were restricted to the patient's own account of the onset of his illness and referred to etiological factors relating to malfunctioning of the brain or heart. In addition, as mentioned earlier, "madness" was commonly attributed to disturbance in the interaction of the four bodily humours, and an excess of black bile was mentioned with particular frequency as the cause of mental illness. Typically, the treatment in such cases involved the administration of a purgative, specifically, black hellebore. Thus, the line "Go to Anticyra," which appears in Aristophanes' (448–385 B.C.) *Vespae*, can be interpreted as a colloquialism that meant, "You are crazy," for Anticyra was famous as a source of hellebore. The treatment prescribed in such cases also included vapor, baths, and appropriate diet.

The literary-philosophical concept. The systematic study of Greek literary and philosophical works has resulted in a deeper and more meaningful approach to Greek psychological concepts at various stages in their development. In the time of Homer (10th–9th century B.C.), no definition of personality was advanced which might be equated with current concepts of personality. The three somewhat differentiated components of the soul—"psyche," "noos," and "thymos"—corresponded to the "organs" of life, rather than to psychological "functions," for action (i.e., thinking) had not yet been separated from its physical substrata (i.e., the brain). Thus, "psyche" (Greek *psyche*, to breathe) was conceptualized as the "breath of life," the force which kept the human being alive. Moreover, it persisted after life as the spirit of the dead, so that it might continue to influence one's living descendants.

The concept of the soul was divorced from the qualities of the body and its physical organs for the first time by Heraclitus (540–475 B.C.): "You could not find the ends of the soul though you traveled everywhere, so deep is its 'logos.'" Nevertheless, the awareness of psychological factors was acquired only very gradually. In the *Iliad*, human beings lacked personal motivation; instead, they were possessed by sudden feelings of power, almost comparable to states of temporary insanity. These feelings of power were believed to originate in the "thymos" or "phrenes," and were attributed to the gods, to *moira* (destiny), or to the

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Erinyes (i.e., goddesses of vengeance). In the *Odyssey*, there were implications of moral criticism, however; and, in time, the concept of *hybris* (arrogance) became prominent in terms of its link with success, complacency, sin, and guilt. In other words, the literary and philosophical works of the period began to evidence an awareness of the fact that moral principles (i.e., conscience) were internalized. They further stressed the relationship between the violation of these principles and consequent punishment by the gods as an inevitable part of man's destiny (*moira*). Such punishment might be inflicted in this life, in the other life, (i.e., after death), or even on one's descendants. Thus, in Plato, the "daemon" is no longer conceived of as an impersonal being; he has become a type of superego, which gave rise to a universal fear of gods and of pollution (*miasma*) and a craving for ritual purification (*catharsis*).

Stages in the development of Greek psychiatry.

In a broad sense, the transitional stages in the development of Greek psychiatry, as reflected in literary and philosophical writings, might be typified by the evolution of the concept of dreams. Initially, dreams were conceived of as part of reality. Subsequently, the dream was thought to be the creation of the gods, who used it as a mode of communicating with the dreamer. Finally, the dream was recognized as the product of the dreamer, and it was further recognized that the events portrayed therein might be interpreted in the light of their symbolic meaning (in the manner outlined by Hippocrates in *On Regimen*).

Yet, even within this framework, it is difficult to translate the psychological vocabulary of 5th century (B.C.) Greece, into modern terms. In general, however, developments during this period may be summarized as follows. Dreams were considered to perform a therapeutic function, in that originally they served to liberate the individual from adverse external forces and later on, from the impediment of his own body ("orphyic" tradition). Thus, the highly emotional group rites in praise of Dionysius, Greek god of fruitfulness and vegetation (especially wine), came to be replaced by mystic individualistic expressions, as typified by the puritanic community established by Pythagoras (6th century B.C.), which emphasized vegetarianism and purification by ritual means. Typically, such rituals included "recollection," to the degree that, in time, catharsis was considered the only means of salvation. Clearly, these practices might serve as a substitute for religious ritual. However, the 5th century also produced an agglomeration of religious beliefs. Thus, on the one hand, passion and immorality were conceived of as an expression of natural law (*physis*), and, on the other, as a conglomeration of irrational customs (*nomos*). While Protagoras (481-411 B.C.) believed that virtue must be acquired, like a habit, Socrates (470-399 B.C.) maintained that it had to be taught intellectually.

In any event, the fact remains that there was

greater acceptance of emotional manifestations of personality. This was particularly evident in dramatic productions: for the first time in *Ajax*, Sophocles' (495-406 B.C.) madman lived in an unreal, rather than a supernatural, world. Euripides' (ca. 484-407 B.C.) plays demonstrated what might almost be described as an esthetic appreciation of behavioral expressions of madness, such as hallucinations, and these were deliberately exaggerated in several of his plays (e.g., *Orestes*, *Heracles*, and *Pentheus*) for dramatic effect.

Plato's concept of madness. In *Phaedrus*, Plato (428-348 B.C.) described four kinds of madness: prophetic, telestic or ritual, poetic, and erotic. Prophetic madness was defined as a unique form of temporary insanity reserved for the few individuals who were able to reach the paroxysm of enthusiasm characteristic of the shamanistic trance, as typified by the ecstatic prophecy of Apollo's oracle at Delphi, and as immortalized in Aeschylus' (525-456 B.C.) *Cassandra*. Telestic or ritual madness typically signified freedom from instinctual needs achieved collectively during the Corybantic religious rites. These rites were characterized by orgiastic dances performed to music, especially flute and drum in Phrygian mode, accelerated to the point of paroxysm, and served a cathartic function. According to Plato's *Laws*, essentially, the Corybantic rites and the practice of rocking babies were based on the same therapeutic principle: "They restore the sufferers to a state of inner calm and repose and bring them back to their sober senses. Thus, the inner tumult is cured by outer activity; unwholesome mania is driven out by beneficent mania, and in the end both kinds of mania are gone." Poetic madness, due to possession by the muses, was described as a state of particular inspiration, which was bestowed by the gods on the artist in order to facilitate the process of creation. Finally, erotic madness was associated with human love, which in the Greek culture, included homosexual, as well as heterosexual relationships.

Therapeutic procedures: The phenomenon of incubation. Students of Plato have repeatedly pointed out the constant fluctuation of his philosophical emphasis between mysticism and rationalism. Perhaps this ambivalence can best be understood as a reflection of the political and social climate of his time, which had produced the enlightenment of Socrates and Euripides, as opposed to the superstitious wave which followed the disastrous Peloponnesian wars. It is in this light that the real meaning and importance in Greek culture of incubation, a method for the interpretation of dreams, should be evaluated.

In essence this phenomenon derives from the belief in the omnipotence of the souls of one's ancestors, and the concomitant homeopathic postulate that the same gods who inflicted diseases could also cure them. The god Asklepios played a central role in this phenomenon. Originally a daemon of Thessalian origin, Ask-



FIGURE 1. Asklepion of Epidaurus in its present status. The labyrinthine structure of the *tholos*, where mental patients had to walk and to sleep in order to be able to reach the center. In the course of this highly symbolic process, they were "healed" by the god while dreaming. From Kerenyi, C. *Antiquities of Asklepios: Images of the Phoenix and Existence* (English translation), p. 44. Pantheon Books, New York, 1959. With permission, Bildarchiv Foto Marburg, Marburg, West Germany.

lepios had undergone an interesting metamorphosis, from a mortal god in Homer to an underworld oracle-demon, and then to an Apollonian god, whose healing role was similar in certain respects to that of Christ. Of the many Greek temples dedicated to Asklepios ("Asklepieia") as settings for his divine manifestation (*epiphanias*), perhaps the most famous today is situated in Epidaurus, in the Peloponnesus (Figure 1).

Typically, the phenomenon of incubation, as described by Pausanias in the second century A.D., consisted of several stages: (1) Postulants, who were afflicted with a variety of physical and psychic diseases, were first subjected to ritual purification. (2) They then went to sleep in the *abaton* of the temple, namely, in underground corridors constructed to form a maze (Latin, *incubare*, to sleep in the holy room). While the patient slept, Asklepios would appear in his dreams as a man or child, or as a snake or dog; he would then "touch" the sick part of each patient's body, after which he would disappear. (3) The patient would wake up healed and would have his dream "decoded" by an interpreter. (4) Finally, the patient's dream (and his subsequent recovery) were regarded as a reward for his devotion to the god Asklepios, to whom he would then make further votive offerings (as in Plato's *Phaedo*).

Recently, Jungian psychiatrist C. A. Meier elaborated a thorough interpretation of the phenomenon of incubation in the light of modern dynamic psychiatry, emphasizing the symbolism of various aspects of the ritual. The spring connected with the place of altar or of sacrifice (*tholos*) was seen to have a therapeutic

significance. The purifying process undergone by the postulant and his unusual experience underground were equated with disintegration and reintegration. The fact that this experience (i.e., the dream) occurred during an altered state of consciousness under the effect of music in the darkness of the night might be compared to the ego regression which is a prerequisite for free association. Finally, just as psychoanalytic theory postulates that the goal of treatment is to make the patient conscious of the unconscious, the phenomenon of incubation equated cure with the patient's acceptance and understanding of the unconscious meaning of his disease.

Aristotle's empirical psychology. Plato made an impressive effort to explain irrational events and behavior as an inevitable part of human life, rather than as the result of noxious influences. And, concurrently, he attempted to subject them to the rational control of the mind. In contrast, Aristotle (384–322 B.C.) approached the various expressions of human behavior from an empirical viewpoint, which is more in keeping with today's psychology. Croissant's thorough presentation of Aristotle's explanation of the mysteries clearly establishes that he conceived of the mysteries as ritual happenings in the course of which mental disorder could be healed. Essentially, in accordance with the basic orphic theme, which Plato ascribed to as well, Aristotle believed that the disordered movement of the mysteries was ultimately conducive to order. Nor did he deviate substantially from general belief in his identification of the three irrational elements presented in these rituals: enthusiasm (i.e., a

state of temporary madness, related to sexuality); divination through dreams; and divination through chance. However, whereas according to the classical Pythagoric tradition the music which accompanied such rituals was considered to evoke harmony, Aristotle postulated that its therapeutic function was to arouse passions. This, then, was the first clear statement that the release of repressed emotions, or passions (i.e., abreaction), was an essential prerequisite for the effective treatment of mental illness, a viewpoint which was to serve as the basis for the so-called "moral treatment" in the early 19th century.

To this end, Aristotle further advocated the use of catharsis, wine, aphrodisiacs, and music as, in the final analysis, they all were found to produce similar effects, especially in people with melancholic constitutions. In summary, Aristotle discussed catharsis from a naturalistic viewpoint. More specifically, in contrast with Plato, he did not emphasize the occult and supernatural character of catharsis; rather he conceived of it as a natural outlet for disturbing passions. In fact, passions must be purged consistently to avoid violence. The use of the theater as a civic and collective cathartic device in Greek culture may be attributed largely to the wide acceptance of this belief.

The triumph of rationalism. Aristotle's empirical psychology did not undergo further development by his disciples. Instead, *ataraxia*, a mental state of imperturbability, became the ideal of the Epicureans and Stoics during the 3rd century B.C., and, concomitantly, the foundation of psychology became much more rationalistic. Recently, in this connection, Werner Leibbrand pointed out that the basic Stoic concept of *apatheia*, which emphasized the moderation of passions in every human act, played an eminent role throughout the development of psychopathology up to the present. In the 4th century B.C., the "conglomerate," the term used by Dodds to express the combination of rational and irrational motives in Platonic philosophy, broke down. With the rise of Hellenism, religion became more rationalistic in the following centuries. At the same time, astrology, neo-Pythagorism, and other irrational beliefs gained momentum. In general, there was a preoccupation with those beliefs which applied to individual salvation, and this preoccupation anticipated some of the major tenets of Christianity.

This description of the development of psychiatry in Greek culture might be appropriately concluded by a brief description of concurrent developments in other medical disciplines. At this point in our chronological account various schools of medical thought had begun to emerge and to acquire the distinct characteristics which were later to become well known in medical history: dogmatic, empirical, methodical, pneumatic, and eclectic. Alexandria became the new center of learning, and it was there, in the 3rd century B.C., that Erasistratus and Herophilus first described cor-

rectly parts of the nervous system, such as the ventricles, the sensory and motor nerves, the circumvolutions, the vessels at the base of the brain, the arachnoid and the dura mater.

The Roman concept of madness. In the succeeding 2 centuries, Rome acquired increasing political importance, but Greek culture continued to dominate those aspects of Roman life which related to philosophy and art. On the other hand, the Romans were particularly concerned with the practical aspects of existence, such as architecture, economics, and jurisprudence. With specific reference to psychiatry, for the most part, with minor variations, the popular and medical concepts of madness, as well as literary and philosophical writings, repeated the Greek themes, outlined above.

Popular concepts. Superstitious practices, influenced by autochthonous Etruscan beliefs, continued to determine the popular attitude toward the mentally ill, who were neglected, banned, or persecuted. Thus, according to the *Twelve Tables* (451-450 B.C.), the mentally ill were deprived of freedom of action and were judged incompetent to control their own personal and business affairs. On the stage, the Romans portrayed madness in the form of bacchantes, in which women carried snakes, wore bizarre costumes, and performed in frenzied ecstasy. In the *Aeneid*, Vergil (70-19 B.C.) conceived of madness to represent this same bacchic frenzy. Later, the Fury was used to imply an even more dramatic picture of madness, and in his *Metamorphoses*, Ovid (43 B.C.-17 A.D.) used not only the Fury, but hell broth, magic philters, and love potions, thus anticipating the paraphernalia typical of the medieval traditions and folk beliefs. Incubation practices became more frequent in Rome at the beginning of the 3rd century A.D., when an Asclepean temple was built on the Tiberine Island where the Fatebenefratelli Hospital now stands.

Medical concepts. Roman physicians continued to believe in the premonitory value of dreams, and, in general, to be influenced by Greek concepts; and this influence became particularly evident after Julius Caesar issued an edict permitting foreign physicians to practice and to teach in Rome. The outstanding contributions of several men to psychiatry during this period merit brief consideration:

In the 1st century B.C., Asclepiades, originally from Asia Minor, and a founder of the "Methodical" school, rejected the doctrine of vital fluids and built his theories on the atomic hypotheses of Democritus. He described phrenitis (as a fever accompanied by mental excitement) and mania (as continuous excitement without fever). Anticipating Esquirol, Asclepiades further differentiated illusions from hallucinations, and prescribed treatment in light rooms for patients afflicted with hallucinations because of their characteristic fear of the dark. Treatment also emphasized proper use of food and wine, physiotherapy and

other activities, which imposed minimal physical restrictions, and included such psychotherapeutic techniques as music and intellectual stimulation; finally, patients were encouraged to form emotional relationships with others.

In the first century, A.D., Celsus, the author of the classic eight-volume *De re medica*, dealt at length with mental diseases in Volume III of this impressive work. Essentially, the originality of Celsus' approach lay in the emphasis he placed on the value of the individual doctor-patient relationship. Celsus anticipated modern psychotherapy in that he proposed that such a relationship might evolve from the use of specific techniques to cheer depressed patients and quiet those who are manic; furthermore, he advocated the proper use of language and music and, possibly, some group activities, such as reading groups, as well. Thus, once again, passions were recognized as constituting the essential ingredient for the treatment of the mental patient.

Literary-philosophical concept. Cicero (106-43 B.C.) must be credited with the first detailed description of passions, which is included in his *Tusculanae Disputationes*, as part of his attempt to clarify psychological terminology. Having defined *animus* as corresponding to the Greek *psyche*, and *anima* to the Greek *pneuma*, Cicero proceeded to describe four main groups of *pate* (same root as "passions"), which can be translated literally as "perturbations." These included *aegritudo* (discomfort); *metus* (fear); *voluptas* or *laetitia* (pleasure, joy); and finally, the strongest of all, *libido* (violent desire). It was Cicero, then, who used the term "libido" in a psychological sense for the first time. Cicero further stated that excessive perturbation might give rise to *morbi*, actual diseases of the soul, and that, basically, they were caused by a contempt or abuse of "ratio," i.e., errors in judgment. In essence, then, the concepts elaborated by Cicero were based on the philosophical doctrine of Stoicism.

In contrast, Lucretius' (ca. 99-55 B.C.) *De rerum natura*, which exerted wide influence during the Middle Ages, followed the Epicurean doctrine. Lucretius conceived of both the mind (*animus*) and the soul (*anima*) as corporal and mortal. The mind was located in the breast—the seat of feelings and intelligence—while the soul was dispersed throughout the body.

Galen. Apart from his prolific writings on philosophy, Galen (ca. 130-200 A.D.) was undoubtedly the greatest physician of Roman times. His contributions to philosophy, as well as medicine, reflect the influence of Plato, Hippocrates, and the Stoics. Galen is best known for his theory of the spirits, which stated that the natural or physical spirits (carried by the blood, as a result of the digestive and reproductive functions) become transformed into vital spirits (in the veins and heart, under the influence of the circulatory and respiratory functions) and are finally transformed into animal or psychic spirits (through

a process of distillation occurring in the brain and the nerves). Like many of Galen's contributions, these concepts exerted a strong influence on medical thought and on Western thought in general, up until the time of the scientific revolution of the 17th century.

With specific reference to psychology, Galen attempted to disprove the Stoic dogma that psychological deviations (*pate* or perturbations) were due to defects of reason, which Cicero had ascribed to. Instead, he maintained that the health of the soul depended upon the proper harmony of the rational, irrational, and lustful parts of the soul. When errors in judgment were made unconsciously, they might be corrected by proper education. However, when such erroneous acts of judgment were reached consciously, for personal gain, they might prove more difficult, if not impossible, to correct. For obvious reasons, this distinction helped to remove much of the stigma attached to mental illness. From his treatise, *On Passions*, it would appear that the insight Galen acquired later in life into his own personal difficulties helped him to master his own passions. This accomplishment was due in no small measure to his relationship with a loved and respected mentor. Thus, it was his personal experience, in combination with his clinical experience, which fostered his understanding of the human mind.

Contribution to forensic psychiatry. It is in relation to the legal aspects of mental illness that the Romans made their most important contribution to psychiatry. Previously, the various terms which defined the mentally ill—*furiosi*, *mente capti*, *dementes* and *fatui*—had been used interchangeably. In contrast, the classic legal text of the late Roman times, the *Corpus Juris Civilis*, detailed the various conditions (insanity, drunkenness, etc.) which, if present at the time the criminal act was committed, might decrease the "criminal's" responsibility for his actions. Apparently, however, the state of mind of the defendant was determined by a judge; physicians were not consulted in such matters. And, for the most part, those persons who were considered to be mentally ill, including those who might be diagnosed as criminal psychopaths today, were placed under the custody of relatives or guardians appointed by legal authorities. In addition, laws were passed which defined the ability of the mentally ill to contract marriage, to be divorced by a spouse, to dispose of their possessions, to leave a will, and to testify. Finally, during the rule of the Emperor Justinian (483-565 A.D.), a number of mentally ill patients, for whom facilities had not been provided earlier, were admitted to institutions for the poor and infirmed, perhaps as a result of the influence of Christianity.

The treatment of mental illness. This more humane attitude toward mental patients, as evidenced in the philosophy of two great physicians of the time, is described by Caelius Aurelianus in his treatise, *On Acute and Mental Diseases*. The first of these,

Aretaeus of Cappadocia (1st century A.D.), who belonged to the pneumatic school of thought, described forms of melancholia which terminated in mania, thus anticipating the manic-depressive syndrome. Of particular interest is the psychological insight Aretaeus demonstrated in defining the influence of the emotions on mental functioning (e.g., love on melancholia). One hundred years later, Soranus of the Methodical school described the ideational content of mental disturbances and of various forms of "stupor." However, Soranus (1st-2nd centuries A.D.) is known, in particular, for the truly humanitarian principles he applied in the treatment and management of the mentally ill. Rooms were to be kept free from disturbing stimuli; visiting by relatives was restricted; the personnel responsible for the care of the patients were instructed to be sympathetic; during lucid intervals mental patients were encouraged to read and then to discuss what they had read, to participate in dramatic performances (tragedy was prescribed to counteract mania, comedy to counteract depression), and to speak at group meetings. And, of course, these procedures are basic to the therapeutic regimen in the modern mental hospital.

Essentially, other writers representative of this period of late Roman civilization and the early Middle Ages repeated the themes of classic antiquity in describing the treatment of mental disorders. In addition, three forms of melancholia due, in turn, to general physiological, nervous, and intestinal factors were described. The brain was considered of central importance in the causation of mental disorders: the forebrain was the site of disturbances of imagination; the midbrain gave rise to disturbances of reason; and the middle and the posterior part of the brain together were the locus for disturbances of thought affecting imagination and reason.

St. Augustine. Even today, one must be impressed by the originality of St. Augustine (354-430), to the degree that he is generally considered the greatest introspective mind before Freud. And his contributions appear more remarkable in light of the fact that he was not specifically interested in mental disorders. Nevertheless, his observations in many areas—on educational methods, on the nature of children, on the joy of being with friends, on the sense of power one derives from doing that which is forbidden—reveal great psychological insight. In each of these areas, various phenomena were attributed to sexual factors. It has recently been suggested that Augustine's preoccupation with sexuality was the result of his mother's strong attachment to him, on the one hand, and his unconscious admiration for his father, on the other. However, apart from their autobiographical value, his *Confessions* contain passages of great psychological significance; for example, the fact that Augustine's analysis of memory anticipated modern concepts of the unconscious is of obvious interest for psychiatrists.

St. Augustine accepted Cicero's description of four main passions, or "perturbations," namely, desire (i.e., libido), fear, joy, and sorrow, which could be moderated by reason. However, he qualified this by pointing out that if the soul is not "intent," that is, if there is insufficient motivation, then the effect of external agents, however powerful, remain unnoticed. This statement, which gives preeminence to the will, represents the essence of the voluntaristic Augustinian philosophy.

Psychiatry in the Middle Ages

When St. Augustine died, the Vandals were at the doors of his city of Hippo. A few decades later, in 476, the collapse of the western part of the Roman Empire signaled the beginning of a new era, the Middle Ages. Shortly thereafter, the classic civilization was overcome by younger forces which, after a period of social upheaval and intellectual stagnation, were finally able to create a foundation for the medieval world.

Theological influence. Initially, medieval man conceived of the world only in terms of God. It is no wonder, therefore, that mental diseases, like every other aspect of medicine, and science in general, received so little consideration. Concomitantly, abnormal phenomena were accepted as an intrinsic part of the total architecture of the world, a view which is directly opposed to the preoccupation of modern science with improvement and progress. This orientation may have had favorable repercussions as well, however. Although supporting evidence is not available, it appears quite likely that in a world which was considered to reflect the ideal harmony of a divine plan, the mentally ill would not be mistreated or neglected. Rather, they might conceivably be integrated into the community.

In this theologically oriented world, the peace of the cloisters and monasteries, where much of the classical heritage continued to be cherished and preserved, represented an ideal environment. Thus, the best minds of the time are to be found among the authors of the Patristic literature, which, at times, under the veil of moral and religious issues, dealt with psychological problems. To illustrate, John Cassian (360-435), who is generally considered the master of the Western ascetic tradition, in listing the qualities he considered conducive to inner perfection, included a description of the sorrow and melancholia which young monks suffered (*acedia*), which has a very modern—and existential—appeal. This tradition of ascetic literature culminated in the remarkable treatise on *Pastoral Care* by Gregory the Great (540-604), which delineated the clergyman's moral and religious role, and, in addition, emphasized the psychological understanding he must acquire in order to help his parishioners under stress.

The prevalence of mystic and occult beliefs. These enlightened views, however, were limited to a comparatively small group of spiritual and cultivated

people. The ignorant populations, which represented the great majority, were influenced by all sorts of mystic and occult beliefs, mainly of Eastern origin. In fact, there is evidence that even after the Christianization of the Northern countries, magical practices, which were carried over from the earliest Indo-European to the Anglo-Saxon cultures, continued uninterrupted. This has been substantiated by written records of charms, of ceremonies (involving idolatry; worship of daemons; the cult of the dead; worship of trees, stones, and fire; and augury and divination), and of similar events recorded by Bede and other historians. Thus, "devil" often meant "pagan deity," rather than "spirit of evil." Contests between saints and pagan magicians were reported; in many instances, Christian and pagan festivals coincided, and the cult of the pagan god was often replaced by that of the local saint.

The belief in witchcraft which was prevalent in the early Middle Ages has been related to the ceremonies which were held at night, and attended by women, for the worship of the goddess Diana. Apparently, these "women of the night" met primarily for the rather innocuous purpose of eating and drinking. However, the official attitude of the Church, as expressed in the *Canon Episcopi*, in 1147, was that these gatherings were an expression of deranged minds; that the women involved had worshipped devils, rather than pagan deities; and that they must be given religious sanctions accordingly. This attitude persisted until the 13th century when laws became more structured and the Inquisition was organized.

In regard to the treatment of mental illness, the extent to which pagan practices had survived is well documented by a report of the cases treated at St. Bartholomew's Hospital in London, written around 1180, and included in *The Book of Foundation of St. Bartholomew's Church*. The general belief was that mental patients were cured by supernatural forces, i.e., the intercession of saints. In fact, there was a similarity with the ancient practice of incubation, for such intercession was held to occur for the most part while the patient was asleep. When the saints failed to intervene, physical treatment methods, i.e., cathartics, emetics, and blood letting were used.

The Arabian contribution to psychiatry. A more humanistic attitude toward the mentally ill prevailed in Arabian countries, which may have exerted some influence on Western European countries as well. Actually, we have relatively little concrete knowledge regarding the attitudes of Arabs toward mental patients. However, we do know a great deal about the religious, ethical, and scientific forces from which such attitudes supposedly derived.

Some years ago, it was believed that the Arabs lacked originality, because their approach to mental diseases was largely influenced by Greek medical science, by the tenets of Christianity, and by the enlightened Byzantine administration. After they came

in contact in the 6th and 7th centuries with the scientists in Alexandria, and with the medical schools established by heterodox Nestorians and pagan philosophers in Syria and Persia, the Arabians translated into Arabic many Greek classic texts and, in turn, established flourishing medical schools. Furthermore, a number of asylums were founded in Baghdad in the 8th century, in Damascus in the 9th century, and in Aleppo, Kalaama, Cairo, and Fez in the 13th century. And, as early as the 12th century, travelers returning to Europe reported on the enlightened treatment mental patients received in these institutions. In his description of the psychiatric hospital built by Sultan Bajazet II in Adrianapolis in approximately 1500 A.D., the historian Evlija described in detail the relaxed atmosphere of this establishment, surrounded by charming fountains and gardens, and the therapeutic regimen, which included special diets, baths, drugs, perfumes, and concerts at which the instruments were tuned in a special way, so they would not "jar" the patients' nerves. Finally, an out-patient clinic and a medical school, where teaching was conducted in the Greek tradition, were attached to each hospital. The same treatment facilities were available to rich and poor patients alike, the majority of whom appear to have been manic-depressive psychotics.

At the root of this humanitarian attitude was the Moslem belief, stated by the Prophet, that the insane person is loved by God and particularly chosen by Him to tell the truth. Therefore, the difference between insanity and possession was conceived as minimal, and the mentally ill were frequently worshipped as saints. And, from a modern viewpoint, it would appear that this attitude might facilitate the patient's recovery, since it permitted free expression of his sexual and aggressive instincts. In any event, while the Arab approach to mental illness was influenced by Greek and Christian tenets and, in fact, was based on the mystical and superstitious tendencies of the Eastern Mediterranean countries, its application of these concepts was original and unique.

The school of Salerno. Of the four most important Arabian medical writers, Rhazes (865-925) and Avicenna (980-1037) came from Persia, and Avenzoar (ca. 1090-1162) and Averroës (1126-1198) came from Spain. The Arabs created a splendid civilization in Spain, with many learning centers, where Greek, Latin, and Jewish literature could be translated and thus become available to Western civilization. Certainly it is not surprising that in such a climate of liberal interchange of ideas, many scholars found it easier to accept an eclectic viewpoint. Among these scholars was Constantinus Africanus (ca. 1020-1087), who is recognized as the founder of the medical school of Salerno, near Naples, which enjoyed great renown in the late Middle Ages.

Like the treatises by his contemporaries and disciples, Africanus' *De Melancholia* was based on the amalgamation of classic and Arabian influences.

Typically, an excess of bile, which was attributed to an imbalance of the systems of the body, could cause melancholia. And, as was true in the past, the recommended treatment included proper diet, kind and sensible words, music, baths, cathartics, rest, physical exercise, and sexual gratification. However, Africanus' concept of two forms of melancholia was more indicative of his originality. According to this hypothesis, which became a basic formulation in 18th and 19th century literature, the site of the first form of melancholia was the brain; the site of the second was the stomach (hypochondriasis). He then proceeded, for the first time, to describe the symptoms which characterize this syndrome: sadness (due to loss of the loved object), fear (of the unknown), withdrawal (staring into space), delusions surrounding siblings and parents (which, today, would be attributed to ambivalence), and intense fear and guilt in religious people. Finally, Africanus advanced certain hypotheses regarding prognosis, which are generally accepted today: the prognosis was more favorable in acute reactive conditions and when the patient had not reached an extreme state of withdrawal.

The early Renaissance of the 13th century. The 13th century has been considered an early Renaissance, primarily because it brought about a more proper and realistic understanding of human nature (as typified by the poetry of Dante and the art of Giotto) and because the concepts formulated during this period preannounced the foundation of modern science. In the harmonious architecture of medieval knowledge, ascending from man to God, psychology was considered from a theological viewpoint. However, Aristotle's influence, imported through the Arabs and soon to become central to Christian philosophy, strengthened the biological foundation of psychology.

Psychiatric concepts of Albert the Great and Thomas Aquinas. Both Albert the Great (1193–1280) and Thomas Aquinas (1225–1274) were influenced by the views of Hippocrates, Galen, and the Arabians, according to which the body, conceived of in terms of the four classic elements, influenced all psychic phenomena, and the soul was the form of the body.

The psychic apparatus. The structure of the psyche was conceived of as comprising three levels—*anima vegetativa*, *anima sensitiva*, and *anima intellectiva*—a concept which anticipated Jackson's theory of integration.

The *anima vegetativa* referred to physiological functions.

The *anima sensitiva* was concerned with: (1) the external and the internal senses, including common sense (the inner center of the external senses), imagination or fantasy, memory, and the cognitive aspect of instinct, all of which originated in the brain; and (2) the *appetitus sensitivus*, which represented movement, i.e., the dynamic forces of the psyche, which lay somewhere between somatic and spiritual forces,

including lustful and irascible tendencies, and which, in a broad sense, would correspond to the sexual and aggressive instincts of today's psychology. These tendencies, which were located in the heart, were the source of all passions.

Finally, the *anima intellectiva* alluded to those qualities in the senses which enabled the cognitive functions of "ratio," i.e., judgment, and intelligence, which derived their impetus from the *appetitus intellectivus* or "will."

Theory of psychopathology. Central to the theory of psychopathology postulated by Albert the Great and Thomas Aquinas was the notion that the soul could not become sick. Therefore, insanity was primarily a somatic disturbance. Ultimately, mental disturbance was attributed to the deficient use of reason. And this, in turn, was due to one of two factors: either passions were so intense as to interfere with proper reasoning, or reason could not prevail because of the peculiar functioning of the "physical apparatus" (in dream states or states of intoxication, for example). Even the pathological character traits described by Albert, such as timidity, arrogance, resentment, impulsiveness, were attributed to somatic factors.

Both Albert and Thomas Aquinas described various psychotic symptoms (such as hallucinations) and different types of mental patients; these descriptions, though highly intuitive, show a lack of clinical experience. In addition to melancholia, (which he attributed to altered body humours), Thomas Aquinas described mania (pathological anger), organic psychosis (loss of memory), and epilepsy (which he attributed to an increased formation of vapors in the brain). His further elaboration of *stultitia*, *hebetudo*, and *ignorantia* correspond, respectively, to current concepts of the psychopathic personality, mental deficiency, and social retardation.

From a legal viewpoint, although mental patients (*amentes*) might have lucid intervals, they were incapable of distinguishing right from wrong; therefore, they could not be held responsible for any crimes they might commit. Sleep and baths were recommended treatment procedures. However, above all, neither Albert the Great nor Thomas Aquinas were immune to the beliefs held by other thinkers of medieval times, according to which both the cause and treatment of mental illness depended largely on astrological influences on the psyche, and on the evil power of daemons.

Other contributions to psychiatry. Of the other theories of the mind advanced during this period, those formulated by Petrus Hispanus (1200–1277), who, in 1276, became Pope John XXI (the only "psychologist" to achieve this honor), merit brief consideration. In fact, more than any other scholar of his time, Hispanus deserved to be called a psychologist. He viewed psychology as *pars nobilissima* of nature and maintained that the study of such phenomena

MALLEVS MALEFICARVM, MALEFICAS ET EARVM

hæresum frangere cōtērens,

EX VARIIS AVCTORIBVS COMPILATVS,
& in quatuor Tomos iustè distributus,

*QVORVM DVO PRIORES VANAS DEMONVM
versus, præstigijs eorum delusiones, superstitiosas Strigimaginum
ceremonias, horrendos etiam cum illis congressus, exaltam denique
tam pestifera scilicet disquisitionem, & punitiōem complectuntur.
Tertius præxim Exorcismum ad Daemonum, & Strigimaginum male-
ficiam de Christi fidelibus pellendam, Quartus verò Artem Deliriorum,
Benedictionalem, & Exorcismalem continens.*

TOMVS PRIMVS.

Indices Auctorum, capitum, veròque non desunt.

Edi-tio nouissima, infinitis penè mendis expurgata; cuique accessit Fuga
Daemonum & Complementum artis exorcisticae.

*Vir sine mulier, in quibus Pythionius, vel dominionis furis spiritus, morbo moriatur
Leuitici cap. 10.*



IMPENSÆ.

Sumptibus CLAVDII BOYERAT, sub signo Mercurij Galli.

M. DC. LXIX.

CVM PRIVILEGIO REGIS.

FIGURE 2. Title page of the *Malleus Maleficarum*, 1486, by the two Dominicans Jacob Sprenger and Heinrich Kramer.

belonged to the realm of the natural sciences, rather than philosophy. Concomitantly, the *physicus*, whose efforts centered on the functioning of the psyche, was defined as a specialist in the fields of psychology and psychiatry. Passions, which Hispanus classified in accordance with Cicero's scheme, must be considered in relation to both psyche and soma. And within this framework, psychic disturbance was the result of multiple etiological factors. Thus, Hispanus foresaw, with remarkable accuracy, modern views of psychosomatic medicine.

Finally, Pietro d'Abano (ca. 1250–1316), the Averroistic philosopher who taught medicine, physiology, and astrology in Padua, anticipated some concepts of modern psychotherapy in his *Conciliator differentiarum*, which was published posthumously in 1476. For example, in discussing "enchantment" (*praecantatio*), he maintained that suggestion played a crucial role in the treatment of diseases. This technique might be particularly effective for those patients who were vulnerable to the physician's influence, provided he had the proper personality—kind, yet authoritative. In addition, in the tradition of Albert the Great and other thinkers of medieval times, Pietro d'Abano at-

tempted to evolve a scientific explanation of dreams by relating dream content to the personality of individual patients and to their "moral characteristics."

In summary, although the 13th century is generally considered a period of enlightenment in many fields of human endeavor (including the study of the mind), there is little evidence that any consistent effort was made to understand mental illness or evolve more effective treatment methods for such disorders. Moreover, this lack of comprehension of the nature of mental illness was to continue for several centuries. Consequently, throughout this period in history, mental illness remained untreated for the most part. Rather, mental patients were regarded as "characters" or, more kindly, as "poors" (which would seem to indicate a more tolerant attitude on the part of society than is evident in some segments of modern society). With regard to the status of mental health, in general, feudalism, with its rigid class structure, on the one hand, and the all-embracing architecture of the Church, on the other, provided a constricted system of controls. Within this framework, overwhelming sexual impulses could find expression only in the ideals of chivalry, while the religious wars and crusades served as an outlet for aggressive impulses.

Psychiatry in the Renaissance

Nevertheless, as early as the 13th century, it was evident that such a feudal society could not continue to exist, and in time this became increasingly apparent. But in the period preceding the ultimate decline of feudalism, the religious fervor on which it was based gave rise to a number of heretic movements and to a frank expression of collective psychopathology, as evidenced in the orgiastic dance frenzy or dancing mania of the Northern countries, in which sexual and aggressive instincts found gratification. Concomitantly, whereas feudalism emphasized the idealization of woman, which had been fostered by the Arabs and found expression in the romantic lyrics of the "troubadours" in Southern France, with the decay of medieval institutions woman began to emerge as a tempting and seductive being, who, from the time of the original sin, had been possessed by the devil and whose ultimate goal was the destruction of man.

The witchcraft mania. From this perspective, it is possible to understand the underlying motives which led to the full fledged mania—the open expression of misogyny—which flourished during the succeeding centuries. A physical explanation of some aspects of the witch has been advanced. For example, it has been suggested that hallucinations were caused by pharmacologically active ointments. In fact, however, the witch ritual represented a deliberate inversion and parody of the Christian way of life, designed to permit the free expression of repressed sexual and aggressive needs. The rise of the Inquisition helped indirectly to crystallize this ritual.

The *Malleus Maleficarum*, or "witches' hammer," by the two Dominican monks Sprenger and Kramer, which was published in 1487, 3 years after Innocent VIII's *Bulla* officially accepted the belief in demonology, inseparably linked mental disease and witchcraft for many centuries. Zilboorg has pointed out that this book was "so replete with sexual details that at times it may well be considered a handbook of sexual psychopathies." In any event, a person who became delusional or hallucinated was considered to be possessed of the devil, and to be a witch. And the *Malleus Maleficarum*, which has been described "as the most horrible document of that age," became the standard reference for Church and state alike in regard to matters concerning the indictment, trial, judgment, and punishment of alleged witches and went through 29 editions up to 1669. During this period, a number of sexual perverts, senile psychotics, schizophrenics, drug addicts, and psychopaths were falsely accused of witchcraft by the populace or were actually involved unconsciously in witchcraft practices through autosuggestion (see Figure 2).

A certain proportion of the mentally ill found an outlet for their pathological drives in war or religious manifestations, (e.g., crusades, pilgrimages, and heretic movements). However, other mental patients were confined to attics and cellars, where they were virtually imprisoned by their relatives, and still others, who were even less fortunate, were simply abandoned. Sebastian Brant's *Das Narrenschiff* (Ship of Fools), which was published in 1494, although it was meant to be satirical, provided an accurate picture of the prevailing attitude toward the mentally ill (Figure 3).

These developments, if they are to be clearly understood, must be considered in their proper context. This was a period in history when irrationality had an accepted place in the realm of human experience: perception was mainly auditory and tactual rather than visual, which frequently led to illusions and fantasies. And it was not yet man-oriented. Irrationality and madness were considered to play a definite role in the charismatic architecture of the world. Accordingly, the insane were represented on the stage in a stereotyped way, or they were considered, in the Arabian tradition, as "speaking the truth" (an attitude which was immortalized in Erasmus' *The Praise of Folly* in 1509).

First indications of social upheaval. However, under the influence of epidemics (plague), migrations, wars, etc., attitudes were changing at an even faster pace than had been anticipated. In literature, philosophy, and the visual arts, man was slowly becoming conscious of himself and developing a different view of the world as a setting for existence, rather than for his return to God. Although the rise of humanism in Italy in the 15th century and later throughout the rest of Europe is no longer considered an antireligious expression (which was the interpretation attached to



FIGURE 3. Instruments of torture for witches, many of whom were psychiatric patients. (From a German engraving of 1527 at the Cornell University Library. From Robbins, R. H. *The Encyclopedia of Witchcraft and Demonology*, p. 507. Crown, New York, 1959.)

these events in historical accounts of the 19th century), the fact remains that man's awareness of himself as an individual whose creation enhanced God coincided with the diminishing influence of the Church.

Changing attitudes toward the mentally ill. These new developments gave rise to concomitant changes in the attitude toward mental illness. In fact, by the 14th century, several institutions had already been established for the care or, more accurately, the custody of mental patients in Metz (1100), Uppsala (1305), Bergamo (1325), and Florence (1385). Furthermore, as is well known, the town of Gheel, in Belgium, had become a center for the care of mental patients during the Middle Ages, as a result of the miraculous renown that the Church of St. Dyphna—named after an Irish princess persecuted and killed there by her incest-ridden father—had acquired for the healing of many patients.

Pioneer treatment efforts. Traditionally, however, the founding of the first mental hospital in Valencia, in 1409, is attributed to Father Gilabert Jofré (1350–

1417), a Spanish priest. Legend has it that Father Jofré decided to enlist the help of his parishioners to build a hospital for the insane after he had witnessed a street scene of mockery and sadism toward the mentally ill typical of the customs of the time. Apparently, Father Jofré was sufficiently impressed by his experience to press toward his goal; his hospital was completed within the year. Moreover, in the period from 1412 to 1489, five similar institutions were established in various cities in Spain, and in 1567, under Spanish influence, the first mental hospital was established in Mexico City. Without question, then, the role of Spain in regard to the hospital care of mental patients, in both the Old and New World, remains of primary significance.

It is equally certain that the Arabs exerted a major influence in shaping the new attitude of the Spaniards toward mental patients. This is further borne out by the many similarities between these early mental hospitals and some of the Arabian institutions which, apparently, were devoted to mental patients, such as the one built by Mohammed V in Granada in 1365.

The emergence of humanism. Other influences were at work as well, and among these the revival by the humanists of the classic culture of Greece and Rome was of particular significance. The Spanish-born Luis Vives (1492–1540) is generally recognized as the most articulate and effective representative of the new trend of humanism. Vives spent most of his life in England and Belgium, where he advanced radical views on social welfare and on the education of women, in direct contrast to the prevailing misogynic trend. In *De anima et vita*, which Vives wrote in 1538, he dealt with the mind from an empirical viewpoint, stressed the emotional origin of certain associations, and even hinted at the role played by the instincts in human behavior.

The scholar Cornelius Agrippa (ca. 1486–1535) was even more outspoken in his opposition of misogyny. *On the Nobility and Pre-Eminence of the Feminine Sex* was written in 1509 as a general defense of women. Furthermore, in 1519, he underscored his beliefs by risking his life in Metz to liberate a woman who had been accused of alleged witchcraft.

In combination, these events, although described only briefly, clearly indicate the emergence of a new trend. There was an increasing tendency to take a fresh look at man, from the viewpoint of classic wisdom, grounded in the Christian tradition. The many treatises on family life and the education of children which were published in Italy during the 15th century may be regarded as a further expression of the gathering momentum of this humanistic—and human—outlook.

Johann Weyer: The first “psychiatrist.” Because of his books on the occult sciences, Agrippa was generally regarded as a rather controversial figure. Nevertheless, the benefits which were to derive from

the influence he exerted on Johann Weyer during his adolescence are universally acknowledged.

Weyer was born in 1515 in Graves, a town on the border between Holland and Germany, and later studied medicine in Paris, where he became acquainted with a number of scholars. After he had completed his medical studies (which were in the medieval tradition), until his death 38 years later, in 1588, Weyer served as personal physician to Duke William of Jülich, Cleves, and Berg. Although he would, undoubtedly, be considered an enlightened man by any standards, in later life the duke became mentally ill, and typically, this may explain his particular sensitivity to psychological issues, and his interest in Weyer's investigations in this area. One can only speculate as to the extent to which Weyer's efforts were influenced by Duke William. The fact remains, however, that Weyer gradually turned his interest from general medicine to the study of individual human behavior, and, in particular, to the study of women who had been accused of witchcraft. The conclusions he reached in the course of his investigations were ultimately incorporated into his *De Praestigiis Daemonum*, which was published in Basel in 1563. It is today universally recognized that this book represents a landmark in the history of psychiatry; as such, a brief summary of its content is clearly indicated.

Weyer began with a very adamant rejection of the belief in witchcraft and a strong condemnation of the clergymen who supported it. He then proceeded patiently to explain a variety of the so-called supernatural signs with which witches were usually identified, on the basis of pure medical knowledge, and, when such knowledge proved inadequate, as in the case of hallucinations, to attribute such phenomena to a combination of natural and supernatural factors. Since Weyer was a 16th century man, it is likely that he genuinely believed that the devil participated, to some extent and in some special way, in human behavior. His determination to “make clinical situations as clear as daylight,” and to proceed to a careful psychological examination of mental patients is all the more remarkable in the light of his personal convictions. Weyer had acquired extensive clinical experience which enabled him to describe a wide range of diagnostic entities, and associated symptomatology, including toxic psychoses, epilepsy, senile psychoses, nightmares, hysteria, and delusions, as well as paranoia, *folie à deux*, and depression.

However, it is in the realm of psychotherapy that Weyer's contribution to psychiatry is truly outstanding and unique. Thus, for example, he recommended that nuns in convents, who manifested psychological symptoms, frequently of an erotic nature, be isolated first and then permitted to return to their own families. But, above all, he insisted that the needs of the individual, rather than the rules of the institution, must be given primary consideration.

This attitude was further exemplified in an account of his treatment of Barbara Kremers, a 10-year-old girl who, supposedly, had existed for over a year without food or drink. Weyer moved the patient and her older sister to his own home, where they lived among his family. After a period of observation, he concluded that the patient's behavior represented an unconscious desire to malingering. The important point is that here, and elsewhere, he tried to initiate a new approach to treatment which was to provide the framework for modern psychotherapy. More specifically, on the one hand, Weyer recognized the importance of the therapeutic relationship, and of the kindness and understanding the therapist must extend toward his patient. However, he further postulated that, to be truly effective, this benevolent attitude must be based on scientific principles, i.e., careful psychiatric examination and observation.

Weyer's classic volume also included a discussion of matters relating to the trial and punishment of alleged witches, which represents an important contribution to legal psychiatry. And, finally, it presented his pioneer views on possible areas for collaboration between physicians and clergymen, and the benefits to be derived from such collaboration.

Weyer's radical approach was, of course, completely alien to the thinking of his times. As a result, his work evoked hostility initially, and then was simply ignored by theologians, philosophers, physicians, and lawyers alike—the very audience to whom his book had been directed. In fact, among the leading “demonologists” of the 16th and 17th centuries—Bodin, Delrio, Guaccius, Remy, King James I, Cotton Mather—only Reginald Scott, in his *Discovery of Witchcraft*, published in 1584, came to Weyer's defense. Weyer, himself, had expected that his book would encounter some opposition. However, he could not have anticipated that it would be listed in the *Index Librorum Prohibitorum* until the beginning of this century. Nor could Weyer have predicted that his observations would be disregarded by physicians who were mainly interested in mental disorders, or more specifically, in problems involving nosology, during the 17th and 18th centuries, and by those interested in organic pathology in the 19th century. Only recently, with the advent of dynamic psychiatry, was the historical significance of Weyer's contributions evaluated in proper perspective, thanks to the efforts of Binz and Cobben.

The humanism of Paracelsus and Cardan. As might be expected, Weyer remained without peer during the 16th century, in terms of the originality and imagination which are evident throughout his writings. Nevertheless, it would seem appropriate in this context to refer briefly to the views advanced by two other enlightened scholars of this period, Paracelsus and Cardan.

The famous Swiss-born physician Paracelsus (ca. 1493–1541) advocated a more humane approach to all

patients, including those who were afflicted with mental illness. In his book, *On the Diseases Which Deprive Man of Reason*, which was written in 1526 and finally published in 1567, Paracelsus clearly rejected demonology, made definite reference to the unconscious, and hypothesized that sexual factors played a role in the pathogenesis of hysteria and neuroses (which, according to Zilboorg, constituted the first definite statement to this effect). Because of the obscure nature and the lack of clarity typical of his writings, these views were the source of considerable controversy, which veiled their essential significance for psychiatry. Only recently were Paracelsus' contributions accorded adequate recognition.

Jerome Cardan (1501–1576), a mathematician, philosopher, and physician, was among the first to use his personal experiences as the basis for his efforts to understand psychological phenomena. In his *Autobiography*, which he completed in 1570, Cardan described in detail the emotional disorders which he underwent during his childhood (nightmares and stuttering, which he ascribed to his father's pathological influence) and as an adolescent (sexual impotence, hallucinations, and grandiose ideas). Cardan's son, who, in turn, was aversely influenced by his father's neurotic tendencies, became so disturbed in later life that, eventually, he killed his wife. Cardan's awareness of the psychological factors which he believed had precipitated his son's behavior led him to postulate (albeit not for the first time) that the mentally ill should not be considered responsible for their criminal acts, a view which is very similar to the later concept of “moral insanity.” Apart from his *Autobiography*, Cardan wrote a number of other works. At various times, in his numerous publications, he opposed persecution of people for so-called witchcraft, detailed the prerequisites for mental health, and, finally, described various character types and their somatic correlations.

Physiognomy and morphology, forerunners of modern character analysis. An attempt to correlate character type with somatic variables would properly include physiognomy, a field of study which became very popular during the Renaissance at the time of the “discovery” of anatomy by Vesalius (1514–1564), and the concomitant emphasis on man as a “microcosm” which reflected the “macrocosm.” In fact, however, physiognomy has a long history in the development of man, which can be traced back to the Arabs; to Pietro d' Abano, mentioned above; to Michael Scott, the 13th century astrologist of Frederick II; and to Michael Savonarola, grandfather of the famous proponent of Florentine religious reform.

Many volumes on physiognomy were published in the late 15th century, but none acquired such wide popularity as the *De Humana Physiognomia*, by Giambattista della Porta (1538–1615), the well known Neapolitan writer of scientific (or pseudoscientific) subjects. The main thesis of his book, which is presently termed “teriological physiognomy” was that the

physical resemblance of man to animals may be extended to apply to behavioral characteristics as well (for instance, sharpness of sight, cautiousness, aggression, etc.). Della Porta also attempted to support the validity of this concept by inserting numerous illustrations throughout his book, which have become justly famous. In a broader sense, however, physiognomy represented the culmination of a series of means of divination used by man. Initially, in early religions, magic traits were assigned to anthropomorphic gods, then in astrology to the planets and stars, and lastly, in physiognomy, to the parts of the human body (hand, head, etc.). Thus, physiognomy represents the final stage of a cycle which initiates and terminates with man. This final concept of man as the focus of the entire universe is crucial to Renaissance thinking and led to various currents of thought which, in turn, ultimately produced certain current theoretical trends, including the modern concept of the biological constitution in relation to psychological functioning.

As a result of his studies of the morphological constitution, the Spaniard, Juan Huarte (ca. 1530–1592), in his book, *The Examination of Men's Wits*, published in 1574, advanced the thesis that variations in the intellectual capacity of men may be attributed to differences in temperament. Thus, Huarte came even closer to modern character analysis and the concepts of vocational orientation.

The preeminence of scientific contributions to psychology. The contributions to psychology and psychopathology by Cardan and della Porta and the other physicians mentioned in this subsection must be considered a reflection of their ability as scientists, rather than clinicians. With the notable exception of Weyer, Renaissance clinicians, although renowned for their anatomical and physiological discoveries, added very little to our knowledge of human psychopathology.

To mention only some of the more outstanding among them, Girolamo Fracastoro (1483–1553), mainly known for his poem on syphilis, accurately described the anxious state of mind of melancholics and suggested methods for the prevention of suicide; Girolamo Mercuriale (1530–1606) related melancholia to a disturbance in the heart rather than in the brain; Jean Schenck (1530–1598) described various psychiatric signs, such as incubus, and manifestations of collective psychopathology (St. Vitus' dance, demonopathies); Konrad von Gesner (1516–1565), the well known scientist from Zürich, described several kinds of epilepsy and mental disorders, among which he included *amoris morbus* (the disease of love), and emphasized psychological aspects of dreams and the fact that they reflected the past, as well as present and future events.

The concepts advanced by each of these clinicians are lacking in originality. Nevertheless this quality did exist in Renaissance thought. To find it, one must go back to Leonardo da Vinci (1452–1519) who, even

before Galileo and Bacon, attempted to establish some kind of scientific methodology by means of various experiments involving man and his functions. His efforts included the careful study of the cerebral ventricles through injection of cadavers. In addition, he anticipated modern concepts of the functioning of the nervous system (Jackson's motor automatisms), and the Rorschach test by pointing to the individual reaction to the configuration of spots and clouds. He investigated the psychophysiology of perception (stereoscopic vision, binomial character of colors, persistence of images), the expression of emotions in physiognomy, and the emotional selectivity of memory. He hinted at the importance of self-suggestion (hypnotic fascination, especially in women) and of dreams. And, in general, he emphasized the instinctual component of the mind.

The layman's view of mental illness. Despite the advances in psychology and psychiatry, as outlined above, the fact remains that in the 16th century—at which point the Renaissance had reached its peak—the attitude of the general public toward mental illness remained essentially the same as the attitude which had prevailed in ancient and medieval times. It has frequently been pointed out that this phenomenon, which ultimately led to the psychiatric revolution of the 19th century, was due to the lag between persisting medieval social institutions, on the one hand, and individual creativity, on the other. It was this basic discrepancy which accounted for the lack of community responsibility and humanitarian attitudes which characterized this period.

As a result, there was no evidence of improvement in the facilities provided for the care of the mentally ill. When they were kept at home, their families frequently resorted to the use of chains. And, with few exceptions, the conditions to which the hospitalized mental patient was exposed were equally deplorable. Apparently, hospital administrators shared the popular view of mental illness, for until the 19th century,



FIGURE 4. Sketch of Bedlam (Bethlehem Hospital) by William Hogarth (1697–1764). (From *A Rake's Progress* (Plate VIII).)

mental patients were regularly placed "on exhibition" at Bethlehem Hospital in London, where they could be viewed by the public for only a few pennies; nor is there any indication that the Hospital of St. Maria della Pietà in Rome was an exception to the general rule, despite the fact that it was administered by a religious order established by the Portuguese Juan Ciudad (1495–1550), called John of God, and was dedicated to the care of all sick people, including those who were mentally sick (see Figure 4).

The layman's attitude toward the contemporary mental hospital was vividly described by the learned monk, Tomaso Garzoni (1549–1589), in *The Hospital of the Incurable Fools*, originally published in Italian in 1586 and translated into English in 1600, in which he presented a broad spectrum of psychiatric entities, ranging from alcoholism to melancholia, paranoia, and malingering. But apart from the stereotyped descriptions of the typical behavior of patients in each of these diagnostic entities, there is an occasional hint of Garzoni's awareness of their inner psychological condition, for instance, the longing for life and death, of the "insane for love."

Evidence of an awareness of inner struggle, reaching the highest level of existential pathos, is present to a much greater degree, of course, in many of Shakespeare's characters. Yet even Shakespeare attributed the so-called "Elizabethan malady," which is described with unwarranted frequency in English literature from the late 16th century to the middle 17th century, to the bodily humours (especially black bile) and, of course, to the influence of the stars. However, recognition of the importance of passions as an internal force, which, when it was not regulated by reason, could produce melancholia through the mediating action of the body, suggests that the foundation had been laid for a more modern view of a human psychological functioning as representing a continuum which ranged from normality to disease. Thus, the Renaissance picture of the "fool" slowly faded, and in its place modern conscience slowly advanced, as a concomitant of the Reformation, of pietism and other religious trends, of philosophical criticism, of early liberal tendencies, and in the new atmosphere of growing national entities.

Psychiatry in the Seventeenth and Eighteenth Centuries

The origins of modern medicine and science. The 17th century represents a period of transition from uncritical dependence on the ancients' belief in the gods, which in the Renaissance had found expression in the witchcraft mania, to the specification and application of methodological criteria in science. Galileo and Bacon must of course, be credited with the formulation of the basic criteria for scientific experimentation. The widespread application of their concepts may be attributed to the fact that they were elaborated in Latin, then the universal language of

science. In addition, the promulgation of these new theories may be ascribed to the establishment, in the years from 1657 to 1700, of the first four scientific societies (i.e., the Accademia del Cimento, The Royal Society, the Académie des Savants, and the Berlin Akademie) and the first professional journals (i.e., *Philosophical Transactions of the Royal Society* and the *Journal Des Savants*). Concomitantly, the Copernican revolution, by demoting earth from a central role in the universe, had paved the way for a more critical and objective view of the world, and, subsequently, of man himself. Obviously, the old beliefs in astrology and alchemy could not be expected to disappear overnight. However, these tenets now contributed to the foundation of the new sciences of astronomy and chemistry, which were further implemented by the many technological advances during this period. This new dynamic concept of the world was soon expanded to include man, and Harvey's description of the circulation of the blood in 1628 fostered this view. Subsequently, Santorio did pioneer work on metabolism; Malpighi, on capillary circulation; Redi, on the generation of life; and Bonet, on pathological anatomy; later, in the 18th century, Galvani developed his theories in physiology. Whatever their specific area of investigation, all these men shared certain interests in common: the forces which generate life, the nature of death, the study of microorganisms and of cells and chemical compounds as basic constituents of the human body. After the Greek word, *jatros*, for physician, these scientists were called jatro-physicists, jatro-chemists, or jatro-mechanics, depending on their particular focus.

New anatomical and physiological concepts of the mind. In psychology, a word coined in 1590 by the German philosopher Göckel (1547–1628), the emphasis was placed on those organs which mediated between passions and body humours, namely, on the body-mind relationship. The *sensorium commune* which was considered central to this relationship was variously located in the pineal gland (Descartes), in the corpora striata (Vieussens), in the centrum ovale (Boerhaave), in the corpus callosum (Lancisi), and, finally, in the medulla oblongata (Malpighi, Willis).

Réné Descartes. Of all these men, René Descartes (1596–1650) was undoubtedly the most important. Indeed, his philosophical postulate concerning the essential distinction between body and mind continued to influence psychology up to the beginning of this century and was responsible for the split between morphology and psychology. Descartes' theories were subsequently rejected because of their strict materialism. However, today, an increasing number of scientists no longer subscribe to this viewpoint. Thus, his attempt to locate the mind in the pineal gland is seen as a dynamic, rather than a static concept. Specifically, Descartes defined the seat of the soul as the site of its activity, rather than its locale, which implies that he conceived of the soul as a physical

force, *virtu*. He continued to subscribe to the Galenic concept of spirits; however, he related differences of temperament or natural propensities to differences in the number, size, shape and movements of the spirits. And he concluded that each reflex action reflected the total functioning of the nervous system. Furthermore, he maintained that movements, i.e., mental phenomena, could occur only after a rational soul had been joined to the body machine, a view clearly opposed to the concept of the "homme-machine," which many workers have incorrectly attributed to Descartes.

Traditionally, Descartes is considered the most outstanding representative of 17th century rationalism. Nevertheless, he attached great significance to emotional factors. This has been substantiated by evidence from still another source: obviously, one's life experience will inevitably be reflected in one's work. The fact that in his own life, Descartes was guided by strong emotions, as well as reason, is illustrated by his performance in two life crises. The first of these occurred when, at 17, he rejected the Jesuit teachings. The second occurred at the age of 23 when he had his three famous dreams, which several of his biographers have explained as "mystical crises." In any event, apparently, by the time he was in his fifties, his major conflicts were resolved for the most part, for in 1649 he was able to write the *Traité des passions de l'âme*, which consists primarily of his correspondence with his pupil, Princess Elizabeth of Bohemia.

The classification of mental diseases. As might be expected, these various scientific developments led to a preoccupation with the classification of mental disorders. Thus, the first medical textbook published in the 17th century to deal with psychiatry, the *Praxis Medica*, written in 1602 by the Swiss physician Felix Platter (1536-1614), begins with a 75 quarto page introduction on the classification of mental diseases. Like his contemporaries, Platter subscribed to a theory of organic humoral causation; however, this view did not necessarily outrule the devil as an etiological factor, at least in some cases of "possessed" female patients. Platter's contribution is historically significant. Undoubtedly, however, the two physicians who were most important for the history of psychiatry in the 17th century were Zacchia and Sydenham, who differed radically in orientation.

Legal psychiatry (Zacchia). Paolo Zacchia (1584-1659), who is generally regarded as the father of legal medicine, served as the Pope's personal physician for many years. In this capacity, he was called on frequently to give *consilia* to the Court of the Sacra Rota, the highest judicial body of the Catholic Church. In his lengthy volume, *Questiones medico-legales* (1621-1635), he presented many case reports and then made many recommendations, which would be considered valid even today. Zacchia's discussion of these cases began with a statement that in his opinion, only a physician was competent to judge the mental con-

dition of a person. He then suggested that such an examination should be based on observation of the person's behavior, language, actions, ability to exercise sound judgement, and, finally, emotional state. Mental disorders were classified as (1) *fatuitas* (which denoted the symptom complex generally associated with immature and psychopathic persons); (2) *insania* (comprising mania, melancholia and "disorders of passion"); and (3) *phrenitis* (which, for the most part, were considered to be organic conditions, in the hippocratic tradition). For persons in each of these categories, Zacchia outlined certain "rules" regarding imputability, ability to testify, to marry, to enter a religious order, to leave a will, etc. Above all, Zacchia's importance lies in the liberal attitude reflected in these concepts, which stressed that the person, rather than the law, was to be given primary consideration. Thus, manic patients who had lucid intervals could only be held partly responsible for their criminal acts; marriage might be beneficial for some melancholics, who could also hold positions with limited responsibilities. Individuals who committed "crimes of passion" should be acquitted; alcoholics should be studied carefully; epileptics should be made to undergo a period of intensive study and observation before they were accepted into religious orders. In cases of malingering, one should keep in mind that not all symptoms are known to the patients and can be reproduced by them. Finally, their melancholia led possessed persons to believe they were persecuted by the devil. This brief summary of Zacchia's concepts underscores his progressive viewpoint. Certainly, on the basis of his contribution, his name should, at long last, be removed from oblivion, so that he may assume his proper role in the history of psychiatry.

Advances in clinical observation (Sydenham). The second 17th century physician whose work was of particular significance for the history of psychiatry was Thomas Sydenham (1624-1689), who is generally considered to have initiated the clinical approach in modern medicine. Although Sydenham was not specifically interested in diseases of the mind, in the course of his clinical experience, he had become aware of the importance of neurotic and hysteric symptoms and the frequency with which they occurred among his patients. He described these symptoms in detail. He pointed out that, contrary to popular belief, hysteric manifestations were not restricted to women but might be observed in men and children as well. Moreover, hysterical illness might include a wide range of symptoms, such as vomiting, convulsive coughing, spasm of the colon, pain in the bladder and back, and retention of urine. Sydenham's therapeutic armamentarium in such cases did not extend beyond the usual methods of blood letting and the use of cathartics and emetics. Rather, his great importance derives from the fact that, whereas psychiatry had focused exclusively on psychotic phenomena, now, for the first time, attention was drawn to the symptoms of neurosis. This

new area of emphasis was not fully explored, however, until the beginning of the 20th century, largely as a result of the work of Sigmund Freud.

Throughout the 17th and 18th centuries, other workers adopted the clinical approach initiated by Sydenham for the observation and description of emotional disturbances. As a matter of fact, despite its initial significance, the classification of mental disorders had, in much the same way as Linnaeus' major opus in botany (1758), degenerated into a taxonomic compulsion. Rather, the advances in psychiatric knowledge achieved during these 2 centuries consisted specifically of isolated descriptions of symptoms and clinical pictures, which were often ignored or forgotten. In Zilboorg's words, "The original and refreshings parts of the literary contribution to medical psychology [of this period] are to be found in the ever increasing number of case reports, in the observations of certain psychological details which, even though not a little desultory, represent an important contribution and a remarkable step forward." This orientation was evident in the description by Charles Lepois (1611-1675) of postpartum psychosis; in the description by Herman Boerhaave (1668-1738), and particularly his successor Jerome Gaub (1705-1780), of psychosomatic conditions. It was from this viewpoint that S. A. Tissot (1728-1797) explored the problem of nervous diseases (epilepsy). It is reflected in a report by Sir Kenelm Digby (1603-1665) of a case of *folie à deux*; in the lengthy dissertation by Giorgio Baglivi (1668-1707) on tarantism. This attention to psychological detail led D. T. de Bienville (1726-1813) to introduce the term "nymphomania" in 1771 to describe "uterine furor." Similarly in 1733, George Cheyne (1671-1743) provided a detailed account of the "English malady," later known as neurasthenia. Furthermore, the "*maladie des vapeurs*," a favorite symptom of many fashionable ladies, came to signify hysteric symptoms caused by the spreading, to the upper part of the body and the brain, of noxious substances which supposedly emanated from the uterus; while "spleen" was attributed to the neurotic and hypochondriac disposition of the English people. In addition to the professional literature (John Purcell's *A Treatise of Vapours*, published in 1702; Richard Blackman's *A Treatise of Spleen and Vapours* which appeared in 1725), these terms were used widely in colloquial expressions.

A description of the melancholic disposition in the classic tradition is central to *Anatomy of Melancholia*, by Richard Burton (1577-1640), which was republished without interruption from the middle of the 17th to the 19th century. Not surprisingly, the real reference for Burton's description of melancholia was autobiographical, and his writing was prolix and discursive, rather than scientific. However, his elucidation of the psychological and social causes of insanity, e.g., jealousy, solitude, fear, poverty, unrequited love, or excessive religiosity, justifiably appealed to his con-

temporaries and their descendants. This emphasis on emotional factors in the causation of mental illness, combined with the rejection of supernatural factors and occult practices, marked a new stage in the development of a more humane and understanding concept of man, which anticipated the English liberal philosophy. This trend was similarly reflected in the spiritual and moral Christian guidance movement which developed during the 17th century as an expression of Protestant piety, and of the Catholic counterreformation and the religious orders which evolved from it. In brief, concern for the moral and spiritual welfare of the soul could not be divorced from consideration of psychological factors, as typified by the casuistry of the Jesuits, which was based on counseling and on establishing a relationship with the individual. On the philosophical level, the Jewish thinker Baruch Spinoza (1632-1677) provided the foundation for an integrated approach to physical and psychological phenomena, by considering them as two aspects of the same living organism; in so doing he anticipated some concepts of the dynamic unconscious.

Contradictions in the 18th century attitude toward the mentally ill. At the same time, however, as a result of the emphasis placed on reason during the *siècle des lumières*, madness was confined to the realm of the absurd and irrational, as beautifully portrayed in Molière's comedies. The glorification of reason, and the concomitant lack of tolerance for the irrational, by condemning and denying irrationality, culminated in a complete rejection of the mentally ill from a philosophical viewpoint, which represented the first step toward puritanism. Although passions were discussed to an increasing extent in the literary salons and in the lucid prose of the French moralists (La Bruyère, La Rochefoucault), they were also considered a great potential evil when they were not controlled by reason. And this ambivalent attitude was also conducive to a moralistic view.

In fact, during the 18th century, there was a basic contradiction in the attitude toward mental illness. On the one hand, the mentally ill were rejected by medical and other professional societies. On the other hand, the impressive scientific and social accomplishments during this period led to the establishment of modern science, and initial acceptance of the liberal ideas of Locke and Montesquieu, which ultimately laid the foundation for modern democracy in the 19th century. Thus, even as cultivated men all over Europe were engaged in philosophical discussion of the human mind and its functions, of social and economic theories, mental patients continued to be objects of ridicule and neglect. Although it is well known, Hogarth's painting of Bethlehem's wards in the eighth scene of his *A Rake's Progress* (1733) must be mentioned here as a representation of the customs of the time. Remnants of other primitive customs persisted as well. For example, the abolishment of capital punishment of sorcerers and witches by Colbert, Louis XIV's famous minister

in 1682, was considered to represent great progress. It did not eradicate superstitions and fanaticisms, however, as evidenced by the fact that 10 years later, there was a revival of the witchcraft mania in Salem, Massachusetts. There, within a single year, 25 alleged witches were placed on trial, and 19 were executed.

Admittedly, some dramatic forms of sadomasochism (such as the episode of the flagellants of Urban Grandier) were dying off. However, other forms of collective psychopathology continued to persist until their open expression on a major scale during the French revolution.

Institutional care of the mentally ill. Of course, as pointed out in recent literature, some progress was made in the understanding and treatment of mental disorders. For one, in 1744, more than 70 years after Lord Hale had differentiated total from partial insanity, an Act of Parliament established rules for the commitment of mental patients. In 1750, St. Luke's Hospital was opened at Moorsfield, England, and due to the influence of Benjamin Franklin, 6 years later, the Pennsylvania Hospital was established as the first public institution in the United States to accept mentally ill patients. In 1773, the Eastern Lunatic Hospital, for the exclusive treatment of the mentally ill, was opened at Williamsburg, Virginia, under the direction of the Galt family. The Elizabethan Poor Law Act of 1601, which placed the responsibility for the care of the poor—and frequently the insane—on local authorities, led to their exile from one community after another. The obvious inequities of this situation finally gave rise to some concern for the mentally ill and, concurrently, efforts to devise improved methods for their treatment.

However, even in the most progressive institutions, strong controversies raged between those physicians who believed that such treatment methods were of potential value, as opposed to those workers who believed that mental illness was, in fact, incurable. One such typical controversy occurred in 1758 between John Monro and William Battie at Bethlehem Hospital. In the light of present data these debates appear to have been highly unscientific. But they were, at least, concerned with concrete aspects of mental pathology, and far removed from the cold, formal classifications of mental disorders by Boissier de Sauvage (1706–1767) and Erasmus Darwin (1731–1802), the grandfather of the famous Charles Darwin. Certainly, they were more indicative of progress than the stand taken by Kant who, as late as 1798, in his *Anthropologie* continued to insist that the treatment of mental disorders was the proper province of philosophers, rather than physicians.

The influence of German "vitalism." G. A. Stahl (1660–1734), the German physician who was well known for his "phlogiston theory," attempted to superimpose the chemical orientation of 18th century medicine on the Aristotelian tradition. It was Stahl's contention that the soul was not a spirit, but a special

force, a drive characteristic of every living organism, a viewpoint which some workers regard as a direct antecedent of the psychodynamic theory of behavior. Similarly, C. F. Wolff (1733–1794), in his doctrine of epigenesis, stated that the living forces of the primary substance (protoplasm) shape each body organ. Both theories are representative of "vitalism," a trend which was particularly popular among the German romantics and enjoyed wide acceptance at the famous medical school in Montpellier, France, which had previously been influenced by Arabian, Jewish, and mystical concepts.

The British empirical orientation. On the other hand, in Britain, William Cullen (1710–1790) of Edinburgh, whose views reflected an empirical, philosophical orientation, acquired wide renown for his work in psychiatry, as well as other medical disciplines. In contrast to existing, more complicated classifications of mental disorders, Cullen defined mania as a disorder of the intellectual functions caused by an imbalance of nervous energy, which could be traced, in the last analysis, to the nervous system. Accordingly, treatment consisted in the decrease or removal of the nervous excitement, and opium was considered especially effective for this purpose. This trend was subsequently crystallized by John Brown (1735–1788), whose views were representative of the theory of stimulus and counter-stimulus, which later became a highly controversial issue in medicine.

The position of 18th century physicians in regard to psychiatry may be summarized as follows. No matter how enlightened their views might be in the abstract, these concepts were not actively applied to mental patients, who were kept at a distance and, for the most part, were still treated—or mistreated—in the manner of the Middle Ages and the Renaissance. Yet, some progress was made even in this area. As typified by Louis XIV, during this so-called period of "enlightened absolutism," the king of each European nation was idealized as a benign father figure who was responsible, not only for the safety of his subjects, but for their health, mental as well as physical. Accordingly, general hospitals for the care of elderly people, people with venereal diseases, epileptics, and the mentally ill, were built in several cities in France (in Paris, the Hôtel-Dieu in 1656). And, according to descriptions which have appeared recently in the literature, these installations combined the characteristics of a penal institution, an insane asylum, a sheltered workshop, and a hospital. Concurrently, the religious order of St. Vincent of Paul founded Saint Lazare in 1632, and the Brothers of Charity founded the Charité de Senlis in 1668, for the care of the insane and of "correctionnaires," namely, patients who today would be called juvenile delinquents, or psychopaths, primarily in need of supervision and rehabilitation. An elaborate system for the commitment of this patient category was instituted. Specifically, the family brought charges against the "correctionnaires" to the police, who, in

turn, verified the facts and obtained an order for their institutionalization (*lettre de cachet*) from the king. Thus, the king's responsibility was extended to include not only the general health of each family in his domain, but supervision of their moral standards as well.

Recent research on these charitable institutions has disclosed that both open and closed wards were provided for the patients, depending on their condition. In addition, there is evidence that they received both physical and psychological treatment, consisting of isolation, reading, personal interviews with the religious staff, spiritual exercises, and controlled contact with their family. A similar program, which appears to have been held in high esteem by such leading figures of the period as Voltaire, was instituted in some small institutions, the most famous of these, at the end of the eighteenth century, being the Maison Belhomme in Paris.

This serves to confirm that, as is the rule, there is never cultural fracture in history. Rather, there is progression, which may be so slow as to be completely obscure, but which, when rapid and innovating, takes on the features of a revolution. During the late 18th century, the general public became increasingly aware of the plight of the mentally ill and increasingly repelled by the fact that they were either completely neglected or, even worse, restrained by the cruelest methods, e.g., ropes, chains, etc. This reaction was a product of the individual and social conscience which was developing during this period—a conscience which had been shaped gradually by economic liberalism; by the new political principles of balance of power (Locke, Montesquieu); by educational reforms (Rousseau); by the development of science and technology independent of, or frankly opposed to, traditional religion; finally, by Voltaire's ironic view of the mores of the time. King George III's mental illness in 1765, which recurred in 1788, further highlighted many of the commonly used, brutal methods of restraint, from which not even a king might be spared.

Psychiatry during the Late Eighteenth and Early Nineteenth Centuries

Traditionally, the credit for the elimination of these objectionable methods of restraint has been ascribed to the French physician, Pinel, and his dramatic efforts to free the mentally ill from their chains at Bicêtre in 1793 have been described at length in the literature. While this should not be interpreted as a desire to engage in sterile controversy over priorities, the fact is that, more properly, Pinel should share the credit for this achievement with an Italian, Chiarugi, and an Englishman, William Tuke. Thus, here we have a striking example, indeed, of *Zeitgeist* in the history of psychiatry. Actually, the existing facilities for the care of mental patients had been criticized strongly in France in earlier reports by Colombier (1785), J. R. Tenon (1788), and La Rochefoucault-Liancourt

(1791). Furthermore, proper treatment methods had been proposed by the physician and philosopher, P. J. Cabanis (1757-1808), an illustrious representative of the school of the "ideologists," and author of *Rapports du physique et du moral* (1802). The French revolution outruled any attempt to initiate improvements in the existing institutions, but other equally important events occurred in Florence, Italy, in York, England, and even in France, in Chambéry and Paris.

Vincenzo Chiarugi. The rulers of Florence during the 17th and 18th centuries, i.e., the Medicis and the Lorenas, had continued to encourage the scientific research initiated by Galileo and carried on by others, especially in biology and medicine. Italian enlightenment, in contrast to that of the French and English, acquired a more practical character, which crystallized under the rule of the Grand Duke Peter Leopold (1747-1792) in a number of economic, financial, judiciary, educational, and religious reforms, culminating in the project for a constitution of 1778, a unique instance in which peaceful revolution almost led to modern democracy. Although many of these proposed economic and social reforms could not be put into effect by the Grand Duke and his ministers because the general population was simply not ready for them, several programs of importance to the future development of psychiatry were implemented.

The "law on the insane," which established the specific rules, including a mental examination, to be followed in cases of proposed commitment, was passed in 1774. In 1785, the Grand Duke began the construction of the Hospital Bonifacio, which was opened 3 years later, under the medical direction of a young physician, Vincenzo Chiarugi (1759-1820). The "Regulations" of the hospital (1788), which were obviously prepared under Chiarugi's supervision, specifically stated that "It is a supreme moral duty and medical obligation to respect the insane individual as a person." Accordingly, neither physical force nor cruel methods of restraint were to be applied to patients, except for the occasional use of a straitjacket, designed so that it would not cause the patient undue discomfort. Hygienic and safety measures were also described in the "Regulations," and, despite their unpretentious character, these represented a radical change in the treatment of the mentally ill. Chiarugi's three-volume work, *Medical Treatise on Insanity* (1793-1794), is somewhat obscure in those passages which describe the psychological foundations of personality (which represent an amalgamation of Aristotelian-Thomistic and modern concepts). Nevertheless, it is important for the pathological and clinical views. These volumes include descriptions of 100 clinical cases, accompanied in many instances, by descriptions of the condition of the patient's brain on autopsy as well. With regard to diagnosis, evaluation procedures were outlined, and mental illnesses were divided into three general categories: melancholia (partial insanity), mania (general insanity), and amentia (abnormal functioning of in-



FIGURE 5. Philippe Pinel (1745–1826), the founder of modern psychiatry, liberating mental patients at the Salpêtrière in 1795 (From the painting by Robert Fleury.)

telleet and will), which might be either congenital or acquired. The etiology of mental disease was discussed, and possible congenital and environmental causes were listed. Most important, the prescribed principles of treatment emphasized the importance of handling patients with tact and understanding, of using an authoritative and impressive but, at the same time, pleasant and individualized approach. Apparently, this therapeutic program, which was very similar to what was later known as “moral treatment,” was carried out by nurses and attendants, under medical supervision. Unfortunately, Chiarugi’s reform program fell into complete oblivion, first because of the peripheral role played by Florence on the European scene, and especially because of the preoccupation with the succession of wars and revolutions which took place throughout Italy shortly thereafter.

William Tuke. While these developments were taking place in Florence, the Society of Friends held a series of meetings in York, England, which were motivated by a desire to find ways of “mitigating the misery and restoration of those who are lost to civil and religious society.” Under the leadership of the elderly, but still vigorous, William Tuke (1732–1819), the “Retreat” was opened at York in 1796 for about 30 patients, who were treated as guests, with kindness and understanding, in a friendly atmosphere free from any mechanical restraint, and also from any direct medical influence. Rather, work of manual type was considered beneficial and greatly encouraged. This treatment philosophy was continued by William’s son, Samuel Tuke, and the Retreat served as a model for several institutions which were opened in this country in the early 19th century.

Pinel’s “moral treatment.” In the meantime, in

1791, Joseph Daquin (1733–1815), an obscure physician in charge of an institution at Chambéry, a village in the then French duchy of Savoy, had published the *Philosophie de la folie* in which he advocated a more humane approach to the care of the mentally ill. However, this contribution, like the work of Chiarugi and, to a lesser extent, William Tuke, was soon overshadowed by the renown that Pinel acquired throughout Europe. Philippe Pinel (1745–1826), was born in southern France and was influenced by the vitalism of the medical school at Montpellier. Later, when he moved to Paris, Pinel became part of the intellectual group of ideologists (Cabanis, D’Holbach). In 1793, after he had been associated with the Maison Belhomme for 5 years, Pinel became superintendent of the Bicêtre (for male patients) and later of the Salpêtrière (for females), where criminals and mentally retarded patients were housed, as well as the mentally ill. One of Pinel’s first accomplishments at the Bicêtre was, as mentioned above, to free the mentally ill from their chains. On the one hand, since he took this radical action during the Reign of Terror, this was widely acclaimed as an act of personal courage. On the other hand, its significance lies in its far reaching implications for the development of psychiatry. Pinel is remembered for two other major contributions to psychiatry: his attempt to analyze and categorize symptoms, and his application of “moral treatment.” Pinel described clinical symptoms in a very simple manner, but with great clarity, in the best medical tradition, as evident in his *Traité médico-philosophique sur la manie* (1801). More specifically, four types of insanity were described: (1) melancholia (disturbance in intellectual functioning); (2) mania (excessive nervous excitement with or without delirium);

(3) dementia (disturbance in thought processes); and (4) idiocy (obliteration of intellectual faculties and affects). Detailed data were accumulated for each patient, most of which were gathered by Pinel himself, a fact which accounts for the abundance of clinical examples throughout the book. More important than environmental factors were those factors which were considered to indicate a predisposition to the later development of insanity, and among these "passions" were considered of particular importance. Accordingly, moral treatment was based on Aristotle's concept of mental health as dependent on the balance of "passions," a term which, in 18th century literature corresponded to our present use of the term, "emotions." Moreover, in anticipation of later theories of psychosomatic functioning, passions (i.e., emotions) were considered the "link" between mind and body. With regard to specific therapeutic techniques, initially, the doctor had to exert the greatest firmness in his approach to the patient and hold his attention and control his will with his eyes. Once the patient was subdued and had been completely dominated by the doctor, treatment consisted of a combination of kindness, firmness, and coercion. While his book emphasizes this phase of treatment, which Pinel conducted with the assistance of his remarkable male nurse Poussin, there is evidence that the patient's participation in various activities within a structured environment greatly contributed to the success of Pinel's moral treatment (see Figure 5).

An overview of early contributions to psychiatric reform. Comparison of the therapeutic orientation of Chiarugi, Tuke, and Pinel reveals that each of these pioneers in psychiatric reform emphasized the healthy part of the patient's personality, i.e., to use modern terminology, the "conflict-free sphere of ego functioning." In addition, they shared in common the belief that any meaningful therapeutic approach had to be geared to the healthy part of the personality and that, consequently, the right treatment consisted of a combination of support and dependency. The course of treatment might be affected by the nature of the doctor-patient relationship (i.e., the transference), but, without exception, the treatment success required that the patient be separated from his family so that he might receive therapy in the structured environment of the hospital. Apart from these basic similarities in viewpoint, as mentioned earlier, Chiarugi's innovations were made possible by the various reform measures introduced by the Grand Duke Leopold, which implies a close connection between politics and psychiatry. Today, the desirability of such a connection would be debated at length. In fact, however, Chiarugi was practically unaware of the importance of the therapeutic reforms he initiated. Rather, he felt that the value of his work lay in his emphasis on the study of the anatomical changes in the brain of mental patients. William Tuke's innovations expressed his religious conviction that if mental patients were re-

moved from environmental stress, they would improve in the natural course of events. Treatment consisted only of a kind approach, devoid of any medical procedure. Finally, Pinel too, believed that mental illness was curable. However, his optimism derived from the influence of the French ideologists, rather than religious principles. Furthermore, the fact that his efforts coincided with the French revolution and the achievement of political equality of all citizens strengthened his belief. But whatever its philosophical basis, Pinel's over-all approach was so sound that moral treatment was accepted as the treatment of choice, thus initiating a new and fruitful trend in psychiatry.

Mental hospitals and the application of moral treatment in the United States. The United States constituted an ideal testing ground for some of these new ideas. Benjamin Rush (1745-1813), who is considered the father of American psychiatry, had been influenced by his early medical training in Edinburgh, where he studied before he became a professor of chemistry and then of medicine at the Philadelphia College. As one of the men who signed the Declaration of Independence, Rush was interested in all kinds of social reforms (temperance, abolitionism, etc.), and he introduced new methods based on moral treatment at the Pennsylvania Hospital. However, in his book, *Medical Inquiries and Observations Upon the Diseases of the Mind*, which was published in 1812 (and remained the only American textbook on psychiatry until the end of the century), Rush reaffirmed his belief in the therapeutic efficacy of purgatives, emetics, and blood letting, as well as in the "tranquilizer," a special chair in which agitated patients were seated, tied down, and then suspended in mid air.

More directly dependent on the new moral treatment were a number of small private mental hospitals, which were established in this country early in the 19th century. These included the McLean Asylum in Massachusetts, which was founded in 1818 under the supervision of Rufus Wyman; Bloomingdale Asylum in New York City (1821), under Thomas Eddy; and the Hartford Retreat in Connecticut (1824), under Eli Todd. Furthermore, during the 3rd and 4th decades of the century, 10 state institutions were opened, the most important of which were the State Lunatic Hospital at Worcester, Massachusetts, in 1833, under Samuel Woodward; the Pennsylvania Hospital for the Insane at Frankfort, Pennsylvania, in 1841, under Thomas Kirkbride, and the New York State Hospital at Utica in 1843, under Amariah Brigham. These three men, together with 10 others, were the "Original Thirteen" who constituted the Association of Medical Superintendents of American Institutions for the Insane, which was founded in 1844 and, as such, represents the oldest medical society in this country. And during the same year the *American Journal of Insanity*, currently known as the *American Journal of Psychiatry*, was founded (see Figure 6).



FIGURE 6. Signatures of the original 13 founders of the American Psychiatric Association, 1844.

Of the Original Thirteen, Isaac Ray (1807–1881) achieved preeminence on the basis of his *Treatise on Medical Jurisprudence of Insanity*, published in 1837, which has remained a classic in the field; Thomas Kirkbride's (1809–1883) fame derived from a manual he published in 1854 on the construction and organization of hospitals for the insane in which he advocated treatment of a maximum of 250 patients at any given time within any given hospital. It is not surprising that the superintendent of an institution with such a small patient population would represent a father figure to the patients and thereby facilitate the implementation of the principles of moral treatment even more successfully than was possible in Europe, under the impetus of the democratic spirit of this newly established country. In fact, the optimistic view of this treatment modality became so prevalent, especially at the Worcester State Hospital, that it gave rise to the so-called "cult of curability," a concept which was strongly opposed by Pliny Earle of the Bloomingdale Asylum.

To return to concurrent developments in Europe, two independent movements, somewhat opposed but equally appealing to many laymen, namely, phrenology and mesmerism, reached the peak of their popularity in the early part of the 19th century.

Phrenology. Franz Josef Gall (1758–1828), the founder of phrenology, was a distinguished physician from Vienna who taught brain physiology there for several years. On the basis of physiognomic concepts, especially those developed by the Swiss pastor, Johann Kasper Lavater (1741–1801), who was a close friend of Goethe, Gall postulated that mental faculties were innate and that they depended on the topical struc-

tures of the brain, to which corresponded particular protuberances of the external cranial surface. Eventually, he identified 27 organs in the human brain (19 of which were found in animals as well). These organs corresponded, in turn, to an equal number of faculties which, being fixed from birth, could not be modified by education. Although Gall tried to avoid criticism by theologians by including among the faculties he listed such factors as goodness, religious sentiment, etc., he was accused of materialism nevertheless and ultimately was forced to leave Vienna for Paris, where he was influenced by the ideologists. In Paris, he continued his neurological studies, in the course of which he anticipated the concept of cerebral localizations which were to prove so fruitful for future investigators. His phrenological teaching was carried on by his pupil, Johann Casper Spurzheim (1776–1832), who lectured extensively on phrenology in this country, where the new doctrine had already been introduced by two Scottish laymen, George and Andrew Combe. Eventually, phrenological societies and journals were founded in several American cities, and the movement became increasingly popular, owing to the efforts of its two principal proponents, the Fowler brothers. It did not decline in popularity until the latter half of the century.

Mesmerism. The second movement, mesmerism, was initiated by Franz Anton Mesmer (1734–1815), who, in 1766, in his doctoral dissertation at the University of Vienna Medical School ascribed to the concept that planets influenced physiological and psychological phenomena, a concept which derived from the writings of some Paracelsists (e.g., Robert Fludd) and others (William Maxwell, Richard Mead). In a later publication, entitled *Memory on the Discovery of Animal Magnetism* (1779), Mesmer hypothesized that man was endowed with a special magnetic fluid, a kind of sixth sense, which, when liberated could produce amazing healing effects. Mesmer, himself, claimed to have "magnetized" and "cured" many patients, but the controversy which arose over his treatment of Miss Paradis (a gifted musician who, quite possibly, had been afflicted by hysterical blindness) forced him to leave Vienna and move to Paris in 1778. There his miraculous cure achieved great success and, as a result, he elicited the support of many distinguished and wealthy people—and an equal amount of opposition from the medical profession. A Royal Commission which was appointed in 1784 and included Benjamin Franklin, investigated mesmerism and handed down an unfavorable report. Following this defeat, later on Mesmer retired to Switzerland where he died in poverty and oblivion. However, his pupils continued to practice mesmerism, and eventually the Marquis du Puységur (1751–1825) came to the conclusion that mesmerized patients were actually in a trance state. This observation was confirmed subsequently by James Braid (1795–1860), who coined the word "hypnosis." Even as the teaching of mesmerism flourished

in Germany, the physicians James Esdaile (1808–1859) and John Ellioston (1791–1868) made good use of mesmerism as a method of anesthetizing surgical patients in India and England, respectively. The importance of mesmerism for psychiatry lies in the fact that it represented the most notable attempt to focus on neurotic phenomena, as opposed to the exclusive preoccupation with psychoses.

National trends in psychiatry. While phrenology and mesmerism were gaining in popularity during the first half of the 19th century, academic psychiatry was taking its first steps. As the various national entities began to take shape in Europe at the end of the Napoleonic era, medicine in general, including psychiatry, began to acquire definite characteristics in each country. Thus, at this point in its history developments in psychiatry can best be understood within the context of specific cultural and medical trends which influenced scientific development in particular nations. In general, during this period, psychiatry gradually achieved recognition as a separate medical discipline. The term “psychiatry” was first used in specific journals devoted to this area of study, which were founded in Germany at the beginning of the 19th century but, unfortunately, were short-lived.

The French school. In France, where the most important developments occurred, psychiatrists stressed the clinical study of the patient, that is, the clarification of symptoms and their detailed description; the close relationship between psychiatry and neurology; and the medicolegal aspects of psychiatry. Concomitantly, a continuous effort was made to improve institutions and hospitals for the mentally ill. Among the members of this school, the contributions of Jean Etienne Esquirol (1772–1840), who was Pinel’s favored pupil, were particularly significant. Esquirol’s textbook *Des maladies mentales*, which was published in 1837, soon became a classic because of its clarity and the inclusion of statistics in the presentation of clinical matters (see Figure 7).

In brief, Esquirol clearly defined hallucinations and “monomania” (a symptom which is currently termed paranoid ideation); emphasized the role of the emotions in the etiology of mental illness; instituted programs involving group activities in various mental hospitals; taught the first course on psychiatry in 1817; and, finally, was largely responsible for the “lunacy bill” of 1838, which delineated commitment procedures for prospective mental patients, and influenced similar legislation in other countries.

Of the other members of the French school, Ferrus was outstanding for his interest in occupational therapy and his efforts to isolate the criminally insane; Falret, for his description of cyclic insanity (*folie circulaire*); Baillarger, for his studies of hallucinations (including alcoholic hallucinations); Voisin, for his book on idiocy (1843), which subsequently became a classic; Georget, for his unitary concept of mental diseases; and Leuret, for his work on thought processes

DES MALADIES MENTALES

CONSIDÉRÉES SOUS LES RAPPORTS

MÉDICAL, HYGIÉNIQUE ET MÉDICO-LÉGAL,

PAR E. ESQUIROL,

MÉDECIN EN CHEF DE LA MAISON ROYALE DES ALIÉNÉS DE CHARENTON,

ANCIEN INSPECTEUR-GÉNÉRAL DE L'UNIVERSITÉ,

MEMBRE DE L'ACADÉMIE ROYALE DE MÉDECINE, ETC.

ACCOMPAGNÉES DE 27 PLANCHES GRAVÉES.

TOME PREMIER.

FIGURE 7. Title page of Esquirol’s classic textbook, *Des Maladies Mentales*, published in 1837.

which anticipated the concept of schizophrenic dissociation. In addition, of particular importance are Bayle and Calmeil, for their description in 1826 of the psychiatric symptomatology of general paresis; Edouard Séguin (1812–1880), for his pioneer work on mental deficiency which he continued after he arrived in this country in 1848; and Moreau de Tours (1804–1884), for his experimental use of “hashish” which anticipated modern phenomenological views and the existential approach. Most of the papers by these or other psychiatrists were published in the *Annales médico-psychologiques*, which was founded in 1843.

The German school. During this time, German psychiatry was strongly influenced by the Romantic movement and by theological principles. On the one hand, the Reformation gave rise to a “personal piety,” which retarded the separation of medical psychology from theology. On the other hand, Stahl’s “vitalism” helped to focus attention on global and teleological aspects of psychological phenomena. Obviously, this focus, in itself, would raise no objection. However, in combination with theological tenets, it had unfavorable implications for the progress of German psychiatry. More specifically, German psychiatrists during this period had very little actual clinical experience. Their writings lack scientific objectivity; although there is occasional evidence of good insight, for the most part, such insights are blunted by sentimental pathos, and religious and metaphysical expressions.

Nevertheless, there were exceptions. With regard to the contributions of individual members of the German School, Heinroth, the first psychiatrist to use the word "psychosomatic," stressed the unity of mental phenomena (i.e., total personality). He attached particular importance to psychological conflict, which he identified as the cause of guilt, and ultimately, of mental illness. In this respect his views were not too removed from those of Ideler, who defined passions as the sum total of man's biological strivings, or of Groos, who attributed mental diseases to the frustration of man's drive toward self-expression. On another level, Heinroth contributed to progress in the institutional care of the mentally ill by defining the role of the physician and various members of the ancillary staff in this therapeutic setting. Of particular importance was Johann Christian Reil (1759-1813), who described psychoneurotic states, including the patient's penchant for introspection, and outlined psychotherapeutic methods designed to engender strong emotions (e.g., fear, disgust, pain) in the patient by means of various carefully planned devices, including theatrical performances. Of equal importance was Johann Gottfried Langermann (1768-1832), who built a modern mental hospital in Bayreuth, southern Germany, in which methods of restraint were abolished. In this connection, it should be mentioned that several German physicians of this period, such as C. F. S. Hahnemann (1755-1843), the founder of homeopathy, did make a determined effort to treat psychotic patients with kindness and understanding and attributed their improvement to this approach. Finally, Ernst von Feuchtersleben (1806-1849) presented views in his *Principles of Medical Psychology*, published in 1845, on the relationship between psychological and physiological phenomena, on the biological unity of the organism, and on the importance of psychotherapy in the treatment of mental diseases, which would be considered advanced even by today's standards.

In sharp contrast to the trend followed by the psychiatrists just mentioned, other psychiatrists during this period, Friedrich Nasse, Johannes Friedreich, and Maximilian Jacobi, by postulating direct causal relationship between mental illness and brain pathology, became the first proponents of the organic orientation in psychiatry which prevailed during the 2nd half of the 19th century. Friedreich was also responsible for some important studies on the history of psychiatry; and Jacobi published a book on the construction of mental hospitals which was widely circulated throughout Europe. The *Allgemeine Zeitschrift für Psychiatrie* was the most important German journal of that period.

The British school of psychiatry. During the 1st half of the 19th century, British psychiatry was characterized, in particular, by a practical orientation, as evidenced, for example, by the well built hospitals provided for mental patients. This was in accordance with the respect for the individual which was emphasized in the English philosophical works of the period.

As mentioned above, the traditions of the York Retreat were continued by William Tuke's son, Samuel Tuke, who outlined the policy which governed the operation of that institution in a volume entitled *Description of the Retreat*, which was published in 1812. Ten years later, in 1823, *Sketches in Bedlam* was published by an anonymous author (generally believed to have been influenced by the "apothecary," John Haslam) who strongly criticized patient care facilities at Bethlehem Hospital. John Conolly (1794-1866) while he was superintendent of the Hanwell Asylum, abolished the use of mechanical restraints at that institution and described his therapeutic approach in a volume entitled *Treatment of the Insane Without Mechanical Restraint*, which, on publication in 1839, was the subject of heated debate both in Great Britain and in this country. Eventually, however, as a result of the interest and support of Robert Hill, who was associated with Lincoln Asylum, Conolly's method gained increased acceptance. Furthermore, as a consequence of mounting interest in legislation pertaining to the mentally ill and especially with regard to commitment proceedings, application of the concept of "moral insanity" developed by James C. Prichard in 1835 became increasingly widespread. Prichard defined this term as an intellectual deficiency which was not accompanied by delusions or hallucinations, and which, as such, corresponded to the French *folie raisonnée* or *folie lucide*. As far as periodical literature is concerned the *Journal of Mental Science*, known today as the *British Journal of Psychiatry*, was the outstanding publication at that time.

Other developments in European psychiatry. As to developments elsewhere in Europe during this period, the contributions of two men were particularly outstanding. First, the Italian layman Pietro Pisani (1760-1837), who was superintendent of the mental hospital in Palermo, applied advanced methods of treatment which anticipated our current concepts of milieu therapy. Second, the Belgian Joseph Guislain (1797-1860) became well known for his textbooks and for his many activities on behalf of mental patients in his own country.

In summary, developments in psychiatry during the 1st half of the 19th century, while often idealistic and prescientific, played a significant role in building the foundation of modern psychiatry. It is difficult to delineate the many trends which influenced psychiatrists of that period. Nevertheless, many current psychiatric concepts may be traced back to the concerns which dominated psychiatric thinking at this phase of its historical development.

The History of Psychiatry from the Second Half of the Nineteenth Century to the Beginning of the Twentieth Century

During the 2nd half of the 19th century, science and technology made tremendous progress, and Western civilization acquired the industrial orientation which is characteristic of our own era. As the people of such

nations as Germany and Italy rebelled against their ruling dynasties and acquired political independence, a zeal for social reform replaced the former preoccupation with religion. And, concurrently, idealism and materialism became the prevailing trends in philosophy. Concomitantly, medicine became increasingly scientific and materialistic, and, as might be expected in this context, psychological phenomena came to be attributed to physiological factors. Partly as a result of the excellent universities which were established in many cities, Germany was the center of these new developments in science and medicine.

The prevalence of organic concepts. In psychiatry, Wilhelm Griesinger's (1817–1868) *Pathology and Therapy of Mental Diseases*, which was published in Germany in 1845, was soon considered the most authoritative textbook in this field. Griesinger maintained in essence that mental diseases could be explained only on the basis of physical changes in the nervous system. However, he also advanced views which anticipated recent developments in ego psychology and which justify our current interest in his work. Apart from such considerations, which are based mainly on hindsight, Griesinger's organic approach was adopted by other leading German psychiatrists, such as Leidesdorf, Westphal, and finally, Meynert, who earned a place in history primarily because he was one of Freud's teachers. This orientation was reflected in the descriptions of various clinical entities during this period, i.e., hebephrenia, by Hecker in 1871; catatonia, by Kahlbaum in 1874; and polyneuritis caused by alcoholism and severe deficiency of food intake (i.e., Korsakoff's syndrome), by Korsakoff in 1887.

Changing attitudes regarding the treatment of mental illness. The prevailing trend in the treatment of the mentally ill during this period consisted of the immediate separation of such individuals from their families and their prompt hospitalization in large institutions. Perhaps this trend was most evident in this country, where it was fostered by Dorothea Lynde Dix (1802–1887), a former school teacher, who throughout her lifetime devoted her efforts to persuading the legislative bodies of the various states to construct large mental hospitals. Miss Dix's efforts were motivated by a desire to involve the states directly in the care of the mentally ill, and certainly such direct participation was necessary in this country following the influx of large groups of immigrants from Europe. However, this movement acquired further impetus from other factors. For example, puritanic influences which eventually produced the Victorian attitudes characteristic of this period certainly contributed to the trend of separating mental patients from the rest of the population. It is not surprising, under the circumstances, that moral treatment, which, as mentioned earlier, was based on personal contact between the superintendent of the hospital and a fairly homogeneous group of patients, in terms of their social and ethnic origins, was discarded completely.

Instead, the treatment of psychiatric patients became increasingly impersonal, and in this climate, the organic view came to prevail. That is, mental illness was considered physiological in origin, and independent of "personal" and social factors.

The "degenerative stigmata." In its extreme form, this viewpoint found expression in France, in the work of Benedict Morel (1809–1873) and Valentin Magnan (1835–1916), who postulated that mental disease was evidence of a degenerative hereditary strain which would become progressively severe in successive generations, causing their extinction. In Italy, Cesare Lombroso (1836–1909), considered the founder of criminal anthropology, was particularly impressed by the degenerative stigmata and "atavistic types" of delinquents, and, in general, of all sorts of people who demonstrated a wide range of physical and psychological abnormalities. Furthermore, some psychiatrists, (including Lombroso) were preoccupied with the relationship between genius and insanity, which led, in turn, to a spate of "pathographies," among which those written by the German Möbius (1853–1905) were particularly important. However, the main psychiatric literature of the time and particularly the works of Krafft-Ebing (1840–1902) and Forel (1848–1931) reflected the concerns which occupied the Victorian mind, i.e., the influence of noxious factors (sex, alcohol, infections, industrialization, and social progress) on personality.

Somewhat in contrast to the trends discussed above, British psychiatry focused on clinical, rather than moral issues. Daniel Hack Tuke (1827–1895), the last representative of the Tuke family, became particularly well known for his dedication to the improvement of the care of the mentally ill and for his important writings, published in the period from 1858 to 1892 (*Manual of Psychological Medicine, Illustrations of the Influence of the Mind Upon the Body*, and *Dictionary of Medical Psychology*), in which he anticipated some modern views.

Psychiatry in the United States in the late nineteenth century. In this country, the Willard Act, which was enacted in 1865, provided for the removal of chronic insane persons from country poorhouses to state asylums and thereby gave further impetus to Dorothea Dix's crusade for the creation of large institutions. Eventually, chronic patients were separated from those whose prognosis was more favorable. As in Europe, those patients who seemed to show signs of improvement were assigned to "colonies," "farms," and even to "foster families." A State Commission of Lunacy was established in New York in 1873, and later in other states, and the term "hospital" was substituted for "asylum." However, although these events appear, at first glance, to indicate great progress, in fact, the medical staff of these mental hospitals had no contact with medical schools, nor were they interested in research, as a general rule.

The contribution of neurology to psychiatry. The effect of the large number of medical casualties during

the Civil War was to focus attention on the importance of neurology. Apart from their contributions to this discipline, William Hammond, E. C. Spitzka, and S. Weir Mitchell were the neurologists whose names are most frequently associated with progress in psychiatry during this period—Hammond and Spitzka for their textbooks on psychiatry, Mitchell for his outspoken criticism of the isolation of psychiatry from medical research (in a famous address before the American Medical Psychological Association in 1894), and for his “rest cure” method, which he considered particularly beneficial in the treatment of neurotic women (and which was a logical outgrowth of the concept of neurasthenia, developed by George Beard in 1880). Also, as a reaction to Mitchell’s criticism, a few psychiatrists became interested in research, and this led to the founding in 1895 of the Pathological Institute of New York Hospital (which later became the New York State Psychiatric Institute). A few years later, in 1902, the young Swiss psychiatrist Adolf Meyer (1866–1950) was appointed to the staff of the Institute where he remained until 1913, when he became director of the newly built Henry Phipps Psychiatric Clinic at The Johns Hopkins University. By that time, important “psychopathic hospitals” for training and the active treatment of patients had been established in Michigan (1907) and in Boston (1912), the latter under the supervision of E. E. Southard, who is noted for his pioneer views on the importance of social work for psychiatry.

The mental hygiene movement. One other event during this period was of particular importance for the development of psychiatry: Clifford Beers, a distinguished businessman, following his recovery from a mental breakdown, published his famous book, *A Mind That Found Itself*, in 1908 and in so doing launched the mental hygiene movement. Despite the implications for organic psychiatry of Noguchi’s and Moore’s discovery of *Treponema pallidum* in 1913, a social orientation was soon to prevail, and this, in turn, was followed by dynamic psychiatry, with its emphasis on the psychological functioning of the individual.

Kraepelin’s contribution to psychiatry, and modern organic therapies. Although he was Freud’s contemporary, Emil Kraepelin (1855–1926) can be considered the last representative of the predynamic school of psychiatry. A very industrious and academically oriented researcher, Kraepelin’s textbook on psychiatry was revised many times after its first edition in 1883 and reflects the transitional aspect of psychiatry over 4 decades. More specifically, Kraepelin’s main contribution was to differentiate between manic-depressive psychoses and dementia praecox, although this differentiation was unfortunately carried one step further than necessary, in that patients in the latter group were now included among the incurable. In fact, over the past few decades, theoretical and therapeutic developments have reflected the significant in-

fluence of this pessimistic and predetermined view. It was only after the introduction of various organic therapies, in the period from 1917 to 1937 (e.g., “malaria therapy,” by Wagner Jauregg in 1917; and insulin coma treatments by Sakel, cardiazol shock treatments by von Meduna, electric shock by Cerletti and Bini, and psychosurgery by Moniz, all between 1935 and 1937), that the prognosis for psychosis was viewed with greater optimism. Less known, but also significant, is the method of psychological and social reintegration used extensively in Russia, based on Pavlov’s studies of conditioned reflexes.

Relationship between constitution and personality. One other trend in psychiatric thought which emerged during the period merits brief discussion. From earliest times, man has attempted to correlate constitution, i.e., the intrinsic physical endowment, with personality type, temperament, and emotional disorder. Kallmann’s summary of the various schools of constitutional typology is reproduced in Table I. In psychiatry, the classifications of Kretschmer and Sheldon in this regard are considered most noteworthy. Kretschmer correlated the short, stocky, round pyknic habitus with extroversion, cyclothymic (cycloid) and manic-depressive psychosis; the thin asthenic leptosomic constitution with introversion, schizoid tendencies, and schizophrenia; and the abnormally proportioned dysplastic habitus with endocrine and pituitary disorders. (Many workers consider his muscular, well proportioned athletic habitus a variation of the asthenic constitution.) According to Sheldon, who applied the methodology of anthropometrics, the endomorph is temperamentally viscerotonic (sociable, relaxed, enjoys eating), the ectomorph is temperamentally cerebrotonic (antisocial, hypersensitive, secretive), and the mesomorph is somatotonie (energetic, competitive, and action-oriented).

Origins and Development of Dynamic Psychiatry: Psychoanalysis and Recent Trends in Psychiatry

The psychiatric events described refer, for the most part, to psychotic, or at least grossly disturbed, patients. In fact, even those workers who did attempt to describe and treat neurotic symptoms (like Mesmer and his followers) were largely unaware of their true origins, i.e., in the unconscious.

Nineteenth century concepts of the unconscious. Interest in the unconscious, which may be attributed primarily to the romantic movement, was evident throughout the 19th century and found expression in the five main currents of thought which were preeminent during that period.

Metaphysical concepts. The unconscious was equated with “will” by the philosophers Schelling, Schopenhauer, and von Hartmann. Carus in *Psyche* (1846) described an “absolute unconscious” and stated that “the key to the knowledge of the nature of the conscious life of the soul lies in the realm of the unconscious.”

TABLE I
Schools of Constitutional Typology^a

Nationality of School	Name of Main Investigator	Name of Constitutional Types			
		Type I	Type II	Type III	Type IV
Greek	Hippocrates	Apoplecticus	Phthisicus		
Roman	Galen	Sanguine	Melancholic	Phlegmatic	Choleric
French	Rostan	Digestive	Respiratory-cerebral	Muscular	
Italian	De Giovanni Viola	Megalosplanchnic Brachymorphic	Microsplanchnic Dolichomorphic	Normosplanchnic Eumorphic	
German	Gall-Beneke Kretschmer	Hyperplastic Pyknic	Hypoplastic Asthenic	Athletic	Dysplastic
Anglo-American	Stockard Rees-Eysenck Sheldon	Lateral Eurymorphic Endomorphic (viscerotonic)	Linear Leptomorphic Ectomorphic (cerebrotonic)	Mesomorphic Mesomorphic (somatotonic)	Dysplastic

^a Adapted from Kallmann, F. J. *Heredity in Health and Mental Disorder*, p. 56. W. W. Norton, New York, 1953.

Biological concepts. These included the "physiological unconscious" of von Hartmann, which was followed later by the "mnene" of Semon and the "psychoid" of Dreisch and Bleuler.

Concepts based on depth psychology. These refer to concepts of the unconscious which were expressed by the mystics, the mesmerists, and the parapsychologists, such as von Schubert who, in his work on dreams (1837), focused on the creative activity and symbolism of the unconscious, anticipating Freudian and, to an even greater extent, Jungian views.

Prescientific concepts. Within this category of concepts of the unconscious, one would include the forgotten memories and the subliminal perceptions of Leibnitz, Herbart, and Fechner. Herbart is particularly important for his emphasis on "unconscious representations" as the background for the conscious, which strongly influenced German psychology; Fechner was significant for his attempt to express the relationship between mind and body in mathematical form.

The concept of the dynamic unconscious. Finally, the concept of the dynamic unconscious was developed as a concomitant of hypnosis by a number of physicians of the French school. For purposes of this presentation, only this last concept of the unconscious is of interest here.

The scientific study of hypnosis. Jean Martin Charcot (1825-1893), a brilliant neurologist, described hysteria in 1870, and, in the following decade, he demonstrated the cure of such phenomena through hypnosis, which he divided into three successive stages, i.e., lethargy, catalepsy, and somnambulism. Because of Charcot's prestige at the Salpêtrière, hypnosis soon acquired wide popularity (and an equal amount of opposition from the medical profession). As opposed

to Charcot's thesis that only hysterical subjects could be hypnotized, two physicians, A. A. Liébeault (1823-1904) and Hippolyte Bernheim (1837-1919), of the School of Nancy, stressed that anybody who could be influenced by suggestion could be hypnotized. After a bitter controversy and in spite of the prestige carried by Charcot, eventually, the School of Nancy proved to be right. The last great representative of the French school was Pierre Janet (1859-1947), who was known for his concept of "psychological automatism" and for his interest in cases of simultaneous psychological existences (i.e., so-called multiple personalities, also studied by F. Myers in England and Morton Prince in this country), as well as for his attribution of neuroses to "psychic weakness."

The development of psychoanalysis. Psychoanalysis and the movements it gave rise to are discussed extensively elsewhere in this book. Therefore, this discussion will be limited to consideration of its special historical significance. Sigmund Freud (1856-1939), a brilliant neurologist and a tenacious researcher, after spending a few months with Charcot in 1885-1886, applied the "cathartic method" of hypnosis, which he had learned from Josef Breuer (1842-1925), in an attempt to relieve the neurotic symptoms of his patients. Later, he substituted for this method the technique of free association, and especially of the interpretation of dreams (the symbolism of which he described in detail in his famous book in 1900, which was based largely on his own self-analysis stemming from his relationship with Fliess). Freud also focused on the patient's resistance to treatment and his repression of significant life events. When he became more aware of the erotic nature played by the patient-therapist relationship and of the importance of

early sexual traumata in the genesis of neuroses, Freud formulated his theory of the development of sexuality. In the succeeding period, which was dedicated to the investigation of techniques of psychotherapy, Freud described in detail transference and counter-transference phenomena in the light of the libido theory, which became central to psychoanalysis. Concomitantly, the importance of didactic analysis was recognized in the training of the psychoanalyst, and the psychoanalytic technique began to acquire the structure which is maintained to this day by those who ascribe to classic Freudian theory. Later, Freud established a more plastic view of anxiety and resistance, in terms of their role in treatment; he emphasized the ego and mechanisms of defense, as well as the importance of the death instinct, and warned against too much optimism with regard to the therapeutic benefits to be derived from psychoanalysis.

From an historical perspective, undoubtedly Freud's work has the characteristics and originality of genius. Nevertheless, it should be recognized that some of his basic concepts can be followed throughout the development of medical and cultural history. The value of catharsis was recognized in ancient Greek culture. Symptoms were considered to represent a compromise between opposing forces (unconscious, sexual, life, and death) during the romantic movement and in early 19th century medicine. The unconscious was considered to play an essential role as conducive to self-knowledge by the French moralists of the 18th century and the philosophers and biologists of the 19th century. The interpretation of dreams was part of ancient tradition and was essential to the technique of incubation. Descriptions of the gradual unfolding of the sexual instinct and the developmental nature of neuroses may be found in the evolutionary concepts of Goethe, Darwin, and others. The teleological, sexual and self-preservation aims of the instincts were fundamental to Plato's basic concept of the immutability of things and their mythical return to an earlier state. Freud's concept of regression was stated earlier by Hughlings Jackson as part of his neurological concept of dissolution. The scientific character of psychoanalytic technique and its concept of behavior as predetermined are evident in the deterministic and experimental frame of reference of 19th century medicine as well. And, finally, Freud's belief that the cure depended on the insight gained by the patient was in the Platonic and orphic tradition, i.e., once man was purged of his prejudices, knowledge would replace ignorance, and "logos," thought, would prevail.

As might be expected, Freud's ideas were strongly opposed. However, the founding of several journals devoted to psychoanalysis and of the International Psycho-Analytic Association at the beginning of the century facilitated their wide dissemination, and they aroused great interest in many scientists who recognized their originality—and their validity.

Other significant forerunners of contemporary

psychiatry. Among Freud's early sympathizers Carl Gustav Jung (1876–1961) was particularly significant for the development of psychiatry. From his initial research (in 1906) on word associations and on the psychology of dementia praecox (as a result of which he demonstrated the fruitfulness of the psychoanalytic treatment of psychosis), he turned increasingly to the study of symbols in mythology and dream material. After his final break with Freud in 1913, Jung developed his concepts of the collective unconscious, of archetypes, of individuation (the emergence of the archetypal image of the self), and of the two psychological types, introvert and extrovert. Primarily because of the more speculative character of his later writings, on alchemy and religion, Jung has remained somewhat esoteric to many, and the influence of his school of analytical psychology has been limited, except perhaps in England and Switzerland.

The individual psychology of Alfred Adler (1870–1937) must also be considered of only limited influence in current psychiatric practice. Adler's early concepts of organic inferiority (1907) and nervous character (1912) progressively evolved into an increasing preoccupation with educational, social, and political issues. Historically, he is remembered in particular for his influence on child psychiatry, and, more recently, on Frankl's logotherapy.

Of Freud's other collaborators and disciples, some of whom subsequently separated from the psychoanalytic movement, mention should be made of Wilhelm Reich, whose studies of character analysis constituted a valuable contribution to the body of psychoanalytic theory; of Karl Abraham, a loyal and gifted disciple, who emphasized the importance of the preoedipal stage of development for later psychological functioning; of Wilhelm Stekel, who attempted to limit dream analysis to its manifest content. Finally, Otto Rank, the first lay analyst, elaborated on Freud's concept of the trauma of birth and attempted to shorten psychoanalytic treatment. Rank was also particularly interested in the application of psychoanalysis to mythology and literature.

In the English-speaking countries, psychoanalysis was introduced in the United States by W. A. White, E. S. Jelliffe, and A. A. Brill; in England and Canada, by Ernest Jones, who was to write the most important biography of Freud (although it is not immune from bias).

In Switzerland, Eugen Bleuler (1857–1939) and Hermann Rorschach (1884–1922) progressed along independent lines, although both were influenced by psychoanalysis. Bleuler is especially known for his comprehensive study of schizophrenia (a term he coined) published in 1911, in which he described the characteristic symptomatology of this disease. Rorschach is famous for the psychodiagnostic test he developed in 1920 which paved the way for subsequent elaboration of the so-called projective techniques.

Psychodiagnostic testing skills have since become

TABLE II
Schools of Academic Psychology (1870-1930)

School of Psychological Thought	Workers	Specific Emphasis
Structuralism	Wundt, Titchener	The study of conscious experience through introspective experimentation. Elementary psychological states, such as sensations, images, and feelings, which make up consciousness are observed and analyzed.
Functionalism	Titchener, Dewey, Angell	Like structuralism, functionalism emphasizes the study of consciousness, but in relation to environmental adaptation, through application to education (educational psychology) and people (clinical psychology).
Associationism	During the 17th century, philosophers like Hobbes, Berkeley, Locke, Brown, Hartley, Mills and Bain. In the early 19th century, Herbart. From 1885 on, psychologists, e.g., Ebbinghaus, Pavlov, Thorndike, Skinner.	The study of learning and memory, as exemplified by Thorndike's law of effect, Pavlov's law of reinforcement, and, finally, Skinner's study of learning in animals and humans, through application of the "Skinner box."
Behaviorism	Watson, Meyer, Weiss, Hunter, Lashley, Tolman, Hull, Skinner	The objective study of human and animal behavior. "Mental" concepts, such as sensation and emotion, are replaced by concepts of stimulus, response, learning, habit, and receptor and effector function. Even the study of consciousness is avoided.
Gestalt psychology	Wertheimer, Koffka, Köhler, Lewin	The total perceptual configuration and the interrelation of its parts are studied. Total experience or behavior is considered to represent more than the sum of its parts. Perception and memory are studied through introspection and observation.
Purposive or homeic psychology	McDougall	The study of goal-seeking behavior. Emphasizes striving and foresight. Human propensities (instincts) comprise the <i>ultimate</i> , primary motivation for behavior. Observations on social behavior stimulated the field of social psychology.
Organismic psychology	Coghill, Kurt Goldstein, Kantor	The holistic, biological study of the individual.
Personalistic psychology	Calkins, Stern	The holistic, social study of the individual.

part of the psychologist's armamentarium. However, on another level, brief mention should also be made of the many schools of academic psychology, e.g., structuralism, functionalism, associationism, behaviorism, which developed in the period from 1870 through 1930. The orientation of each of these schools and its chief proponents are summarized in Table II.

To return to psychiatrists of Swiss origin, also of Swiss background was Adolf Meyer (1866-1950), the founder of psychobiology, a concept which attempted to present an integrated biological and social view of the personality, in the light of which mental disturbances were conceived of as reactions. Meyer's influence on American psychiatry, which is outlined in detail elsewhere in this volume, has been tremendous, and his concept of reactions has been accepted by the American Psychiatric Association in its official classification of mental diseases.

Following the arrival in this country of many outstanding psychoanalysts from Europe in the late 1930's as a result of the rise of Nazism, psychoanalysis became widely accepted in this country, and a number of training institutes were founded in various cities. Subdisciplines, such as child psychiatry and psychosomatic medicine, became increasingly important, and psychotherapy, based on classic Freudian psycho-

analytic concepts or in modified form, became the treatment of choice for most neurotic patients. The impact of World War II served to underscore the need for a broad treatment program for mental disorders. In the United States such programs were initiated by the Veterans Administration, and eventually such legislation as the Mental Health Act of 1948 was produced. The so-called neo-Freudian schools of Harry Stack Sullivan, Erich Fromm, and others may be viewed as attempts to apply certain classic psychoanalytic concepts to today's urgent social problems (alienation, lack of individuality, urbanization, automation, poverty, and the search for values), and this trend has been further stimulated by the report published in 1960 by the Joint Commission on Mental Health and Mental Illness, entitled *Action for Mental Health*.

With the renewed interest in the biological aspects of psychiatry, following the introduction of the "psychotranquilizers" in the early 1950's, psychiatry now appears to be entering a new historical phase. It is hoped that in future decades the various biological, individual, and social trends which have characterized the developments to date will no longer be opposed to each other but, rather, may achieve successful integration and thereby ensure the further progress of this discipline.

Suggested Cross References

In this chapter the history of psychiatry was discussed in a general manner. For information regarding the history of special areas of interest such as child and forensic psychiatry, and of special disorders such as schizophrenia and mental retardation, see the chapters and sections under these respective subjects.

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BASIC BEHAVIORAL SCIENCES

Human behavior, the main concern of psychiatry, is an exceedingly complex process which reflects the interaction of many divergent variables. In fact, the specific determinants of normal and abnormal human behavior are not yet fully understood; during the past decade our concepts and theories of psychic functioning have undergone constant modification to accommodate the rapid accumulation of data derived from the behavioral sciences. Concurrently, it has become increasingly apparent that behavioral determinants operate on several levels and must be considered within a sociocultural and psychological, as well as a physiological frame of reference.

If the psychiatrist is to transcend the role of clinical technician, he must acquire some insight into the nature of these basic determinants of behavior. Admittedly, much of the data derived from the basic behavioral sciences has not yet been effectively translated into psychiatric knowledge. Nevertheless, these data form the cornerstone of current research in psychiatry, which, in turn, will determine the future progress of this discipline. Concomitantly, an understanding of the determinants of normal and abnormal behavior is a prerequisite for clinical competence in the practice of psychiatry and for the effective implementation of the principles of community psychiatry.

For example, basic concepts derived from psychopharmacology, neuroanatomy, and neurophysiology provide the rationale for the application of psychoactive drug therapy. In addition, the use of this therapeutic modality requires some knowledge on the part of the clinician of the effects of a specific drug on such psychological variables as motivation, affect, thought processes, and perception, in specific psychopathological states.

Effective planning for community health services and social action for the prevention of mental illness

depends, in large measure, on the psychiatrist's awareness of the social and cultural determinants of behavior and his appreciation of the significance of such factors.

Finally, if they are to be meaningful, research projects, such as those designed to investigate the etiology of psychiatric disorder, for example, require an awareness and understanding on the part of the research worker of the multiple and varied factors which are believed to contribute to mental illness. These would include affective and cognitive experiences in early childhood, the biochemical constituents of the brain, and the social and family environment to which the patient was exposed in the past and in which he functions at present.

The sections included in this area on the basic behavioral sciences deal with some of the psychological, sociocultural, and physiological concepts which are fundamental for the understanding of human behavior and psychiatry. The general plan of organization for each section is to present the basic concepts, semantics, and methodology of the discipline. In addition, data of importance to psychiatry that derive from the field are reviewed. When feasible, this material is then discussed in terms of its direct relevance to pathological behavioral phenomena encountered in clinical practice.

To illustrate, the sections on *perception* and *cognition* define the mechanisms of these functions as normal phenomena. In addition, these sections discuss the perceptual and cognitive disorders characteristic of such psychiatric disorders as schizophrenia and mental deficiency and describe the application of concepts and methods deriving from the study of perceptual and cognitive functions to the clinical use of psychological test procedures.

Ethology is discussed in terms of the relevance of

data about animal behavior to the understanding of human behavior, especially to developmental theories which are intrinsic to the study of child psychiatry. In addition, the possible application to psychiatry of the methodological procedures employed in ethology, as well as the potential value of such application, is explored.

Basic concepts of *psychopharmacology* and *neurochemistry* are discussed with specific reference to the clinical use of psychopharmacological agents. These sections also present the biochemical data which have been accumulated to date relevant to the understanding of the behavioral manifestations of the organic brain disorders and psychotic states.

The section on *learning theory* is concerned, first, with the manner in which pathological behavior is ac-

quired, and, secondly, with the application of the principles of learning theory to the treatment of such psychopathology.

Similarly, the sections on *anthropology* and *sociology* focus on the application of the data derived from these disciplines to milieu therapy and community psychiatry, and on the value of the methodological procedures unique to these fields for the study of the etiology of mental illness.

Thus, despite the fact that the relevance of this material to the complexities of human behavior and clinical psychiatry is not precise at the present time, there is compelling reason to believe that findings in these areas will eventually be translated into knowledge which will facilitate theoretic and therapeutic progress in psychiatry.

A.M.F.
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Chapter 2

Basic Biological Sciences

2.1 GENETICS AND PSYCHIATRY

JOHN D. RAINER, M.D.

Until the early 1930's, development in the fields of genetics and psychiatry followed separate paths. In the behavioral sciences, heredity and environmental factors were considered as separate, if not distinctly different, entities. Many psychiatrists were deeply concerned with the ancient dichotomy between nature and nurture and between mind and matter; as a result, they tended to separate the biological and the psychological disciplines.

For many years, the behavioral sciences were dominated by viewpoints similar to that expressed by J. B. Watson, who believed that one could produce any kind of human being if allowed to manipulate that individual's environment from an early age. Meanwhile, American psychiatry was under the constructive influence of Adolf Meyer, who considered mental disorder largely as a maladaptation in the face of environmental stresses. A number of family studies of the major psychoses were reported by Rosanoff, Pollock, Malzberg, and others, and biologists such as Raymond Pearl worked in the tradition of Galton and Pearson. But in the transplantation of psychoanalysis from Europe to the United States in the middle 1930's and its flourishing during and immediately after World War II, the attention that Freud and Ernest Jones had given to inborn differences was largely forgotten. Freudian psychoanalysis, particularly some of its offshoots in the United States, combined therapeutic zeal with exclusive attention to psychogenesis.

A few of that generation of psychoanalysts showed exceptions to this trend. Among these was Rado, who conceived of a unitary scheme of psychology with psychodynamics resting on the solid bases of genetics and physiology. The publication of Kallmann's Berlin family study and subsequently of his New York twin investigation in schizophrenia changed American psychiatry profoundly, by calling attention to the importance of genetics in many psychiatric conditions.

The area of Kallmann's work included schizophrenia, manic-depressive psychoses, homosexuality, mental deficiency, aging and longevity, tuberculosis, early deafness, and genetic counseling.

In the last decade, a more general shift in American psychiatry could be seen. Major advances in cytological and biochemical genetics not only captured the imagination of many psychiatrists but pointed to an understanding of the possible mechanisms of genetic influence. Experimental psychology was studying individual differences in various species from drosophila to dogs. The theory of interaction of genetic and ecological forces in human development became predominant, and the problems of population growth began to draw attention to important aspects of population genetics and human evolution. At the same time, on the basis of clinical observations, psychiatrists were beginning to be aware of the importance of family patterns, individual differences, and metabolic and pharmacological distinctions.

In considering the relation of genetics to psychiatry, we can conceive a series of organization levels: the molecular and cellular, the biochemical and neurophysiological, the psychodynamic, the demographic, and the social. In each of these areas, the continuous interaction of the organism with its surrounding forces determines its status at any given time; that is, there is an interplay of all the factors affecting human development—whether genetic, chromosomal, cytoplasmic, biochemical, embryological, metabolic, experiential, or social. The goal of psychiatric genetics as a science may be considered, in the broadest sense, to be the clarification of the mechanisms of cause, of effect, and of interaction not only in psychiatric disease but in normal behavior.

Classical Genetics

Gregor Mendel's report on his garden pea experiments in 1865 paved the way for the modern theory of genetics. His observations led to the postulation that a genetic substance, which was not blended but rather remained intact during an individual's life, was transmitted in the form of stable units to his offspring. His ideas led to the description of populations in mathematical terms. The development of genetics later merged with that of the theory of evolution. Originally, Mendel's conclusions were statistical in nature. Counting the variations that he found in the progeny of certain matings, he

inferred that each trait existed as if determined by paired particles (later called genes) in the germ plasma. From this inference, a number of general principles of inheritance were derived.

In classical genetics it is assumed that single genetic traits are determined by paired genes, one of which is derived from the male germ cell and the other from the female germ cell. One may speak of the total genetic constitution of the individual as his genotype and of his appearance at any given time as his phenotype. A person receiving a given gene from both parents is called a homozygote for that particular gene, and under proper environmental conditions he will be certain to show its characteristics. If an individual receives the given gene from one parent and a different gene at the corresponding locus from the other parent, he is known as heterozygote. In some cases, the heterozygote will display traits intermediate between those represented by homozygotes; in other cases he will display the trait as a homozygote does; in this instance, the trait is known as dominant. In still other cases, he will not display the trait; in this instance, the trait is known as recessive; that is, it is expressed only if both genes are present.

Mutant genes. If a single mutant gene can express itself against the genetic background of many other factors, its phenotype effect in most cases will tend to be pathological.

Simple dominant traits tend to be rare and incompletely expressed. When they appear, they are transmitted in the direct line of descent by inheritance from one parent. They may be easily studied in pedigrees, and they appear in approximately 50 per cent of the offspring of one affected parent (see Figure 1, for example). Matings between two affected persons are rare, and a negligible role is played by consanguineous marriages.

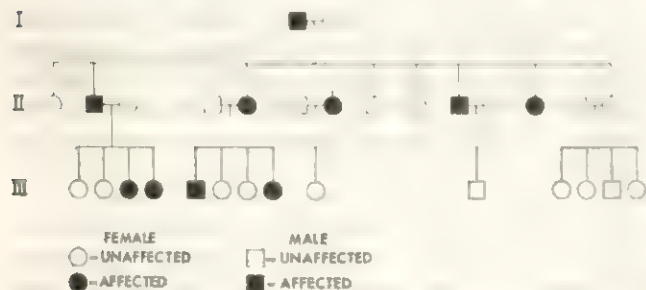


FIGURE 1. A pedigree of Huntington's chorea, illustrating dominant inheritance. (From the Department of Medical Genetics, New York State Psychiatric Institute.)

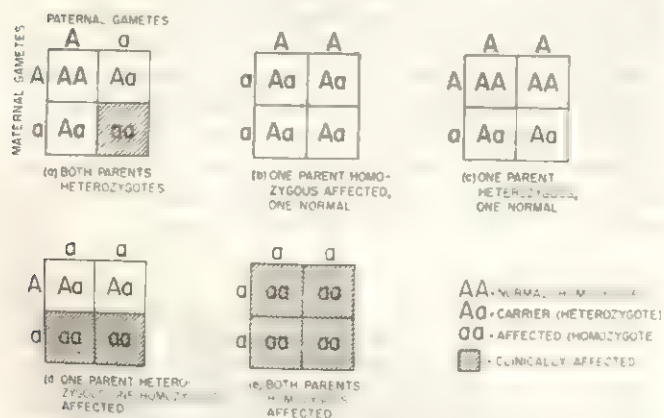


FIGURE 2. Diagram of theoretical expectations in simple recessive inheritance, e.g., phenylketonuria. (From the Department of Medical Genetics, New York State Psychiatric Institute.)

In simple recessive traits, inheritance from both parents is necessary. The parents themselves are frequently unaffected, since they are usually heterozygotes. If two heterozygotes mate, each child has a 25 per cent chance of being a homozygote and, therefore, an affected individual (see Figure 2, for example). In relatively rare disorders, consanguineous marriages are apt to increase the chances of such affected offspring. Transmission of a simple recessive trait is usually along collateral rather than direct lines of descent.

Not all mutant genes in man conform to a simple mode of inheritance. A gene does not produce a given trait directly. It merely begins a long series of reactions that may be modified by environmental factors, both prenatal and postnatal, as well as by the action of other genes. Gene effects, therefore, may vary from complete expression to no apparent expression at all. There are genes that are neither completely dominant nor completely recessive but somewhere in between. Since recessive genes may express themselves mildly in heterozygotes, methods for their detection are of great importance in the practical application of genetic counseling.

Multiple genes. In addition to single factor types of inheritance, certain traits are determined by the interaction of several or many genes. This type of inheritance is called multifactorial, with contributions made in a cumulative manner by a number of genes that by themselves produce only minor effects. Such genes are neither dominant nor recessive but are intermediate in their effect. Modifier genes may change the expression of a major gene, and suppressor genes may limit its effect entirely. For many traits such as height, weight, intelligence, and perhaps personality variations that show small gradations within the range of normalcy, multifactorial inheritance may be at work.

Human Cytogenetics

During the 3 decades in which Mendel's findings remained unnoticed, the discovery of the chromosomes in the cell nucleus took place. These specially staining threadlike bodies were observed to divide in the process of cell division and to be distributed as exact duplicates. But in the formation of germ cells, each cell received only half of the chromosomes in the parental cells. These facts turned out to be consistent with the statistical findings of Mendel, and thus it became possible to combine data derived from breeding experiments with the microscopic study of cells and chromosomes. For instance, if a gene is situated on one of the 22 pairs of autosomes, the type of inheritance is called autosomal and the distribution of the trait between the sexes is equal. But if a gene is transmitted on the sex chromosomes, the inheritance is called sex-linked, and the distribution of the trait between the sexes is unequal. In recessive X-borne conditions, for example, males are more frequently affected than females because males have only one X chromosome whereas females have two.

Nevertheless, the study of chromosomes in the human was long neglected. There was no agreement on such simple matters as the number of chromosomes and the mechanism by which sex was determined chromosomally. Most textbooks stated that the total number of chromosomes in each normal human cell is 48, a figure found to be incorrect in recent years. The number is now established as being 46. And although it was known that females had two X chromosomes and males one X and one Y, it had been er-

roneously thought that the Y chromosome was inactive, sex being determined by the number of X chromosomes. Until recently, methodology was not advanced to the point where clinical abnormalities could be correlated with chromosomal aberrations.

Sex chromatin and nuclear sex determination. In 1949, the first recent major discovery in human cytogenetics was made in Canada by Barr and Bertram, who uncovered an important difference between male and female cells while studying neurons of the cat. The investigators found a dark staining mass of chromatin in the nuclei of many cells. They soon made the crucial observation that it was the female cat that had this chromatin substance. Before long, this difference was shown to exist in other mammals, including man.

The determination of sex chromatin in the human is not a difficult procedure. It is done most easily by examining a smear made of buccal mucosal cells. The cells are scraped from the inside of the mouth, put on specially prepared slides, fixed and stained, and from one to two hundred cells are counted. The mass is seen plastered against the nuclear membrane. From 30 to 60 per cent of the cells of the normal woman show this dark staining mass, which is now referred to as sex chromatin, or, after its discoverer, a Barr body (see Figure 3). The origin of the sex chromatin body is still not completely clear. Originally, it was believed that it consisted of parts of both X chromosomes. This theory was discarded in favor of one derived from the so-called Lyon hypothesis, which states that in the early embryonic development of the female, one X chromosome in each cell is inactivated. Accordingly, the Barr body is thought to represent all or part of this inactivated chromosome.

In 1954, a second difference between male and female cells was discovered. A drumstick-like appendage attached to one of the lobes of the nucleus of polymorphonuclear leukocytes was consistently noted in over 2 per cent of cells in females and in an insignificantly small number of cells in males.

Turner's syndrome. The technique of nuclear sexing soon led to the discovery of chromatin abnormalities in certain human sexual anomalies. In one of these, Turner's syndrome, cells were found to lack the Barr body. Girls with this syndrome are short and have infantile genitals, and their gonads are reduced to connective tissue streaks. There are other defects, such as webbed neck, short fingers, and shield chest. This anomaly appears in about one in 3,000 newborn females. Some patients with Turner's syndrome show intellectual impairment, but the condition is not usually associated with severe mental deficiency. Initially, these individuals were called "chromosomal males" because they lacked the chromatin patch.

Klinefelter's syndrome. Another syndrome studied on the basis of the presence or absence of sex chromatin was Klinefelter's syndrome. This condition occurs in males and includes small, atrophic testes,

usually with sterility; notable gynecomastia; and increased excretion of gonadotrophin. It appears in one in 350 male births, but accounts for 1 per cent of mentally retarded male patients in institutions. Klinefelter's syndrome was found to be associated with the presence of a Barr body, usually absent in the male, and for a time these patients were called "chromosomal females."

Development of chromosome technique. In 1956 improved methods of visualizing and counting human chromosomes promised to clarify many of these cytogenetic problems. Since chromosomes become visible and distinguishable only at the metaphase stage of a dividing nucleus, it was necessary to obtain cells in the process of division. Early investigations had been done with testicular tissue, and individual cells with visible and distinguishable chromosomes had been observed. However, these chromosomes clumped together and overlapped, rendering attempted counts inaccurate.

The problem of obtaining many cells in a dividing stage was dealt with by the use of tissue culture methods whereby cells from skin biopsy or from blood could grow and divide in vitro in tissue culture media. In order to arrest the cells at the metaphase stage, where the chromosomes may be distinguished, colchicine or other mitotic poisons were added to the culture medium shortly before the cells were harvested. In order to avoid clumping and overlapping of the chromosomes, the cells were suspended in a hypotonic solution in the stage before staining. This hypotonic solution swelled the nucleus and scattered the chromosomes over a larger area to make them discretely visible. Finally, the cells were centrifuged, spread on slides, dried, and stained.

Currently, most cultures are prepared with lymphocytes. They are stimulated to turn into large lymphocytes and to divide by the addition of a foreign antigen such as phytohaemagglutinin, a plant substance. The entire process of cell growth and harvesting takes about 72 hours.

Normal human karyotype. Tjio and Levan, in 1956, found by tissue culture methods that the number of chromosomes in



FIGURE 3. Sex chromatin in buccal mucosal cells (left, chromatin-positive; right, chromatin-negative). (From Cytogenetics Laboratory, Department of Medical Genetics, New York State Psychiatric Institute.)

man is 46. It soon became possible, by enlarging the photograph of the microscopic field and cutting each chromosome out, to arrange the chromosomes in descending order of size, thus producing a visual representation of the chromosome complement or karyotype. Since each chromosome is photographed at the stage in which it duplicates itself, the chromosomes have the appearance of a letter "X" or an inverted letter "V," each chromosome and its new partner remaining connected at one point, called the centromere. The chromosomes are distinguishable within size groups by the position of this centromere, which may be either median or toward one end. The median or submedian chromosomes are known as metacentric; the subterminal or terminal ones are acrocentric.

In 1960 the numbering system was standardized, the chromosomes being divided into seven groups (see Figure 4). Group A, made up of chromosomes 1 through 3, consists of large chromosomes with approximately median centromeres; these chromosomes may be easily distinguished from one another by their size and the location of the centromere. Group B, chromosomes 4 and 5, consists of large chromosomes with submedian centromeres; these chromosomes are more difficult to distinguish from one another. Group C, chromosomes 6 through 12, consists of medium-sized chromosomes with submedian centromeres; they are not easily distinguishable one from one another morphologically; the X chromosome resembles the larger chromosomes in this group. Group D, chromosomes 13 through 15, consists of medium-sized chromosomes with centromeres which are nearly terminal in location. Group E, chromosomes 16 through 18, contains rather short chromosomes with approximately median or submedian centromeres; chromosome 16 is easily distinguishable because its centromere is median, and it looks like a small letter "x." Group F, chromosomes 19 and 20, contains short chromosomes

with approximately median centromeres. Group G, chromosomes 21 and 22, is made up of very short acrocentric chromosomes; the Y chromosome is similar to these in size.

Recent techniques of autoradiography, in which cells are grown in a labeled medium and the uptake of radioactive substance at various stages in chromosome replication is measured and visualized, indicate that in the various groups certain chromosomes replicate later than others. This characteristic serves to distinguish chromosomes that are difficult to recognize by appearance alone.

Chromosomal aberrations

Nondisjunction. The 3 years following the correct description of the human karyotype were fruitful ones in cytogenetics. Even before the numbering system was standardized, a number of aberrations were described. One group of aberrations was marked by the presence of an extra chromosome, so that there were 47 rather than 46 chromosomes in the karyotype. The extra chromosome represented the presence of 3 rather than 2 of a given chromosome. Such an anomaly arises through a process of nondisjunction, usually in the formation of the sperm or the egg cell. In the splitting of the cell, 1 chromosome of each pair ordinarily goes to each of the daughter cells. If the two chromosomes of a given pair remain joined and migrate together to one of the daughter cells, that cell will have an extra chromosome. When that daughter cell combines in fertilization with a normal gamete, a zygote or single cell stage individual will be formed with the extra chromosome.

Down's syndrome (mongolism). Three viable types of nondisjunction causing trisomic conditions

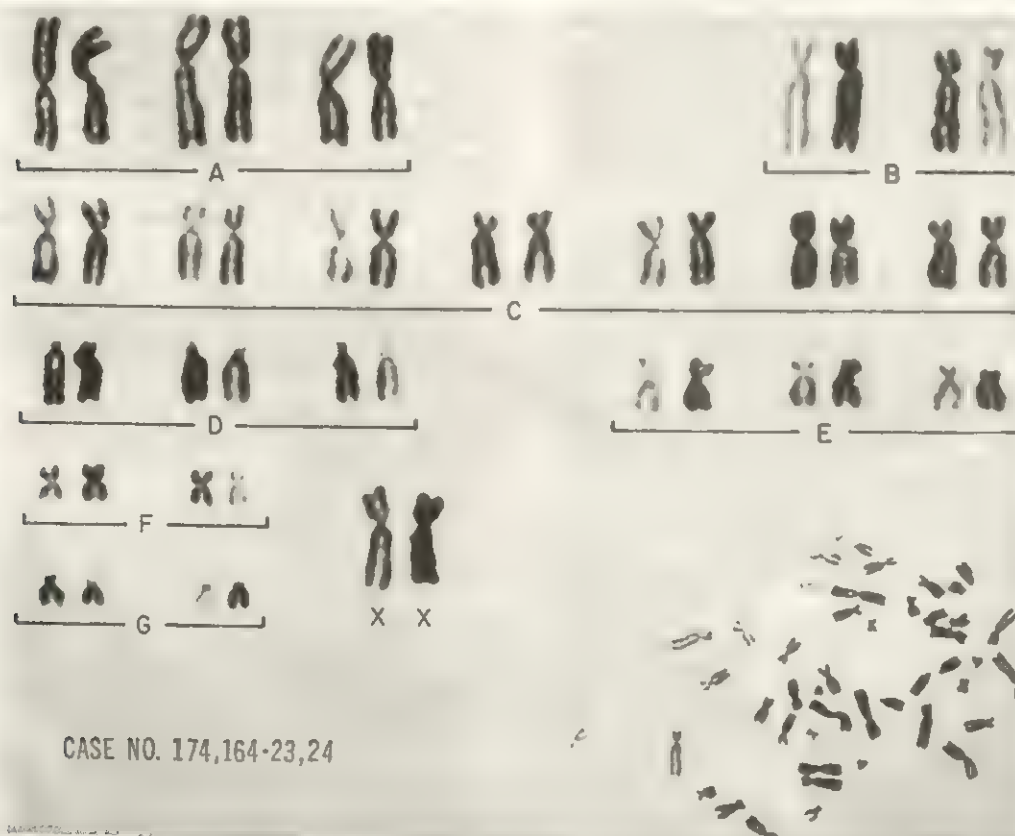


FIGURE 4. Karyotype of normal woman. (From the Cytogenetics Laboratory, Department of Medical Genetics, New York State Psychiatric Institute.)

have been described. In these conditions the autosomes, as distinguished from the X and Y or sex chromosomes, are involved, and the affected chromosomes are triple instead of double. The first type described was the trisomy of a chromosome in group G in mongolism, better termed Down's syndrome, after the man who first described it in 1866. It had been known for a long time that most cases of this syndrome occurred in children born to older mothers. At the same time, however, the concordance rate in one egg twins was close to 100 per cent. These findings foreshadowed an early germinal, possibly chromosomal, defect as the responsible agent. In 1959, Lejeune and others demonstrated by tissue culture methods the presence of an extra small acrocentric chromosome in patients with Down's syndrome. It is very likely that this condition arises by nondisjunction in the formation of the maternal ovum. The delicate balance of chromosomes is indicated by the fact that an extra one causes such widespread chemical, morphological, and psychological effects.

If the extra chromosome is lost through disjunction in the early cell divisions of the zygote, two cell lines may persist, one with 46 and one with 47 chromosomes. The individual will be known as a mosaic and may have an intermediate degree of symptomatology.

A third mechanism in mongolism was first postulated by Polani on the basis of the investigation of the chromosome complement in a mongoloid child born to a young mother. Chromosome count revealed the normal number of 46, but 1 of the chromosomes in group D turned out to be longer than normal. It was suggested that this oversized chromosome consisted of an extra G chromosome joined to the long arm of a D chromosome; in such cases there are, in effect, 3 G chromosomes. It has sometimes been found in these cases that the mother or the father has such a long D chromosome also, but the added unit is balanced by the absence of 1 of the unattached G chromosomes, leaving the individual with a total number of only 45 chromosomes. Such a parent is a carrier, and his children have approximately 1 chance out of 3 of being affected.

This interchange of chromosomal material is known as translocation. It may also occur in Down's syndrome between 2 chromosomes in the G group. The difference between trisomy and translocation is very important from a practical point of view. Most mothers who have a child with Down's syndrome have a small risk of producing a second one; the risk is no greater than for other women their age. At the highest, this risk is about 1 in 50 for mothers over 45. But if a mother is a translocation carrier, she has a risk of about 1 in 3 of having an affected child.

Other autosomal trisomies. A second autosomal trisomy syndrome is the trisomy 17-18 syndrome. Infants affected by this syndrome fail to thrive and live only a few months. Among the defects they

show are apparent mental retardation, a small mandible, low set ears, eyes wide apart, fingers flexed with a dorsal crossing or overlapping of the digits, and hypertonia. A third trisomy, of one of the chromosomes in group D, also results in failure to thrive, mental retardation with associated eye defect such as microphthalmia or anophthalmia, often cleft palate and hare lip, polydactyly, and occasionally congenital heart disease.

Deletion. In addition to nondisjunction and translocation, a third mechanism causing chromosomal anomalies is that of deletion. In this condition part of a chromosome breaks off during cell replication, and future cells have a smaller sized chromosome than usual. The *cri du chat* syndrome described by Lejeune is associated with a deletion of chromosome 5. Children displaying this syndrome fail to thrive; are mentally retarded; show microcephaly, hypertelorism, and low set ears; and emit a characteristic mewlike cry similar to that of a kitten.

Abnormalities involving sex chromosomes. Contrary to the normal patterns, certain males show the sex chromatin patch, and certain females do not. Chromatin-positive male patients with Klinefelter's syndrome, once their karyotype is determined, are found to have 47 chromosomes. They do indeed have 2 X chromosomes, but they also possess a Y chromosome. The 2 X chromosomes are sufficient to cause the appearance of the Barr body, but the Y chromosome causes them to have male gonads and essentially male genitals. Such an anomaly may be brought about by the union of an abnormal XY sperm with a normal ovum or by the union of an abnormal XX ovum with a normal Y-bearing sperm. In each case, the abnormal gamete is the result of nondisjunction. Similarly, most girls with Turner's syndrome and no Barr body are found to have a karyotype containing only 45 chromosomes; they have only 1 X chromosome, the other sex chromosome being missing. This condition is called the X0 condition, "0" referring to the absence of a chromosome that is normally present. In this case, a nondisjunction may result in a sperm cell or an ovum containing neither an X nor a Y chromosome; the union of such a deficient cell and an X-bearing gamete results in the given anomaly.

Another abnormality involving the sex chromosomes is seen in the "superfemale," who is actually sexually infantile and amenorrheic, having 47 chromosomes with 3 X chromosomes and 2 Barr bodies.

The above findings and many variations thereof establish certain important principles in human sex determination. First, the presence of a Y chromosome appears to be both necessary and sufficient for the formation of male gonads, regardless of the number of X chromosomes the individual possesses. Individuals with XXXY or XXXXY karyotypes are basically males in spite of severe anomalies. Second, the sex chromatin pattern seems to be related in a simple way

to the chromosome count: the number of Barr bodies is always one less than the number of X chromosomes.

Significance of chromosomal variations. It is too early to assess the value of chromosomal studies in unraveling the processes of human gene action. At present, such studies are valuable in the analysis of cases for genetic diagnosis and counseling. In the future, by correlating specific metabolic abnormalities with diseases involving certain chromosomes, it may be possible to further the localization of human genes and mapping of human chromosomes. A number of observations foreshadow this development. It is known, for example, that acute leukemia is frequently found in patients with Down's syndrome (trisomy G); at the same time, in patients with chronic myelogenous leukemia, one of the chromosomes in group G is abnormally small. It is likely, therefore, that some of the lesions in this type of leukemia may be traceable to genes located on this chromosome.

Chromosomal findings in psychiatric syndromes other than the mental deficiencies and sexual anomalies already described have thus far not been striking. A suggestive, but not statistically significant, correlation between sex chromosome anomalies and schizophrenia in large populations has been described, and many of the mental deficiency states associated with abnormal karyotypes evince psychotic types of behavior. It may someday be possible to localize some of the genetic mechanisms in human behavior. This has already been done in the fruit fly; strains of flies have been bred to travel either from or toward the light or away from or toward gravity. These strains have then been analyzed by crossbreeding experiments involving known markers to determine the contribution of the various chromosomes to their behavior.

Biochemistry of Genetic Substance

Structure of DNA. In the biochemical laboratory, there have been outstanding advances in elucidating the nature of the genetic substance itself. By 1952, chemists had determined that the genetic material transferred from generation to generation and carrying genetic information is not protein, as had long been thought, but deoxyribonucleic acid (DNA). It was found possible to transform a bacterium of one type to another by injecting it into an animal together with pure DNA of the second type. It was also found that in certain viruses the effective part was DNA. Chromosomes are composed of DNA and protein, but DNA appeared to be the primary genetic material.

In 1953, the structure of this molecule was proposed by Watson and Crick. It had been known that DNA contains four nitrogenous bases—two purines (adenine and guanine) and two pyrimidines (cytosine and thymine)—that the amount of adenine equals the amount of thymine, and that the amount of guanine equals the amount of cytosine. Watson and Crick suggested that DNA consists of two chains of five-carbon sugars held together by phosphate bonds and that each of these chains is twisted in the form of a helix. From each sugar on one chain to a corresponding sugar on the other, there is a linkage between either adenine on one chain and thymine on the other or guanine on one and cytosine on the other, the linkage held together by hydrogen bonds. A DNA molecule may consist of thousands of such nucleotide linkages.

Functions of DNA. On the basis of this DNA structure, it is possible to explain the two main functions of the genetic material: (1) its ability to duplicate itself exactly and (2) its ability to transfer information to the cytoplasm of the cell and bring about the synthesis of unique enzymes or other proteins.

Replication. If the two chains forming the double helix separate, breaking the linkages between the nucleotides, each half may then extract, from the surrounding nutrient material, substances with which to reconstruct a sister chain. In this process, the sequence of nucleotides on each sister chain must be complementary to that on the original half-chain. One is left with two double helical chains, each of which is identical to the original.

Protein manufacture. The process of protein manufacture is more complex and involves additional molecules. Basically, it is believed that a sequence of 3 nucleotide linkages is associated with the final production of a given amino acid. As there are 21 amino acids and 64 possible linkages of 3 nucleotides, there are more than enough different combinations, and some redundancy is probable. The process begins as the message on a portion of the DNA, is transferred to a single stranded molecule known as ribonucleic acid (RNA), which then moves out into the cytoplasm of the cell. The sequence of nucleotides in the RNA is the same as in the DNA except that thymine is replaced by uracil. This RNA attaches itself to structures in the cytoplasm of the cell known as ribosomes.

Meanwhile, the amino acids derived from the diet and present in the cytoplasm attach themselves to a type of genetic molecule called transfer-RNA, a long chain bent like a hairpin and twisted into a helix. A given molecule of transfer-RNA is able to attach itself at its free end to one—and only one—of the amino acids. At the bend of the hairpin, a sequence of three nucleotides searches for its unique complementary sequence on the messenger-RNA and attaches itself thereto. In this manner, the messenger-RNA serves as a template that specifies how a sequence of amino acids, each accompanied by its appropriate transfer-RNA molecule, will line up. These amino acids form bonds, one with the other; the transfer-RNA molecules separate off, and the resulting chain of amino acids or polypeptide remains. These polypeptides form proteins, which may be enzymes or structural proteins such as hemoglobin.

Mutations. Gene mutations represent changes in the genetic instruction so that new cells produce different substances than do the cells that preceded the mutation. If these mutations take place in germ cells, they may produce a change in the genetic information contained in the zygote and, depending on the locus of the mutation, a resultant particular enzyme deficiency or disease.

In the framework of the modern theory of gene action, a mutation may be considered as a change in the sequence of nucleotides in the DNA. Such changes may take place through a mistake in the replication process at the time the cell divides, possibly through the action of certain chemical compounds, or as a result of high energy radiation. The changes may consist of the addition of an extra nucleotide pair, the subtraction of a nucleotide, the substitution of one nucleotide for another, or various rearrangements of the nucleotide sequence. From then on, a changed message is sent via the messenger-RNA to the cytoplasm, and a different protein is produced.

Control of DNA function. One of the basic questions in this picture of gene action and protein synthesis is the problem of control or regulation. Every so-

matic cell in the body has the same 46 chromosomes, all of them descendants of those in the original one cell or zygote, but it is clear that cells differentiate and perform different functions. Not every chromosome, therefore, is transferring its total message at all times.

Various theories have been propounded to account for the control of gene action. One theory, propounded by Jacob and Monod on the basis of the study of bacteria, states that there exist both structural genes, whose message determines the production of enzymes or structural materials produced by the cell, and regulator and operator genes. The regulator and operator genes switch the structural genes on and off, depending on the presence and quantity of the substrate on which the genes act or of the product that the genes produce. Thus, a type of feedback mechanism insures a regulation of the genes by their surroundings. More complex mechanisms may play a role in higher organisms. These may represent the basic prototypes of interaction, a concept of primary importance in psychiatric genetics.

Inborn Errors of Metabolism

One of the classic writings on genetics early in this century was the series of papers by Garrod, dealing with inborn errors of metabolism. Garrod foresaw the concept of genes determining enzyme production and conceived of the idea of metabolic blocks in which the absence of a necessary enzyme caused the intermediary metabolism of a certain substance to proceed in a faulty direction. His theory also foreshadowed the one gene-one enzyme hypothesis of Beadle and Tatum.

Phenylketonuria. One example of a genetic defect in metabolism with notable effect upon the brain is phenylketonuria. This condition was described in 1934 by Fölling, who noted 10 patients, some of them siblings, who were mentally deficient and who excreted phenylpyruvic acid. Jervis discovered the single autosomal recessive inheritance of this condition, observed large amounts of phenylalanine in the blood of these patients, and pinpointed the metabolic error as the absence of the enzyme, phenylalanine hydroxylase, which ordinarily oxidizes phenylalanine to tyrosine.

The heterozygous carriers, the parents of such children, have a reduced enzyme level, which is best detected by giving a test dose of phenylalanine and observing the plasma level 1 to 4 hours later. In this tolerance test the plasma phenylalanine concentration of the heterozygotes may be twice that of normals.

Clinical characteristics. As a recessive condition, phenylketonuria will occur on the average in one child out of four if both parents are heterozygotes. There is equal distribution of the condition between the sexes. Clinically, the first manifestations of mental retardation occur at about 6 months. Most patients develop to idiot level, a few develop to imbecile level, and a small number have borderline intelligence. Other characteristics of the disorder are seizures, psy-

chotic symptoms consisting of destructive and noisy episodes and temper tantrums, skin manifestations consisting of eczema, dry or rough skin, and often blond hair and blue eyes. Patients with this disorder account for about 1 per cent of the population of institutions for mental defectives.

Case detection. Until recently, phenylketonuria was detected by the ferric chloride test, in which a 5 per cent solution of ferric chloride added to fresh urine produces an olive green color, which fades within an hour or two. This test, however, frequently does not give a positive result until the individual is 4 to 6 weeks of age, when it may be difficult to follow up a child already discharged from the hospital. Recently, a simple test for detecting elevated phenylalanine levels in the blood of newborn infants was devised by Guthrie. At present, many states require that every newborn child be tested by this technique. Prior to the use of the Guthrie test, the incidence of phenylketonuria was thought to be about 1 in 25,000. Present determinations, excluding false positive results, yield an incidence of closer to 1 in 10,000.

Management. In line with the dictum that a genetic disease represents interaction between a gene-borne deficiency and the environment, Jervis found it possible to prevent the mental deficiency that develops in the phenylketonuric by supplying an environment relatively free of phenylalanine by means of a low phenylalanine diet. Infants started on such a diet in the first few months of life may develop normally, even though the enzymatic deficiency is present. Indeed, such infants have been removed from these special diets at the age of 5 or 6 years; although the phenylalanine level in the blood subsequently rose, there was no effect on intelligence. This phenomenon represents an example of the relation of gene-borne deficiencies to time of life. A new problem is presented in the case of females who grow to adulthood and have children while their phenylalanine level is high. In these cases, placental transfer may cause brain damage in the child, even though the child is not a homozygote for phenylketonuria. It has been recommended that such women be returned to a low phenylalanine diet before pregnancy.

Drug sensitivity. There is evidence that there may be inherited differences in response to drugs. This has given rise to a discipline known as pharmacogenetics. One example of an abnormality in this area with psychiatric implications is pseudocholinesterase deficiency. Individuals with a low concentration of this enzyme in the plasma and with an atypical form of the enzyme show a prolonged reaction to the drug succinylcholine. This skeletal muscle relaxant, acting at the neuromuscular junction, is usually destroyed by pseudocholinesterase and therefore has a very short duration of action. Succinylcholine is used in anesthesiology, particularly during endoscopic procedures and reductions of fractures and dislocations. It is used in psychiatry during electroshock treatment in

order to avoid strong convulsions and muscular contractions that might cause bone fractures. In persons with atypical esterase, an excessive amount of the drug reaches the nerve end plate. Even a small test dose of the drug may cause 10 to 15 minutes of apnea in a patient with this metabolic disorder.

According to Kalow, this condition is determined by an autosomal gene. Persons homozygous for this gene have only atypical esterase; heterozygotes have mixtures of atypical and typical. Homozygotes account for about 1 person in 3,000; almost 4 per cent of the population may be heterozygotes. Determination of pseudocholinesterase activity in persons who are to receive electroconvulsive therapy and adequate provision for artificial respiration would reduce the seriousness of prolonged apneic reactions to succinylcholine.

Principles of Population Genetics and Evolution

Genetic factors determine important short and long range effects in human populations. A population may be defined as a group of individuals tending to mate among each other. Such a reproductive community will share a common gene pool, within which the relative frequencies of various genes may be specified. In a human population, other distinguishing features may be of a geographic, cultural, socioeconomic, ethnic, or psychological nature. These considerations may tend to isolate certain subpopulations within the main population. The changing stratification of such subpopulations will exert a definite effect on the genetic composition of the given population groups.

Hardy-Weinberg equilibrium. The basis for a systematic approach to population genetics is a simple formula called the Hardy-Weinberg law. This law describes an equilibrium state in an ideal population that will exist from generation to generation. It expresses, in terms of the gene frequencies, the expected values of the various genotypes if the following conditions are met: random mating, with every male individual having the same chance to mate with any female; no selective advantage or disadvantage of any one gene over the others at the same locus; and absence of mutations. In addition, the ideal Hardy-Weinberg equilibrium assumes a very large and geographically stable population.

The main importance of the law lies in the fact that it demonstrates a continuation of population variations from generation to generation rather than a trend toward increasing uniformity. If any of its conditions are not fulfilled, there is interference with the population equilibrium.

Causes of disequilibrium

Interference with random mating. A change in the relative proportion of homozygotes and heterozygotes will be brought about by any interference with random mating, such as consanguineous marriage, assortative mating, and the persistence or development of population isolates. Such practices will result in an increase

of recessive phenotypes, particularly in the case of relatively rare conditions, since there will be an increased trend for two heterozygous carriers of recessive genes to mate and produce homozygous offspring.

Genetic drift. In small populations, even with random mating, there will be chance variations in the relative frequency of genes from generation to generation. This phenomena, known as genetic drift, will lead to fluctuations of gene frequencies, despite the absence of mutation, selection, and assortative mating.

Mutation and selection. Mutations, now understood in biochemical terms as a change in the DNA molecule, may be described in terms of calculable frequencies with definite effect upon the gene pool for future generations. Mutations tend to cause changes not only in gene frequencies but also in the adaptiveness of individuals. In this process these individuals become subject to the action of selection, which may be defined as genetic advantage or disadvantage measured in terms of mean family size. If individuals of a certain genetic constitution produce an increased number of offspring, this is known as positive selection. A trend toward elimination of a trait due to a disadvantage is known as negative selection. To be sure, advantage is determined not only by the effect of individual genes determining unit characters but by general genetic aspects of fitness and adaptiveness to the environment, which may be determined by the action of many genes, in both homozygous and heterozygous form. Selection may be mediated by differences in mating, fertility, emigration, and early mortality.

Methods of Genetic Investigation

In genetic population studies various approaches have been used, some favoring the analysis of the health problems of individual families, others studying entire populations. Since Mendelian ratios express only the average expectancy of a gene-controlled trait in a representative population sample, various statistical procedures are necessary to determine the validity of inferences drawn from individual observations.

Pedigree method. Genetic data obtained from individual pedigrees or individual pairs of siblings or twins are useful in the study of rare pathological conditions that are fairly constant in their penetrance and clinical expression. Such data are not calculated to furnish conclusive proof about the operation of heredity or about the mode of inheritance involved. Since family histories are often published only if there is a concentration of affected individuals, the data are of limited value, since they are not statistically representative of the population.

Census method. Total population surveys by the census method are valuable but difficult to conduct. The populations must be sufficiently cooperative and not too large, and the traits under investigation must be relatively uncomplicated ones. Nevertheless, in certain special populations, particularly in regions of

Scandinavia, excellent psychiatric studies using this method have been produced.

Family risk studies. A very useful method of genetic investigation has been termed the contingency method of statistical prediction. The aim of this method is to compare the expectancy of a given medical condition developing among relatives of affected individuals with the expectancy in the general population. The condition in question must be well defined so that a number of independent observers may accurately diagnose persons coming into the study. And the original group of patients whose relatives are to be investigated must be either a consecutively reported series representing a complete ascertainment or a random sample thereof. If this criterion is met, members of the group may be called index cases or probands. They generally represent all admissions to a given hospital system or clinic over a given period of time or at least a properly selected sample of such a list.

Not all the relatives who are free of symptoms will necessarily remain so if they live to an older age. For the relatives, therefore, one cannot simply consider the prevalence of the condition; one must also obtain a corrected figure known as the expectancy rate. A simple means of calculating this is Weinberg's abridged method. The number of observed cases among the relatives (the numerator) is related not to the total number of relatives but to all those who have survived the period in which the disease may be certain to be manifested plus one-half the number who are still within the age limits during which the disease may be manifested (the denominator). Persons who died before the earliest manifestation age of the given disease or who are still under that age are not counted as part of the denominator. This method yields morbidity risks that approach the average expectancy of developing the given condition in persons who remain alive through its manifestation period. These expectancy rates for various groups of relatives may be compared with one another and with the expectancy rates for the general population. General population rates have been obtained in many medical conditions through careful demographic studies of whole populations of small areas or of samples of populations of larger districts.

Twin-family method. The basic principles of the contingency method have been applied to an extended approach termed the twin family method. The use of twins in genetic research was initiated by Galton and is based on the occurrence of two genetically different types of twins: those derived from one fertilized ovum and those derived from two fertilized ova. The former are always of the same sex (barring a rare sex chromosomal nondisjunction prior to the first cell division, which may result in a pair of identical twins comprising a normal male and a Turner's female); two egg twins may be either of the same sex or of opposite sexes.

In the twin-family method, data are obtained on complete sibships of twin index cases and their parents. Comparisons are made between one egg twins, two egg twins of the same sex, two egg twins of opposite sexes, full siblings, half siblings, and step siblings. This procedure provides a unique opportunity to investigate intrafamily variations with a minimum of uncontrolled variables. Comparisons can be made between one egg twins brought up and living together and two egg twins under the same conditions. It is more difficult to find one egg twins who have been raised apart and who present a particular syndrome—at least in sufficient numbers to warrant drawing conclusions from concordance rates.

Certain significant misunderstandings concerning twin studies should be noted. Carefully stated hypotheses should not be questioned simply because pairs of dissimilar one egg twins have been found. Genes actually determine a norm of reaction, the exact expression of which depends on many interactions taking place before, at, and after birth. Indeed, one egg twins, especially those with a common chorion, are subject to more disparate influence before birth than two egg pairs, as a result of circulatory variations. There are many pathways from identical genetic structures to later expression of behavioral traits, and minor shifts in the process of interaction at crucial points may lead to wide divergence in phenotypes. Preconceived ideas on the locus of such crucial points often prove to be invalid. A spiral-like development toward marked dissimilarity in behavior may arise as a result of influences at all stages from the chromosomal to the postnatal ones. Conversely, similar development is often found to exist in two egg twins.

The statistical value of investigating twins, with primary genetic factors maintained constant, does not preclude more intensive studies in the fields of biochemical and clinical investigation. One of these studies is represented by the co-twin control method in which data are obtained from a few selected pairs of one egg twins. Their reactions and patterns are compared under different life conditions or in response to planned differences in management. In general, the careful study of discordant or dissimilar identical twin pairs may furnish important findings. Often the discordance turns out to be only a partial one, and much is learned about expressivity. In other cases, the divergent development may be associated with certain key life factors.

Psychiatric Genetics

Schizophrenia. In the early literature of psychiatric genetics, there are a number of case reports tending to confirm the common notion that psychoses tend to run in families. However, such studies, which were popular in the last century, are now thought to have limited value. At the time of their origin, the science of genetics itself had not yet been developed,

and the reports themselves were usually restricted to families containing many cases and to observations that in no way ruled out intrafamilial causes other than those of a genetic nature.

Expectancy rates. In 1916, Rüdin, in Germany, insisted upon the need for studying the genetics of schizophrenia in representative and clinically homogeneous samples. His school developed the methods of obtaining statistically corrected expectancy rates for schizophrenia in relatives of schizophrenics as compared with the general population. This method, the contingency method of statistical prediction, was applied first to siblings and half siblings of schizophrenics. Other investigators studied cousins, nephews, nieces, and children of schizophrenics. Kallmann's first survey, the largest major study of the genetics of schizophrenia, was published in 1939 and represented work done in the 1930's. It focused on the expectancy of this condition in a large group of descendants of schizophrenics and their siblings. Meanwhile, improved methods for ascertaining rates of schizophrenia in the general population were devised by a number of English and Scandinavian workers. All these studies showed a significant difference between the incidence of schizophrenia in the families of schizophrenic patients and that in the general population. The range of expectancy rates found in these studies was as follows: general population, 0.85 per cent; half siblings, 7 to 8 per cent; full siblings, 5 to 15 per cent; parents, 5 to 10 per cent; children of one index case, 8 to 16 per cent; children of two index cases, 53 to 68 per cent. The greater the genetic similarity to the schizophrenic, the greater was the expectancy rate. But the variations in the rates must be considered in light of the difficulties encountered in each investigation: the need to find missing family members, the differences between investigations based on hospital records and those based on direct diagnostic interviews, different diagnostic criteria in various countries, and diverse methods of age correction. Also, parental schizophrenia rates tend to vary from one population to another according to the chance of an adult becoming a parent despite certain signs of emotional instability. Most schizophrenic mothers have normal children, and many normal parents have schizophrenic offspring. There is no significant difference between the morbidity rates of the children of affected fathers and those of affected mothers. With all this, there has been widespread accord in finding that the various categories of relatives of schizophrenics show significantly higher expectancy rates than the general population.

Twin studies. As early as 1911 in the United States, twin studies were conducted with descriptions of the histories of interesting twin pairs as matters of curiosity. With progress in the accuracy of zygosity determination and psychiatric classification, data of more than historical interest were published by the early 1930's. These studies were limited in sample size. The

first large scale, unselected sample survey was planned by Kallmann in New York in 1936 and was followed by the European studies of Essen-Möller and Slater. The New York study, reported in 1946 and 1950, included 953 schizophrenic twin index cases. In this twin study the concordance rate for two egg twins was 14.7 per cent, as compared to 14.3 per cent for full siblings, 7.1 per cent for half siblings, and 85.8 per cent for one egg twins.

Deafness and schizophrenia. Another study explored the effect of early total deafness, a severe sensory deprivation, upon the vulnerability to schizophrenia. Families of patients with both schizophrenia and deafness were studied. While the schizophrenia rate among the general deaf population was no more than 2 per cent, that among the siblings of deaf schizophrenics was 12 to 14 per cent. This figure was significantly higher than that for the general population and was similar to that observed for the siblings of hearing schizophrenics. Of major importance was the fact that the schizophrenia rates between deaf siblings and hearing siblings did not differ significantly.

Mode of inheritance. Kallmann assumed that a single unit factor was responsible for schizophrenia and that this factor was autosomal recessive in nature and subject to modification by other genes conferring a greater or lesser degree of resistance. Others have favored a simple dominant mode of inheritance. In either case, auxiliary hypotheses are needed. The diversity of the various theories would seem to indicate that theories as to the exact mode of inheritance will remain inconclusive until the biochemical and physiological nature of the inherited vulnerability factor is identified.

Genetic studies and clinical psychiatry. The work of Sandor Rado and his school, based upon the genetic theory of schizophrenia, has been directed at exploring the basic psychological organization of the genetically defined schizotype. The two most consistent factors he found were a defect in the utilization of pleasure and a proprioceptive deficit.

Depressive illness

Manic-depressive psychosis. Twin-family studies have played an important role in both nosology and etiology of manic-depressive psychosis. In his classic investigation of this syndrome, Kraepelin observed large numbers of relatives who had the same illness, but he did not find an increase in dementia praecox among these relatives. The general population rate for manic-depressive psychosis in most European and American populations is not over 0.4 per cent, though in a few special situations, such as isolated island populations, rates of 0.8 and up to 1.6 per cent have been found. In the case of parents, siblings, and children of manic-depressive index cases, the rates are much higher. Some of the earlier results indicated a range of 10 to 15 per cent in the parents and a similar

range in siblings and children. Stenstedt, in Sweden, conducted a careful population study from 1949 to 1952 and found morbidity risks of 12.3 per cent for siblings, 7.4 per cent for parents, and 9.4 per cent for children.

The largest twin-family study, reported in 1950 by Kallmann in New York, involved 27 one egg and 58 two egg pairs. In this series the expectancy of manic-depressive psychosis varied from 16.7 per cent for half siblings to 22.7 and 25.5 per cent for siblings and two egg co-twins, respectively, and 100 per cent for one egg co-twins. Parents of index cases showed a rate of 23.4 per cent. The apparently perfect concordance rate of 100 per cent for one egg twins was considered an artificial maximum value, since only patients admitted to a mental hospital, and hence the most severe cases, were included as index cases.

It was concluded by both Stenstedt and Kallmann that manic-depressive psychosis followed a dominant type of inheritance with incomplete penetrance and variable expressivity of a single autosomal gene. Although there were more females than males among the index cases in both studies, the sex ratio among siblings, parents, and children was no different from that of the normal population.

An important offshoot of the study of manic-depressive illness in families was the differentiation of depressive illness from schizophrenia. In no case was a pair of twins found with a schizophrenic psychosis in one partner and a cyclic psychosis in the other, and the morbidity risk for schizophrenia among families of manic-depressive index cases was not statistically different from that in the general population.

In attempting to define the psychological characteristics of the individual predisposed to manic-depressive psychosis, Rado described a tendency to emotional overreaction from infancy, a persistent alimentary dependent state, a strong craving for gratification from without, and an intolerance to pain. He considered the depressive spell the terminal link in an etiological chain stemming from the genotype.

Involuntary psychosis. In one study, Kallmann found no increase in involuntary psychosis among the families of manic-depressives. In the families of 96 involuntary twin index cases, the risk of involuntary psychosis was increased (6.4 per cent for parents, 6 per cent for full siblings, 6 per cent for dizygotic co-twins, and 60.9 per cent for monozygotic co-twins). The risk for schizophrenia was somewhat elevated (5.5 per cent in parents and 4.2 per cent in siblings), but the risk for manic-depressive psychosis was hardly raised at all. Finally, the expectancy of involuntary psychosis among the parents and siblings of schizophrenic twin index cases was increased to 6.6 per cent.

From these data it was concluded that the diagnostic category of involuntary psychosis was more complex pathogenetically than schizophrenia and manic-depressive psychosis but that it was more closely

associated with the group of schizoid personality traits than with manic-depressive psychosis.

Deafness and depressive illness. The modifying effect of incidental factors on depressive symptoms was indicated in the New York survey of persons with early total deafness. The survey showed no significant increase or decrease in manic-depressive or involuntary psychosis, but it did show a decrease in symptoms of retardation, guilt, and depression in the presence of the early sensory deficit. Paranoid symptoms or anxious agitated states without depression appeared to take their place.

Psychoneurosis. In the case of psychoneurotic behavior, genetic studies have been hampered by problems of diagnosis and the need to develop quantitative methods. Reviewing the literature, Slater found an increase in neurotic illnesses and neurotic personality traits of a like kind among relatives of obsessional neurotics, anxiety neurotics, and persons diagnosed as hysterics, with the evidence much stronger in the first of these than in the last. The evidence supported a multifactor type of inheritance with continuous, and probably multidimensional, variation in traits.

Correlation tests have been conducted, with the use of various rating scales to measure neuroticism. In a twin sample tested with the Minnesota Multiphasic Personality Inventory, Gottesman found either a low genetic component or none in neuroses with hypochondriacal and hysterical elements, but he found a substantial genetic component in those with elements of anxiety, depression, obsession, and schizoid withdrawal.

Criminality. Some of the earlier findings in the area of criminal behavior indicated concordance rates of 14 per cent in opposite sex pairs, 54 per cent in same sex two egg pairs, and 66 per cent in one egg pairs, suggesting the importance of both family milieu and basic personality traits in shaping the habitual criminal. Unfavorable environmental influences would appear to play a large part. Further studies measuring concordance as to specific personality traits likely to lead to a life of crime rather than criminal behavior itself would seem to be indicated.

Male homosexuality. The question of the genetic contribution to male homosexuality is presently under active debate, and more research is urgently needed. Early hypotheses in this field centered about the conception that male homosexuals may have a female chromosome structure. Certain investigators found a greater proportion of males among the siblings of male homosexuals than would be normally expected. However, with the onset of sex chromatin studies and karyotype analyses, no abnormalities in sex chromatin or sex chromosomes were discovered in male homosexuals. Nevertheless, Slater more recently found a later birth order and a high maternal age in a group of 401 consecutive admissions of male homosexuals. These findings were considered to suggest a chromo-

somal anomaly in some male homosexuals. Klinefelter's syndrome has been associated with a number of cases of homosexuality, transvestitism, and pedophilia, but these symptoms are not generally characteristic of the syndrome.

Twin studies. Some of the highest one egg concordance rates have been those for homosexual behavior in the adult male. In Kallmann's series of 44 male homosexuals, almost perfect concordance was found, whereas in 51 two egg male homosexual twins, the degree of concordance in the co-twin was no higher than what might be anticipated on the basis of Kinsey's statistics for the general population.

These findings were interpreted as suggesting a gene-controlled disarrangement between male and female psychosexual maturation patterns. In this formulation, homosexuality would appear to be a part of the personality structure rather than directly determined by the gonadal apparatus. If this is so, the processes whereby this deviation develops may be studied within the interactional framework of psychiatric genetics. A normal rate of maturation of personality development and an ability to perceive and respond to sexual stimuli, to recognize satisfaction and success, and to utilize these experiences as integrating forces may be crucial to normal sexual role development. Vulnerability factors in these areas may render an individual susceptible to deviant behavior, which is then reinforced accidentally or by family or social surroundings.

A few one egg twin pairs discordant for homosexual behavior have been discovered who also showed important similarities, principally in psychological test findings that indicated sexual confusion and body image distortion. Divergent patterns of experience may be influenced by such factors as differences in the twins' relationships with their parents, frustration in heterosexual contacts, and poor masculine identification in the case of the homosexual twin. The study of many additional cases of this kind may eventually yield a detailed interactional synthesis.

Genetics of Behavior

In the realm of general behavior, there has been a steady and increasing body of data, originating in psychiatric observation of basic differences among individuals, in which the clinician himself has been led to the hypothesis of genetic or constitutional uniqueness.

Integration of genetics in psychodynamics. The science of psychodynamics was always postulated by some psychoanalysts to be part of a unitary conceptual scheme in human biology. These psychoanalysts, such as Rado, analyzed behavioral variations in the gene-specific physiological (i.e., biochemical) context of the organism. In such a scheme the psychodynamic approach, focused on an understanding of motivation and emotional control, may uncover and delineate behavior problems that require for their complete explanation the clarification of the role of genetic transmission. Indeed, this approach was formulated in the

writings of Freud. He always took into consideration both the constitutional and accidental causes of neurotic disease, and he spoke of primary congenital variations in the ego and in the defense mechanisms an individual selects. And in an early essay on the study of twins, Hartmann wrote of personality structure as the result of interaction between heredity and environment. He considered the possibility of character *anlagen* that, in the course of development, differentiate into character traits. He felt that twin studies might throw light on the possible substitution of one trait for another.

Such an integrated approach may assume a central role in future psychodynamic work. In essence, this approach affords an opportunity to recognize fundamental genetic differences among individuals and to correlate these differences with various forms of developmental interaction both before and after birth. Although the role of genetics is not always made explicit in these studies, there are many advantages and potentialities within the scope of workers who combine the methods of both disciplines.

Child studies. In the field of infant and child psychiatry, the integrated approach is becoming very fruitful and pertinent. Intrinsic differences among children have been found to be as powerful as maternal attitudes in determining final behavior patterns. These differences have been measured in various ways. Attention has been paid to sleep, feeding, and sensory responses, to activity types, to motor behavior, and to specific reaction patterns. Variations in drive endowment and reactions to stimuli have been shown to differ. The responses of neonates to various internal and external stimuli are under investigation. Genetic analysis will be the next step in studies of this kind.

Geriatric and animal studies. At the other extreme of human life, normal and pathological phenomena of senescence have been shown to have significant genetic components, as evidenced by studies of twins and their families. Finally, animal research has indicated variations between different strains in such species as mice, rats, and dogs and has applied selective breeding methods to produce extremes of behavioral characteristics.

Demographic and Social Problems

Many demographic problems fall within the scope and interest of the psychiatrist. Dysgenic trends in human populations include wars, certain differential reproductive patterns, improvement in the efficiency of therapeutic procedures not accompanied by directed guidance as to reproduction, and such mutagenic procedures as exposure to radiation. The effects of migration, of socioeconomic drift, and of differential fertility are constantly in the forefront of discussions regarding trends in the prevalence or distribution of psychiatric disorder.

Reproductivity of schizophrenics. There is current concern with the reproductivity of schizophrenic

parents. Available data clearly indicate the increased risk of schizophrenia in the offspring of such parents, ranging from over 10 per cent, if one parent is affected, to over 50 per cent, if both are affected. Modern treatment methods in the past two decades have lessened the amount of time a schizophrenic patient remains in the hospital. At the turn of the century, the reproductivity rate of schizophrenic patients was about half that of the corresponding general population. This ratio increased only slightly through the 1930's. However, in a study of reproductivity changes between 1934 to 1936 and 1954 to 1956 (based on large samples of schizophrenic patients in New York), the rate in the earlier period was 58 per cent that of the general population, but in the later period it was 87 per cent that of the general population. Moreover, there seemed to be a similar increase in reproductivity for the siblings of the schizophrenic patients in the sample. About 2 per cent of the patient marriages were between two schizophrenic patients. If the reproductive rate of schizophrenics is approaching that of the general population, any selective disadvantage that schizophrenic illness may have had in terms of its evolutionary history may now be in the process of disappearing. This fact alone spurs the search for methods of preventing and treating this condition. Meanwhile, these data are available for marriage and parenthood counseling of the many families who request such guidance. The developmental hazards of children born into homes in which one or both parents are schizophrenic include overwhelming proportions of broken homes, displacements, and chaotic lives during many rehospitalizations of the parents, in which both the child and the parent are harmed. Many individual tragedies may be avoided if sound guidance is available when requested by patients and their families.

Genetic Counseling

In clinical practice the final common pathway of increased knowledge in the areas of genetics and family guidance is the responsible practice of marriage and parenthood counseling when there is a gene-borne condition present in one of the families concerned. When doubt exists regarding important and emotion-laden decisions as to marriage and parenthood, people must have access to trained professional advisers who are able not only to elicit the facts and evaluate them scientifically but also to resolve fears and misunderstandings and to be aware of the impact of their procedures upon their patients.

Genetic counseling may represent a short term course of psychotherapy based on psychological understanding and conducted according to established techniques of psychiatric interviewing. The counselor must be well versed in the medical, legal, and psychological implications of such procedures as contraception, sterilization, abortion, artificial insemination, and adoption. From the clinical point of view, responsible genetic counseling provides the most direct

application of medical knowledge in the field of genetics to the patient and his family.

Suggested Cross References

For more detailed descriptions of the various clinical syndromes discussed in this section, see Chapter 15 on schizophrenia, Chapter 17 on the depressive psychoses, Chapter 22 on mental retardation, and Section 26.3 on homosexuality.

Section 40.1, Chess's section on the adjustment reactions of children, in the child psychiatry area (Area H), deals more fully with the constitutional behavioral reactions mentioned in this section.

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2.2 NEUROCHEMISTRY

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Although one of the primary objectives of this textbook is to study the abnormal behavior of patients with mental disturbances, normal behavior must also be examined, if only to permit comparison of the nor-

mal individual with the disturbed patient. In the attempt to gain insight into behavior, neurochemical findings in the normal individual must be studied as well as biochemical changes accompanying abnormal behavior. We have not attempted to provide a complete survey of neurochemistry in this section; it is devoted to dealing with neurochemical data available on the human brain and to summarizing data too recently published to be available in textbooks.

Normal Brain Constituents and Cerebral Metabolism

Developing brain. The growth and development of the brain, including the attainment of the adult levels of metabolism and of the various chemical constituents, proceeds in all species of animals from the time of the appearance of the neural streak until maturity. The chronological relation of this maturation to events such as implantation, birth, and opening of the eyes varies in the different species of animals. There are some indications that the newborn human is more mature than the newborn rat, rabbit, cat, and dog. However, development after birth appears to proceed more slowly in man than in other species studied.

The changes in water, lipid, and protein composition that occur in the human brain during the first few years of life are similar to those in other animals (see Figure 1). The infant human brain reaches its adult level of deoxyribonucleic acid (DNA) at about 1 year of age. The percentage of ash in the cerebral hemispheres decreases progressively from the 3rd month of conceptual life to birth. The development of succinic dehydrogenase and the ability of the human brain to maintain oxygen consumption during fetal life suggests the same neurophylogenetic pattern that has been established for other animals. Specifically, this means that the older

parts of the brain, the medulla oblongata, for example, mature before the cerebral cortex. Although these data are only general indications, they suggest that the human brain develops in the same fashion as does that of the other animal species but not necessarily on the same time table.

The brain of the fetus shows a distinctive cerebroside pattern by the 8th fetal month. By the 3rd fetal month the gangliosides show an adult type of pattern, which may be changed by birth trauma, with marked reduction of trisialogangliosides and disialogangliosides. This change is possibly due to a rapid liberation of sialic acid due to anoxemia.

Bertler found both norepinephrine and 3,4-dihydroxyphenylethylamine (dopamine) in the 5-month-old fetus, although dopamine was not present at the end of the 1st trimester. At 5 months of fetal life, dopamine was very low. By 8 months, dopamine had increased nearly to the level found in the adult human brain. Although norepinephrine had also increased by 8 months, its rate of increase was not as high as that for dopamine. These data suggest a different maturation pattern for norepinephrine and dopamine. Hornykiewicz has suggested that the newborn human infant's relative development of the hypothalamus and related autonomic functions, as compared with the extrapyramidal motor functions, may account for the difference in the maturation patterns of norepinephrine and dopamine.

Mature brain. Analyses of adult brains are more frequent than similar work on fetal brains. Of the many constituents of the adult brain that have been studied, variations in some appear to be particularly relevant to normal and abnormal behavior. Below is a brief review of the brain constituents for which there are analyses of human brain available.

Minerals. In spite of the fact that the mineral content of the human brain would be expected to change slowly after death, there have not been many studies of adult human brains. Among the analyses that are available are those for copper, magnesium, rubidium, barium, silicone, strontium, phosphorus, and iron. Copper is of special importance because of its relation to Wilson's disease. This element reaches its peak concentration at about the same time brain growth is complete, that is, 19 or 20 years. In general, the copper content of gray matter is two to three times higher than that of white matter. The substantia nigra and the locus coeruleus are particularly rich in copper.

The very important role of the electrolytes, Na^+ , K^+ , Ca^{++} , Mg^{++} , and Cl^- , in neural transmission is discussed elsewhere in this book.

Lipids. Table I gives the currently accepted classification of the lipids in the brain. Cerebrosides are typical myelin lipids, as shown by the predominant amount of cerebrosides in white matter as compared with the cortical gray matter. In the cerebral cortex, the localization of cerebrosides cannot be restricted to the few visible myelin sheaths. Undoubtedly, these substances are also localized in the membranes of myelin-free nerves and the membranes of nerve cells themselves. Cerebrosides also play a part in the formation of the cell membrane in the glial cells. Thus, they should be considered as membrane lipids. Gangliosides, on the other hand, are localized in the nerve cell bodies and probably also in dendrites and axons. It seems unlikely that gangliosides normally occur in glial cells.

The fatty acid composition of human cerebrosides from four regions of the brain shows that the content of these substances differs from region to region, as does the relative content of hydroxy acids. However, the distribution of acids within each class is independent of brain location. The normal saturated acids contain stearic and lignoceric as major acids, but fairly large amounts of C_{22} , C_{23} , and C_{25} acids are also present. The hydroxy-saturated acids are similar but contain

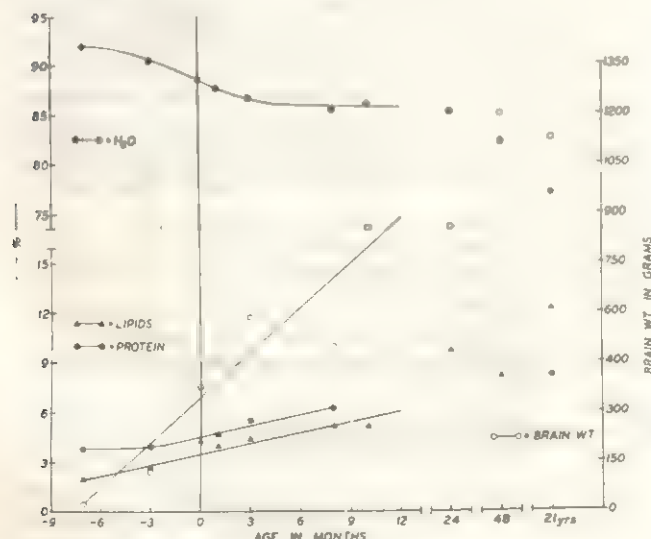


FIGURE 1. Changes in composition of human brain during development. The figures are combined from Tilney and Rosett, and MacArthur and Doisy. (Taken from Himwich, W. A. Biochemical and neurophysiological development of the brain in the neonatal period. In *International Review of Neurobiology*, C. C. Pfeiffer and J. R. Smythies, editors, vol. 4, p. 117. Academic Press, Inc., New York, 1962.)

TABLE I
Classification of Lipids Found in the Nervous System^a

- A. Phosphatides (phospholipids)
 - 1. Glycerophosphatides (phosphoglycerides)
 - Phosphatidylcholines (lecithins)
 - Phosphatidylethanolamines
 - Phosphatidylserines
 - Plasmalogens (phosphatidylethanolamines)
 - Cephalin B
 - 2. Inositol phosphatides (phosphoinositides)
 - 3. Sphingomyelins (phosphosphingosides)
- B. Glycolipids
 - 1. Cerebrosides (glycosphingosides)
 - 2. Cerebroside sulfate esters (sulfatides) } Sphingolipids
 - 3. Mucolipids
 - Gangliosides
 - Strandin
- C. Nonsaponifiable lipids
 - 1. Sterols
 - 2. Hydrocarbons
- D. Neutral fat (triglycerides)
- E. Protein-bound lipids
 - 1. Proteolipids
 - 2. Phosphatidopeptides
 - 3. Lipoproteins

^a Taken from Rossiter, R. J. Chemical constituents of brain and nerve. In *Neurochemistry*, K. A. C. Elliott, I. H. Page, and J. H. Quastel, editors, p. 10. Charles C Thomas, Springfield, Ill., 1962.

little hydroxystearic acid; the unsaturated acids of both classes contain the C_{24} acid as the major constituent.

Myelin has a higher lipid content than white or gray matter, 78 to 81 per cent, as compared to 49 to 66 per cent and 36 to 40 per cent, respectively. This substance also contains higher percentages of cerebrosides and cholesterol and lower percentages of ethanolamine, glycerophosphatides, and choline glycerophosphatides than gray matter. The molar percentages of serine glycerophosphatides are reported to be about the same in each tissue. The extramyelin portion of white matter has a lipid composition similar to that of myelin but quite different from that of gray matter.

The fatty acid composition of sphingomyelins from gray matter is quite different from that of sphingomyelins from white. Before myelination, C_{18} -saturated acid is the predominating acid in both gray and white matter. The proportion of very long chain acids (C_{22} to C_{26}) in white matter increases with age and reaches about 70 per cent when the process of myelination is complete.

O'Brien et al. analyzed brain lipids, especially cerebroside sulfate esters or sulfatides, in human gray and white matter. The major fatty acids are C_{24} -saturated, and C_{24} -monounsaturated. Odd chain fatty acids are present as well as mono-unsaturated acid of both odd and even chain fatty acids, but no polyenes were detected.

By far the most extensive work on the human brain throughout life has been by Bürger, who investigated 378 brains obtained from autopsies on individuals ranging in age from birth to 90 years. According to his data, the weight and the volume of the brain attains a maximum during the 3rd decade, averaging 1,394 gm. in the male; at the age of 90 the volume of the brain is reduced to an average of 1,161 gm. As brain substances are lost, the percentage of nitrogen and protein falls (see Figure 2). DNA and ribonucleic acid (RNA), which form part of the liponucleoproteins, also diminish. The concentration of brain lipids is impaired in old age. This

change applies to all lipid fractions with the exception of a small one, the "rest lipid," which enlarges slowly to the 8th and 9th decades of life, at which time it composes about 8 per cent of the total lipids. This "rest" fraction appears to be made up in part of a yellow lipoprotein that accumulates and becomes widespread in old age. The water content of various brain parts reveals a phyletic order, the oldest areas being the driest. In addition to these differences, the decrease in water content in general throughout the early decades of life is reversed during the senium. The early fall may be ascribed chiefly to loss of extracellular water as myelin is laid down. The late increase is due mainly to an enlargement of the extracellular compartment, for the intracellular one probably decreases.

Amino acids and proteins. Relatively few analyses of human brain in regard to amino acid content or proteins per se have been made. Some information is available regarding the proteins which are contained in the lipoproteins. Data also are given on the total protein in human brain in Figures 1 and 2.

Miscellaneous substances in human brain. Biotin is important because it appears to be involved in lipid metabolism. Disorders of lipid metabolism are among the most studied abnormalities of human neurochemistry. The differences in biotin content among brains tend to be greater than among regions in the same brain. When values are based on dry weight, the highest concentrations are found in gray matter.

CHEMICAL BIOMORPHOSIS OF THE HUMAN BRAIN
MALE & FEMALE AVERAGES

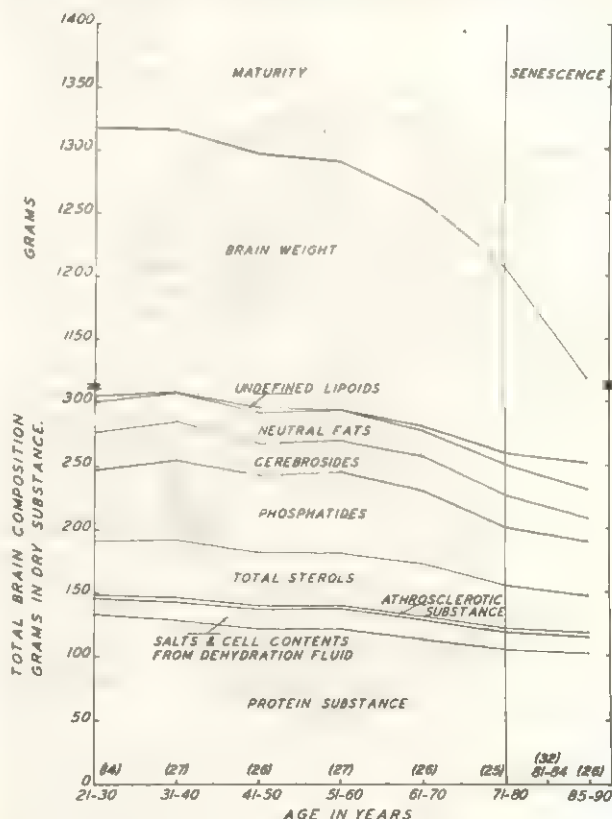


FIGURE 2. Changes in brain constituents and brain weight. Brain constituents are calculated on a basis of dry weight, whereas the weights of the entire brain include all constituents as well as water. (Adapted from Bürger. From Himwich, W. A., and Himwich, H. E. *Neurochemistry of aging*. In *Handbook of Aging and the Individual*, J. E. Birren, editor, p. 187. University of Chicago Press, Chicago, 1959.)

This difference disappears when values are placed on a fresh weight basis. The human brain has been shown to contain arabinose and xylose as well as glucose and galactose.

Biogenic amines. The distribution of the various catecholamines in the human brain suggests that dopamine plays an important part in the functioning of the extrapyramidal motor centers. This conclusion is based on these facts: (1) Dopamine occurs almost exclusively in the corpus striatum. (2) Its level is reduced in Parkinson's disease. (3) L-Dihydroxyphenylalanine (a precursor of dopamine) has a beneficial effect on the akinesia of Parkinson sufferers. Dopamine occurs principally in the structures related to involuntary motor function, for example, the basal ganglia and the substantia nigra (see Figure 3). Within the basal ganglia most of the material is found in the phylogenetically youngest part of these structures. Homovanillic acid, a metabolite of dopamine, exceeds 1 μ g. per gram in the caudate nucleus, the putamen, the globus pallidus, and the substantia nigra. The data on dopamine and homovanillic acid for the globus pallidus suggest that a high dopamine turnover may occur in this region, though very little dopamine accumulation occurs.

The recent large body of work on the cellular localization of the monoamines, although done largely in the rat, contain suggestive data on how these substances exist and function in the central nervous system. Dopamine, noradrenaline (NA), and serotonin (5-HT) are present in specific neurons, largely in the mesencephalon. The fibers arising from neurons containing dopamine go primarily anterior, those from NA neurons go both cephalad and caudad, and those from the 5-HT neurons go principally down the spinal cord. The NA

and 5-HT fibers descend from the medulla and possibly higher levels. The localization of 5-HT nerve cells is entirely different from that of NA or dopamine nerve cells. The former are almost exclusively in the raphe nuclei; the latter cells are generally in a more lateral position.

Enzymes. Enzyme studies have been particularly difficult to conduct in man because of the changes that occur after death. However, certain enzymes have been studied in the human brain. For example, the distribution of diphosphopyridine nucleotide-diaphorase in the human brain has been mapped by the excellent histochemical techniques of Friede. This enzyme shows a tendency toward a caudo-cranial differentiation in the chemical architecture of the brain. The thalamus and cerebral cortex are the most variable regions. The pattern of distribution of the diphosphopyridine nucleotide-diaphorase is almost identical with that of succinic dehydrogenase and of capillarization in the medulla oblongata. Previous material suggests a similar distribution of cytochrome oxidase and triphosphopyridine nucleotide-diaphorase. The patterns appear to follow the general gradations of tissue oxidation and energy metabolism. This knowledge can be applied to problems of neuropathology, since the mapping of the deposition of lipofuscin, a pigmented lipid in the aging human brain, shows that its extent is proportional to regional gradations of oxidative enzyme activity. This fact has led to the suggestion that the deposition of lipofuscin is proportional to the "wear and tear" in an area, that is, to the intensity of the oxidative energy metabolism.

The distribution of alkaline phosphatase, acid phosphatase, and nonspecific esterase in human nervous tissue shows that alkaline phosphatase is present in the vessel endothelium, the arachnoidal cells, and the external part of the first cortical layer. It is present in the cytoplasm, the nuclei being negative. Acid phosphatase and nonspecific esterase are seen in the cytoplasm and the processes of neurons and normal glial cells, and the nuclei are negative. Acid phosphatase in the human cerebellar cortex is found primarily in the cytoplasm of Bergmann cells. Some activity is also present perivascularly and in the cytoplasm of Purkinje cells, and in Golgi cells. Carbonic anhydrase in the human brain has been determined in 32 anatomical parts. The distribution in gray matter roughly parallels the metabolism of the area, as indicated by comparison with blood flow, rates of oxygen consumption, and distribution of succinic dehydrogenase. The high activity of carbonic anhydrase in subcortical white matter suggests a special function for this enzyme.

The distribution of acetylcholinesterase (AChE) and butyrylcholinesterase (BuChE) has been followed in the human brain by the Warburg manometric technique and Koelle's histochemical method. The AChE activity is consistently higher than the BuChE activity in gray matter. AChE is active, in increasing order, in the cerebral cortex, cerebellar cortex, thalamus, globus pallidus, and caudate nucleus. The BuChE activity is higher in white matter than in gray matter, and the AChE activity is primarily present in a granular pattern in the protoplasm of the neurons. The distribution of cholinesterase activity in white matter is diffuse. The cholinesterases of human spinal fluid and the brain have also been studied by means of electrophoresis and chromatography. Three cholinesterases are present: two butyrylcholinesterases and one acetylcholinesterase. The electrophoretic mobilities of these cholinesterases, compared with those in plasma, suggest that the acetylcholinesterase in spinal fluid derives from the brain. No decision can yet be made as to the origin of the butyrylcholinesterases.

The highest activity of glutamic acid decarboxylase is also present in the extrapyramidal motor system. As yet no data are available on the relationship of this enzyme to extrapyramidal motor syndromes.

Because of the uneven distribution of the biogenic amines, interest has grown in the patterns of concentration of the

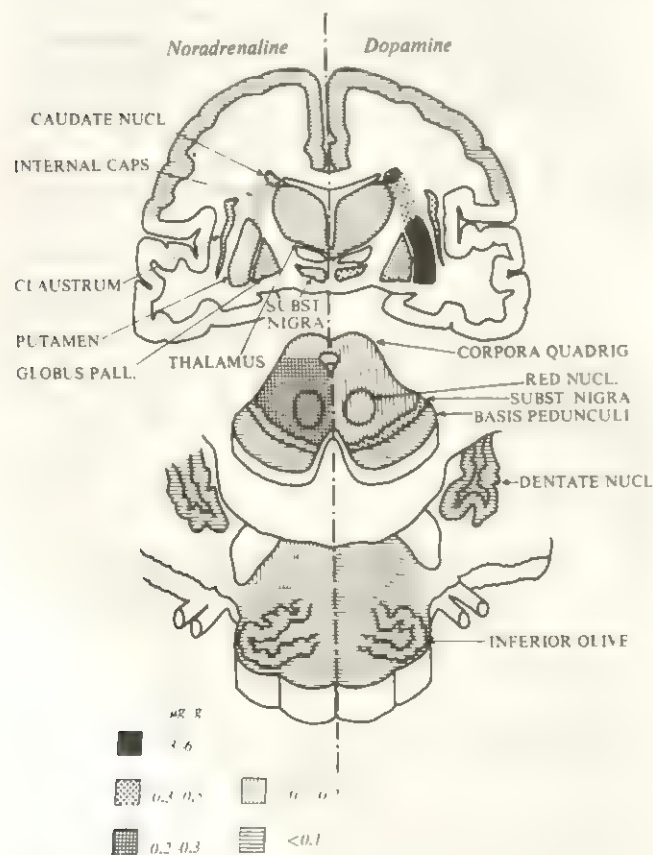


FIGURE 3. Noradrenaline and dopamine in the human brain. (From Bertler, A. Occurrence and localization of catecholamines in the human brain. *Acta Physiol. Scand.*, 51: 97, 1961.)

enzymes responsible for their elaboration and destruction. The activities of L-dihydroxyphenylalanine (L-dopa) decarboxylase and monoamine oxidase do not correspond with the distribution of the respective amines.

These relatively sparse data indicate the areas of research in human brain chemistry of greatest interest at the present time. The data on lipids seem promising, as explanations of the various lipid degenerative diseases can be based on the abnormalities of lipid structure and composition. The biogenic amine distributions are important in clarifying neurological diseases such as parkinsonism. Moreover, the effects of psychotropic drugs on these compounds promise to aid in our understanding of their action and of the fundamental chemistry of the conditions in which they are effective.

Cerebral metabolism. (The normal adult brain uses about 3.5 ml. of oxygen per 100 gm. of brain per minute. For a human brain of average weight, this is a total consumption of approximately 50 ml. of oxygen per minute, or about 20 per cent of the basal oxygen requirement of the body as a whole. With age and degenerative disease there may be a decrease in cerebral metabolism (see Table II). (The evidence is good that the intact brain utilizes glucose predominantly as a normal substrate for energy, with no evidence of significant utilization of other substrates for this purpose. Glucose is essential for the complete normal functioning of the human brain, and few substances, if any, can substitute for glucose in this respect, even under unusual circumstances.) Cerebral blood flow on an average in the normal alert subject is 54 ml./100 gm./minute; in the sleeping subject it is 65 ml./100 gm./minute. Glucose consumption is 5.4 mg. 100 gm. minute. (On the basis of whole brain, blood flow averages 750 ml. per minute, oxygen consumption 46 ml. per minute, and glucose consumption 7.6 mg. per minute.)

Disorders Affecting Brain Constituents and Metabolism

Anoxia. (The brain is basically dependent on its supplies of glucose and oxygen. For this reason, the two most important things that can affect the brain are anoxia and hypoglycemia.)

Impairment of oxygen supply may be caused by a failure of any link in the long chain of events beginning with the inspiration of air and ending with a final utilization of oxygen by the tissues. It may occur because of (1) insufficient oxygen in the respired gases, as in high altitudes, (2) obstruction of respiratory passages, or (3) failure of the respiratory centers. The carriage of oxygen from the outside air to the tissues can be impaired by myocardial insufficiency, reduction of the oxygen carrying power of the blood, decrease of blood pressure (as in shock), relative cerebral ischemia, or enzymatic inactivation at the cellular level. (Even if oxygen is available and all of the processes concerning it are normal, the require-

TABLE II
Metabolism^a

Subjects	Cerebral Blood Flow	Cerebral Oxygen Consumption	Cerebral Vascular Resistance	Arterial-Cerebral Venous Oxygen Difference	Respiratory Quotient	Mean Femoral Arterial Blood Pressure
	ml.	ml.	mm. Hg	volumes %		mm. Hg
Healthy young men ^b .	54	3.3	1.6	6.3	0.99	86
Patients with hypertension ^c						
Various ages	57	3.5	2.8	6.2	0.90	153
61-70 yrs.	50	3.2				
Patients 56-79 yrs. ^d . .	44	2.9	2.4	6.5		97
Patients with senile psychosis ^e	41	2.8	3.0	6.8	0.95	121
Healthy 71-year-old men ^f	59	3.4	1.5	5.85	0.91	91.4

^a Data given per 100 gm. of brain per minute. In order to compare the data obtained by the method of Kety and Schmidt with those of Scheinberg and Stead, in the case of the latter the values for the cerebral blood flow and oxygen consumption are decreased by 15 per cent, and the cerebrovascular resistance is increased by the same percentage. (From Himwich, H. E., and Himwich, W. A. Neurochemistry of aging. In *Handbook of Aging and the Individual*, J. E. Birren, editor, p. 187. University of Chicago Press, Chicago, 1959).

^b Kety, S. S., and Schmidt, C. F. The effects of altered arterial tensions of carbon dioxide and oxygen on cerebral blood flow and cerebral oxygen consumption of normal young men. *J. Clin. Invest.*, 27: 484, 1948. Scheinberg, P., and Stead, E. A., Jr. The cerebral blood flow in male subjects as measured by the nitrous oxide technique. Normal values for blood flow, oxygen utilization, glucose utilization and peripheral resistance, with observations on effect of tilting and anxiety. *J. Clin. Invest.*, 28: 1163, 1949.

^c Hafkenschel, J. H., Crumpton, C. W., and Friedland, C. K. Cerebral oxygen consumption in essential hypertension. *J. Clin. Invest.*, 33: 63, 1954.

^d Scheinberg, P., Blackburn, I., Rich, M., and Saslaw, M. Effects of aging on cerebral circulation and metabolism. *Arch. Neurol. Psychiat.*, 70: 77, 1953.

^e Freyhan, F. A., Woodford, R. B., and Kety, S. S. Cerebral blood flow and metabolism in psychoses of senility. *J. Nerv. Ment. Dis.*, 113: 449, 1951.

^f Sokoloff, personal communication.

ment may be relatively excessive, as during convulsive seizures.)

(Anoxia results in an impairment of the energy supply to the brain. It can be withstood successfully for only about 5 minutes in the adult.)

(Anoxia is an important problem in the neonate.) In fact, there is some tendency for all disorders of the newborn to be ascribed to anoxia or to birth injury. Chronic anoxia, often beginning in utero, may lead to various neurological disorders and to death. However, there are reports on one child who withstood anoxia for 14 minutes with no apparent damage and on another child who recovered from a lack of oxygen

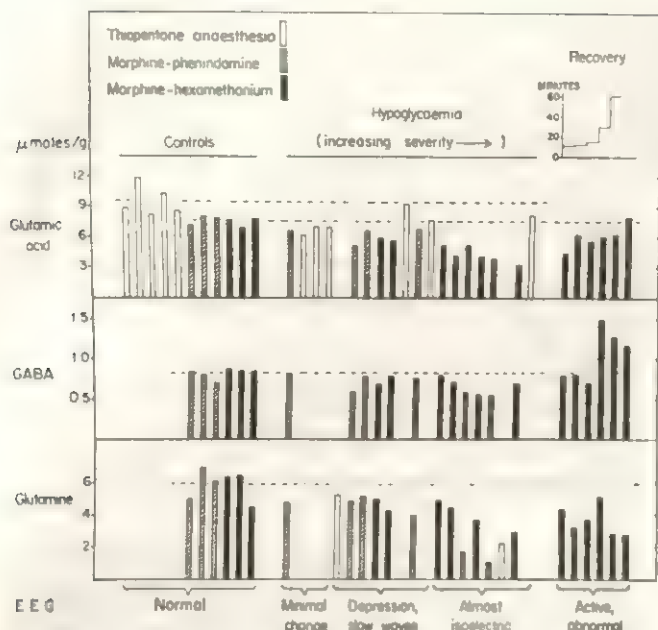


FIGURE 4. Changes in cerebral glutamic acid, GABA, and glutamine in relation to electrographic patterns during hypoglycemia and recovery. Dotted lines represent mean control values. (Taken from Tews, et al. Chemical changes in the brain during insulin hypoglycaemia and recovery. *J. Neurochem.*, 12: 688, 1965.)

after 25 minutes. It is difficult to distinguish between the effects of anoxia per se and of concomitant pathological processes of different origins in the fetus. Animal studies have cast some light on this problem, but it is still one that needs a great deal of research.

In any animal suffering from anoxia, survival depends largely on the release of energy from anaerobic processes. A small yield of energy is made available as substrates containing unsaturated hydrogen bonds accept hydrogen atoms from compounds that are thus oxidized to yield energy. Such compounds include unsaturated fatty acids and the sulfhydryl-containing compounds. Glycolysis, or the anaerobic breakdown of carbohydrate, especially of glucose, is the most important source of anaerobic energy. In accordance with the Embden-Meyerhof scheme, glucose is broken to form pyruvic acid and, finally, lactic acid. Glycolysis is a wasteful process in comparison with oxidation; in glycolysis 12 molecules of carbohydrate supply approximately the same amount of energy as the oxidation of 1 molecule of that substance.

Another important anaerobic source of energy comes from the breakdown of energy-rich phosphate bonds, such as those contained in phosphocreatine and adenosine triphosphate. These and similar energy-rich compounds are built up by the energy derived from glycolysis, and the latter process is reversed, as most of the lactic acid formed anaerobically is reconverted to carbohydrate by the energy released in oxidations. If glycolysis is stopped for any reason, energy-rich phosphate bonds are depleted as a sec-

ondary result. This depletion, however, is not complete; a small amount of energy-rich material remains.

Tews and Stone studied the effect of anoxia induced by the administration of 4.5 per cent oxygen in nitrogen for 12 to 13 minutes in adult dogs. There were significant increases in alanine, γ -aminobutyric acid (GABA), glutamic acid, leucine, tyrosine, and lactic acid, accompanied by decreases in aspartic acid. Remaining unchanged, however, were most of the free amino acids and related compounds (see Figure 4).

Hypoglycemia. In hypoglycemia the brain first makes use of the glycogen it has stored in the central nervous system. Figure 5 shows the changes in glycogen content during insulin hypoglycemia in nine experimental dogs. In general, the upper parts of the brain lose their glycogen deposits before the lower areas are depleted. After the glycogen stores are gone, the brain then makes use of whatever material may be available for energy. The depletion of glycogen in the brain is followed by a reduction of material such as glutamic acid. Such a condition can be obtained only if the animals are given artificial respiration and have some means of maintaining their body temperature. The use of glutamic acid to supply energy does not, however, support the electrical activity of

Number of Experiment	Cause	Corpora quadrigemina	Cerebral gray	Thalamus	Cerebellum	Medulla	Cord
Hypoglycemia							
1	8	26	56	45	40	35	46
2	12	28	33	40	32	26	14
3	8	32	21	27	33	24	14
4	1	8	16	8	30	49	122
5	20	0	11	18	18	36	45
6	12	13	19	20	8	19	16
7	6	15	10	8	1	31	43
8	0	0	2	0	1	31	32
9	0	2	6	0	6	13	26
Normal							
Average	58	50	73	62	35	37	29
Range	44-71	37-60	45-108	41-68	23-46	21-47	15-31

FIGURE 5. Glycogen content of parts of the central nervous system of hypoglycemic dogs. Observations of nine experiments are presented here. A line has been drawn to separate the glycogen contents of the animals into two divisions. The values to the left of the line are significantly lower than the lowest values for the normal range for the same part. Those to the right are not significantly lower than the normal. In general, the upper parts of the brain lose their glycogen deposits before the lower areas are depleted. (Taken from Chesler, A., and Himwich, H. E. Effect of insulin hypoglycemia on glycogen content of parts of the central nervous system of the dog. *Arch. Neurol. Psychiat.*, 52: 114, 1944.)

the cortex, even though 50 per cent of the glutamic acid remains. Other amino acids are also affected by hypoglycemia (see Figure 6). If the animal is kept alive long enough, functional and structural changes occur in the brain.

The changes that occur in insulin hypoglycemia have also been analyzed from the standpoint of the mineral content of the brain. Yannet, Geiger, and associates have shown that a marked loss of potassium and an increase in sodium occur with insulin hypoglycemia. The cats used by Yannet also had marked neurological defects. Acetylcholine is lowered in the brain in hypoglycemia.

Convulsions. Convulsions are some of the most dramatic and interesting phenomena that the medical practitioner sees in his patients. Although there has been a great deal of clinical research in the field, relatively little if any work has been done on the changes in the human brain before, during, and after a convulsion. Most of the work in this area has been done with convulsions induced experimentally in animals.

With methionine sulfoxamine (MSO) at 6 mg. per kilogram, the dog does not always have convulsions, even though there is evidence of toxic reaction. Under these conditions there is the expected decrease in glutamate and glutamine, due probably to inhibition of glutamine synthetase. The values for methionine and cystathione show a disturbance in methionine metabolism due to the MSO. The inhibition of glutamine synthetase by MSO leads to the reduction of protein synthesis in cerebral tissues, which can be reversed if methionine is given before or shortly after MSO treatment. The effects of the convulsive hydrazids seem to be related to GABA, glutamic acid decarboxylase, the GABA- α -ketoglutarate transaminase, and vitamin B₆. GABA is reduced in vivo by convulsive hydrazids whereas hydroxylamine raises the level and tends to reduce cerebral excitability. Five significant changes occur in cerebral constituents with these compounds: GABA is decreased, and its precursor, glutamate, shows a trend toward a higher value, although this difference is not statistically significant. Alanine, ammonia, lactate, and tyrosine are increased. The data by Tews and Stone are compatible with the suggestion that the seizures caused by drugs that inhibit glutamic acid decarboxylase or GABA- α -ketoglutarate transaminase result from the reduced rate of metabolism through the GABA pathway.

In animals treated with picrotoxin or pentylene-tetrazol (Metrazol), neither of these convulsants produces a striking effect on the free amino acid content of a brain frozen while a seizure is in progress. Picrotoxin causes a slight reduction in aspartic acid; with Metrazol, the change is not significant. Animals given fluoroacetate and fluorobutyrate have also been studied, since both compounds cause violent seizures and alterations in the content of cerebral constituents. With both of these substances, significant

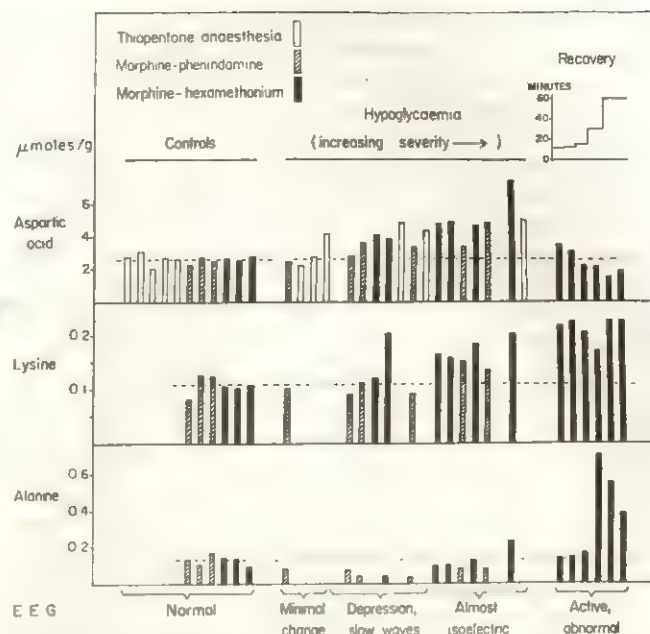


FIGURE 6. Changes in cerebral aspartic acid, lysine, and alanine in relation to electrographic patterns during hypoglycemia and recovery. Dotted lines represent mean control values. (Taken from Tews, et al. Chemical changes in the brain during insulin hypoglycaemia and recovery. *J. Neurochem.*, 12: 689, 1965.)

changes are found for alanine, ammonia, citrate, lactate, leucine, and serine. Decreases are noted for aspartic acid, glutamate, and glycogen. These fluoro compounds block the tricarboxylic cycle prior to the ketoglutarate oxidase step and produce a decrease in glutamic and aspartic acids. Decreases in brain glycogen have been observed during seizures induced by fluoro compounds, in contrast with Metrazol, in the dog. Probably convulsions per se do not reduce brain glycogen, except in a transient fashion. If blood glucose and cerebral circulation are adequate, the normal value is soon restored.

In studying a group of epileptic and nonepileptic mice, Naruse and his co-workers showed that ammonia, glutamate and glutamic acid were low in the brains of the epileptic mice, and GABA was 40 to 50 per cent higher. The level of total acetylcholine was 40 to 60 per cent higher than in the control strain, and the rate of resynthesis of acetylcholine was faster.

The human epileptogenic cerebral cortex has been studied by Tower. The biochemical lesion seemed to involve an inability to build up bound acetylcholine, a metabolic loss of glutamate in incubation in vitro, and reversal of normal potassium and sodium levels. These data were used as a basis for the treatment of epileptic patients.

Seizures have been linked to carbonic anhydrase by Millichap, who studied susceptibility to seizures in young animals as related to the activity of this enzyme. However, Robinson and Tizard pointed out that many other factors, such as dendritic development and

myelinization, may be of equal importance in permitting the propagation of abnormal discharges. Nonetheless, a parallel can be demonstrated in adult animals between the degree of carbonic anhydrase inhibition and the degree of anticonvulsant activity.

Lipidoses. Lipidoses, abnormalities of lipid metabolism, are an enigmatic group of disorders which provide a fertile field for future study.

Tay-Sachs disease. A large study headed by Korey included both biochemical and electron microscopic analyses of brains of patients with Tay-Sachs disease. These patients were assessed clinically and then subjected to cerebral biopsy. These investigators found that the neuronal cytoplasm was crowded with distinctly laminated bodies that had no apparent association with normal cellular organelles. The macroglia pericytes and the endothelial cells contained degraded lipid. Myelin degeneration was of the Wallerian type, and the phagocytes contained myelin fragments and lipid bodies. Fibrous astrocytosis and an increase in extracellular space developed as the disease progressed. Biochemical studies of Tay-Sachs disease are complicated by the occurrence of the disease in a rapidly developing brain, showing both maturational changes and effects secondary to the primary pathology of the disease. Gangliosides were found to accumulate within the cells, not only in gray but also in white matter. An increased hexosamine content of cerebral tissues was also characteristic of the condition and possibly reflected the presence of asialo derivatives of gangliosides. In the early stages of the disease, brain slices showed normal respiration and lipid formation. A decrease in the free amino acid pool, however, occurred in the central nervous system, which may limit protein synthesis. Although the enzymes present in homogenates of diseased brains were capable of acting on normal brain, Tay-Sachs brain, or beef brain, there may be structural abnormalities in some of the gangliosides in Tay-Sachs disease that make them resistant to hydrolysis by enzymes in the diseased brain tissue. The membranous cytoplasmic bodies (MCB) have been isolated from homogenates of Tay-Sachs brain and analyzed for lipids. The data of Samuels and his colleagues, who attempted to form MCB in an artificial system, suggest that these bodies are neither lysosomes nor derivatives of normal organelles, but may result from spontaneous aggregation of gangliosides, cholesterol, and phospholipids to form a molecular complex.

Leukodystrophy. Austin has described the biochemical changes in the globoid leukodystrophy (GLD), which is a fatal, genetically determined disorder of myelin that chiefly affects infants and children. The most consistent finding was an increase in the ratio of cerebrosides to sulfatides. The data, however, showed that GLD brains contain the usual amount of cerebrosides; the condition, therefore, is not, strictly speaking, a cerebroside lipidosis. However, the possibility of focal disproportional dyslipidoses should not be overlooked. This may appear as

an increase in cerebrosides relative to sulfatides where there are islands of globoid elements. In the globoid bodies there were relative increases in cerebrosides identified as cerebron and kersasin. These increases were always in relation to a marked decrease in sulfatides and were usually evident in relation to the sphingomyelin as well. Fractions with higher globoid counts contained more than four times as much cerebrosides as sphingomyelins. The results suggest that the GLD fractions may share in the lipid imbalance in a manner similar to that of the globoid bodies.

Metachromatic leukodystrophy (sulfatidosis), studied by Svennerholm, shows a decrease of all lipids in the brain, especially cerebrosides, but an increase of sulfatides. The primary lesion may be the defective anabolism of cerebrosides with secondary increased formation of sulfatides.

Gaucher's disease and Niemann-Pick disease. In Gaucher's disease, a systematized storage disease of the reticuloendothelial system involving deposition of cerebrosides in liver and spleen, there are clinical signs of central nervous system involvement. Gaucher cells have been found in the adventitia of the blood vessels, but no increase has been detected in the brain. Niemann-Pick disease, on the other hand, involves storage of sphingomyelins in reticuloendothelial tissues. So far, analyses of the sphingomyelins found have shown no difference from the normal. Analyses of brains in both Gaucher's and Niemann-Pick diseases show a low concentration of myelin lipids, and the fatty acid analysis of sphingomyelins have an immature pattern.

Demyelinating diseases. The interest in lipidoses extends to the demyelinating diseases as well. Control glial fractions from advanced multiple sclerosis cases show relatively less sphingolipid than do glial fractions from GLD, whereas glial fractions from less advanced diffuse disseminated sclerosis have relatively more. In multiple sclerosis, there appear to be changes in the lipids of the brain; that is, there is a deficiency of the plasmalogens of the total phospholipids. Analyses of the carboxyl esters and the long chain fatty acids reveal even-numbered saturated fatty acids in visually intact white matter. Phospholipids seem to be reduced in concentration, possibly because of a predemyelinating removal in the very early stages of degeneration. The appearance of cholesterol esters in the white matter of patients with multiple sclerosis is also of interest, since the appearance of these compounds is one of the earliest and most characteristic features of Wallerian degeneration.

Edema. Brain edema is thought to occur following neurosurgical procedures and in the areas adjacent to brain tumors in patients who have received electroshock. Little can be done to study the human brain under these circumstances, and so the effects of edema on brain composition must be inferred from animal studies.

Anoxia produced in any way apparently causes

rapid swelling of the brain, with an increase in intracranial pressure. When edema was produced by means of distilled water perfusion in monkeys and rabbits, the edematous brain contained more sodium and more water, especially in the white matter, but less potassium. Carbohydrate metabolites were altered in such a way as to indicate increased anaerobic glycolysis. The data obtained by Herschkowitz et al. suggest that the edema was mainly in the white matter, probably within the myelin sheath, and perhaps some in the extracellular space. When edema is produced by means of an experimental glioma in the mouse, the tissue adjacent to the implanted tumor becomes edematous, with an increase in water and sodium content. The chief alteration detected by electron micrography was a swelling of glial cell processes. It is suggested that there is altered membrane permeability or altered transport process.

Edema has also been produced in cats by a number of procedures, such as freezing treatment to the exposed dura and partial removal of brain tissue. Fluid did not accumulate as a result of reflection of the dura and simple exposure of the brain, but 24 hours after the production of a lesion by freezing, there was a decrease in dry weight, a fall in potassium, and an increase in sodium. These alterations occurred only in the white matter and persisted for at least 5 days. As far as the cortex as a whole is concerned, there were no changes. Three days following partial lobectomy, the same changes as with a freezing lesion were noted. A highly significant correlation occurred between sodium and potassium content. Cortisone apparently had no effect, although the authors were not able to rule out the possibility that the volume of tissue that was edematous was diminished in cortisone-treated animals.

Neurochemistry in Psychiatric Disorders

Sources of information. Only rarely does the opportunity arise to make neurochemical and other basic observations on the brains of patients with cerebral disorders. There is still too little application of the multidisciplinary approach, and, therefore, a dearth of basic observations on the various disorders of the brain and mind. And, unfortunately, there are limitations on the information available from even the living patient. In the foreseeable future, researchers will find the greatest difficulty in obtaining biopsy materials for biochemical studies from the brains of living patients. Significant autopsy material is easier to obtain, but the information so obtained is similar in some ways to that available from neurohistological methods in general: The end results of a process can be seen, and the mechanisms may be inferred, but the various intermediary steps in that process cannot be observed and studied. But at least this inferential information presents suggestive leads. A step removed from the brain is the information to be obtained from the patients' blood and urinary constituents, which may be of indicative value. (For

example, in schizophrenic patients, an increase of urinary tryptamine foreshadows a worsening of schizophrenic symptoms, and a return to the usual tryptamine levels similarly precedes the cessation of the exacerbation. The increased urinary excretion of tryptamine only mirrors the increased levels of tryptamine in the blood, and since the blood-brain barrier is permeable to tryptamine, a rise in the brain concentration of tryptamine may be inferred.)

The permeability of the blood-brain barrier to tryptamine has, however, been established by animal experimentation, and this leads us to another step still further removed from the primary source of the information sought, the human brain. In animal studies, researchers may try to imitate disease in man; for example, they may establish high levels of phenylalanine in an attempt to reproduce phenylketonuria and then study the effects of excessive phenylalanine on developmental behavior and changes in the brain constituents.

The following discussion examines all the aforementioned devices for examining the biochemical correlates of behavior; however, the most compelling data should be obtained from the brains of living patients.

Chemical findings on patients with disturbed mental functioning

Schizophrenia. Although the role of biological alterations in the pathogenesis of schizophrenia has been under investigation for many years, both experimental results and their interpretations remain controversial. One of the main problems is that schizophrenia is poorly defined and may cover a variety of pathogenic conditions. Even in individual patients, the clinical symptoms may vary greatly from time to time. Moreover, the dissimilar clinical responses to treatment with psychotropic drugs suggest that different biochemical situations may prevail in the various clinical states.

It is easy to understand why each new technique based on advances in the basic sciences is applied in turn to a study of schizophrenia, a prevalent disease that is emotionally crippling and costly, both financially and in interpersonal relationships. Many biochemical studies, however, not only failed to correlate the basic observations with the behavior of the patients, but failed to use controls, including the important one of diet. Later work, done under improved conditions, indicated an impaired ability of the liver to detoxify psychotomimetic substances and a reduced turnover rate of some phosphate compounds in the blood of schizophrenic patients. Investigations have also disclosed dissimilarities in urine and blood constituents between schizophrenic patients and controls.

Tryptophan. One aspect of biochemical psychiatry is concerned with the relationship between schizophrenic behavior and the protein products contained in urine. Some studies on urinary derivatives of

TABLE III

*Urinary Tryptamine and Degree of Psychotic Activity**

The average for all observations lies within the normal range but other averages, based on the degree of psychotic activity, reveal an increased output of tryptamine per day with greater degree of psychotic activity.

Degree of Psychotic Activity	No. of Patients	Days	Tryptamine ^b	
			Average	Range
			μg./day	
Apparently inactive.....	17	410	91.6	39-137
Slightly active.....	12	270	124.9	58-167
Moderately active.....	7	105	151.2	66-282
Active.....	6	40	202.8	153-292
Markedly active.....	2	10	382.5	180-585

* From Himwich, H. E. Loci of actions of psychotropic drugs in the brain. *Fol. Psychiat. Neurol. Jap.*, 19: 217, 1965.

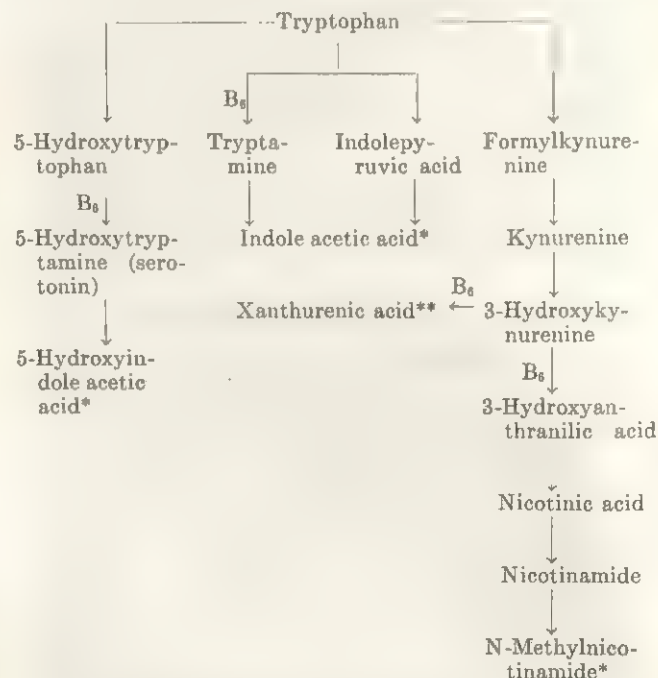
^b Average, 118 μg. per day for 835 24-hour urinary specimens. Normal range, 36 to 120 μg. per day.

tryptophan have revealed abnormally high excretions of indole substances in patients with schizophrenia in comparison with nonschizophrenic individuals. But, in other observations, either no differences were found or these products in the urine of patients with schizophrenia were abnormally low. It seems apparent, however, that the daily excretions of these urinary products exhibited a greater variability in schizophrenic patients than in normal controls. A series of studies on schizophrenia showed, not unexpectedly, that average values for urinary indoles were either within the normal ranges or were somewhat higher than in controls. But when day-to-day correlations were made between the intensities of the psychotic symptoms and the levels of the urinary constituents, striking agreements were observed between the degree of psychotic activity and the daily output of tryptamine (see Table III) and of 3-indole acetic acid and 5-hydroxyindole acetic acid. Tryptamine was the most sensitive indicator for the rise of the indole products in the urine. From 1 to 5 days before any signs of behavioral exacerbations were observed, indole substances began to increase in the urine. Levels continued high until rather precipitous falls were observed, usually beginning before the last day of active psychotic behavior. Examination of the results revealed that the increased indole products were endogenous. Such a conclusion was drawn partly on a basis of behavioral changes but chiefly on biochemical alterations. Behaviorally, some patients suffered a loss of appetite and simultaneously exhibited greater motor activity. Thus, caloric intake decreased at a time when caloric requirements were raised. Biochemically, the additional indole products in the urine were the result of the breakdown of body proteins.)

Increases of urinary creatinine revealed that the breakdown of muscle protein was one source of the increased indole products. But another factor account-

ing for the endogenous origin must also be given serious consideration. Figure 7 shows the known pathways of tryptophan metabolism in the body. When the use of the pathway starting with formylkynurenine and ending with 1-N-methylnicotinamide is depressed, those of the indoles may show compensatory increases. Thus, two processes may be operative in the increased urinary excretion of indoles. But the diversion of tryptophan metabolism away from the formylkynurenine pathway and toward that of the indole amines does not exclude the increased breakdown of body protein as another source. In both cases, greater amounts of tryptophan breakdown products would appear in the urine. A number of other amino acids, including methionine, may also be released from muscle. It is, therefore, possible that higher concentrations of indoles and methionine may give rise to an increased production of psychogenic methylated indoles, thus accounting in part for the maintenance of the active psychotic behavior.

In a series of feeding experiments with methionine, tryptophan, and other amino acids, it was shown that, given by themselves, none of the amino acids evoked changes in the behavior of schizophrenic patients. Even with a monoamine oxidase (MAO) inhibitor, all but two were without effect. When, however, me-



* = Normal urinary excretion products.

** = Found in large amounts in the urine in vitamin B₆ deficiency.

FIGURE 7. Known pathways of tryptophan metabolism in the body. Note that three of these pathways maintain the indole nucleus intact but that the fourth one, via kynurenine, does not. (Adapted from Figure 1 of Olson, R. E., Gursley, D., and Vaster, J. W. Evidence of a defect in tryptophan metabolism in chronic alcoholism. *New Eng. J. Med.*, 263: 1169-1174, 1960.)

thionine was administered simultaneously with a monoamine oxidase inhibitor, significant changes occurred as the severity of symptoms increased. These changes were first observed by Pollin, Cardon, and Kety and were amply confirmed by other investigators. Tryptophan with an MAO inhibitor also aggravated the clinical picture, but to a lesser degree. An important function of methionine is to make methyl groups available for the metabolic processes of the body. Since another methyl donor, betaine, also produced behavioral worsening when administered with an MAO inhibitor, it seemed that tryptophan metabolites and methionine might be involved in a common mechanism, a mechanism in which increases of indoles derived from tryptophan and elevated levels of methyl groups donated by methionine might facilitate the formation of methylated indoles with psychogenic properties. It is worthy of note that *N*-dimethyltryptamine, similarly derived from tryptophan and methionine, is also psychotomimetic.

Thus, two factors may be involved in the mechanism of symptomatic deterioration of schizophrenic patients: the psychogenic action of methyl groups and the increased formation of indoles. Increases of

tryptophan and methionine may act together to produce an endogenous metabolic factor by furnishing material for the production of a methylated psychogenic indole. Such a psychotomimetic substance may be involved in this hypothetical cycle in an individual with a genetically determined schizophrenic reaction; from his hereditary nexus comes an unknown initiating component of the behavioral worsening, with loss of appetite as an early symptom. Next follows a breakdown of muscle protein and the release of amino acids, including tryptophan and perhaps methionine. In addition, more indole amines are formed from tryptophan at the expense of the kynurenine metabolites. These amino acids, in turn, furnish materials for the formation of a methylated psychogenic indole, an endogenous metabolic factor. Finally, the interactions of the endogenous factor and the schizophrenic hereditary component increase the severity of the psychotic symptoms.

Catecholamines. Phenylalanine and tyrosine are the sources of all the catecholamines in the body, including dopamine, norepinephrine (noradrenaline), and epinephrine (adrenaline) (see Figure 8). Increases of urinary catecholamines usually accompany

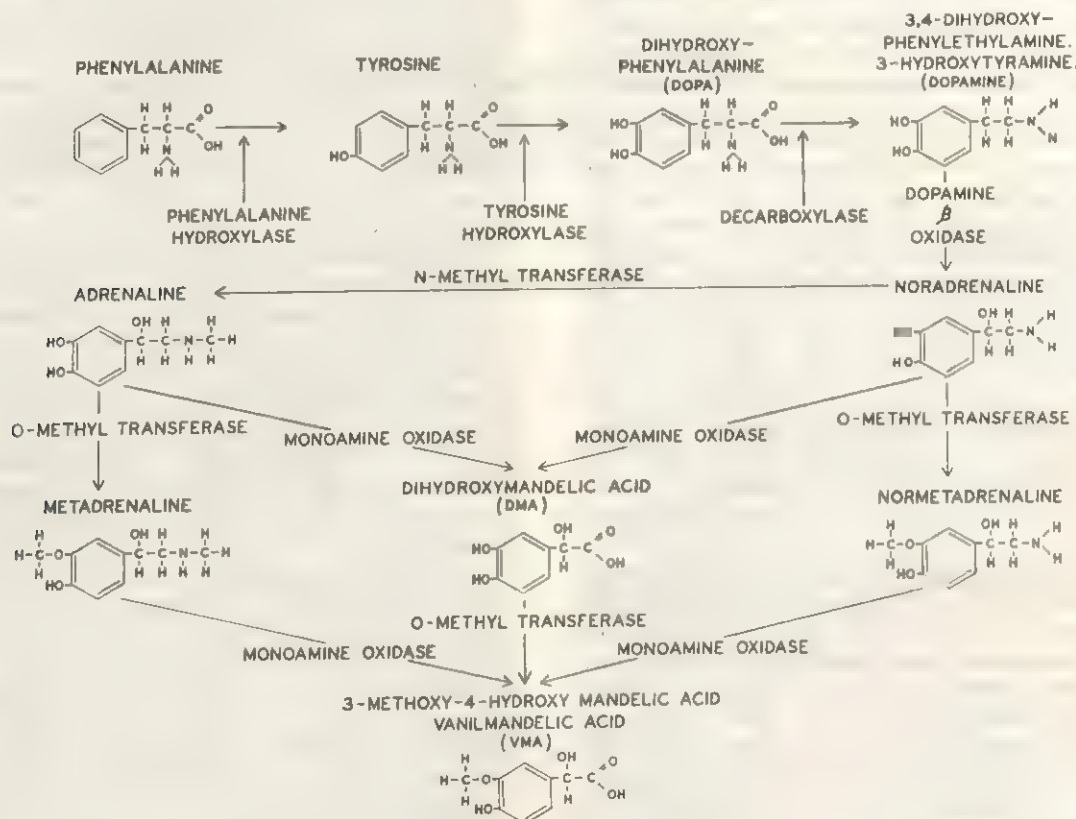


FIGURE 8. Pathways of catecholamine metabolism. The process starts with phenylalanine and goes on to tyrosine, dopa, and dopamine. Noradrenaline (norepinephrine) gives rise to adrenaline (epinephrine). At this point, there are two chief paths for the continuation of the metabolic process. In extraneuronal areas, these two substances are transformed into normetadrenaline (normetanephrine), metadrenaline (metanephrine), and reactions catalyzed by catechol *O*-methyltransferase). Within the neuron, dihydroxymandelic acid is formed with the aid of monoamine oxidase. In both instances, however, these products are next acted upon by the other one of these two enzyme systems so that, irrespective of the order in which the two enzymatic processes occur, the resulting product is the same, vanilmandelic acid. (Courtesy of H. E. Himwich.)

aggravations of psychotic symptoms but, unlike the indoles, do so on a somewhat different temporal basis. The indoles begin increasing *before* a sudden flare-up of symptoms and continue at high levels during psychotic activation. On the other hand, epinephrine and norepinephrine begin rising *simultaneously* with the increase of psychotic behavior.

Usually, exacerbations of schizophrenic symptoms are accompanied by increased motor activity, heightened tension, or both. In such instances, both urinary catecholamines and indole amines appear in greater amounts. But when signs of anxiety and tension increase in severity in the absence of marked worsening of schizophrenic symptoms, the catecholamine rise is not associated with a rise of the indoles. In the elevation of catecholamines unaccompanied by an elevation of indoles during a period of reduced psychotic activity, the relationship between the greater output of the catecholamines and the increased anxiety and muscular activity in schizophrenics does not appear to be different from the relationship between the increased excretion of catecholamines and heightened tension and motor restlessness in non-schizophrenic individuals.

The methyl groups in the formation of psychotogenic indole amines have been stressed here, but a similar possibility exists with the catecholamines. Osmond and Smythies suggested that a catecholamine related to mescaline may play a part in schizophrenia, and they included in their paper the remarks of Harley-Mason that such a catecholamine might arise as a result of faulty methylation. More recently, Friedhoff and Van Winkle have demonstrated that dimethoxyphenylethylamine (DMPEA), a catecholamine, is closely related in chemical structure to the well known psychotomimetic agent, mescaline (trimethoxyphenylethylamine). And DMPEA occurs more frequently in the urine of schizophrenic patients than in nonschizophrenic populations. Much work has been done following this lead, which, however, like that of the psychotogenic indoles, is still regarded as controversial. Yet the conclusions of Friedhoff and Van Winkle have received much experimental support.

DMPEA may represent a nosological classification characteristic of certain types of schizophrenia, and the increases in the other catecholamines—noradrenaline, adrenaline, and vanilmandelic acid—may correlate with hyperactivity and anxiety. But this correlation is not specific for patients with mental disease, since it also occurs in normal subjects. The alterations of the indole amines, on the other hand, seem to relate specifically to the worsening of the schizophrenic symptoms.

Steroid hormones. In some ways, the changes in the urinary steroid hormones parallel those of the catecholamines. Sudden and severe exacerbations of schizophrenic symptoms are accompanied by rises in both 17-ketosteroids and 17-hydroxycorticosteroids.

Ratings of the severity of schizophrenic symptoms reveal that the levels of urinary steroid hormones may be associated with concomitant high degrees of motor activity and anxiety.

In a specific example (see Figure 9), a most severe exacerbation of schizophrenic behavior was accompanied by outbursts of violence, hostility, and hyperactivity. All urinary constituents studied, with the exception of vanilmandelic acid, rose during the behavioral worsening. The episode lasted for 5 days, with peak exacerbations on the 1st and 2nd days, but psychotic symptoms were most severe on the 3rd day.

These simultaneous observations of urinary indoles, catechols, and steroids during behavioral worsening have made it possible in many instances to separate psychotic symptoms in accordance with their relationships either to urinary indoles on one side or to urinary catechols and steroids on the other. One group of symptoms, characterized by rises in catechols and steroids, is composed of increased motor activity or motor restlessness, heightened tension, and anxiety. In contrast, a second group of symptoms is distinguished by increases of urinary indoles and is associated with such psychotic symptoms as intensifications of hallucinatory and delusional experiences, usually with mounting hostility. When to the latter group of symptoms are added motor restlessness and increased anxiety, either separately or together, all three classes of urinary products are significantly elevated in the urine. Perhaps the elevations of catecholamines and steroids indicate a total mobilization of the bodily resources to meet this grave emergency.

Affective disorders. The most prominent experimental concept on the affective disorders emanates from Kety's laboratory and indicates that some, if not all, depressions are associated with an *absolute or relative deficiency of catecholamines*, particularly of norepinephrine in the brain. Abnormal elation conversely may be accompanied by an excess of such amines. The experimental basis for the hypothesis is found in the work of Brodie and his associates, who correlated behavioral excitation in animals with increased levels of brain norepinephrine. Other workers were able to demonstrate that dopa, a catecholamine (but not serotonin), counteracts reserpine-induced sedation in animals. In the clinical field, Schildkraut also demonstrated that depressed patients treated with imipramine showed increased excretion rates of normetanephrine, a catecholamine metabolite, with clinical improvement. In contrast, according to some studies, sedation seems to be associated with a greater abundance of brain serotonin. However, other data do not support the hypothesis that fluctuations in catecholamines are the primary biochemical factors in depression.

An alternate dualistic approach, presented by Buono, Pscheidt, and Himwich, suggests that *both catechol and indole amines* are involved in the bio-

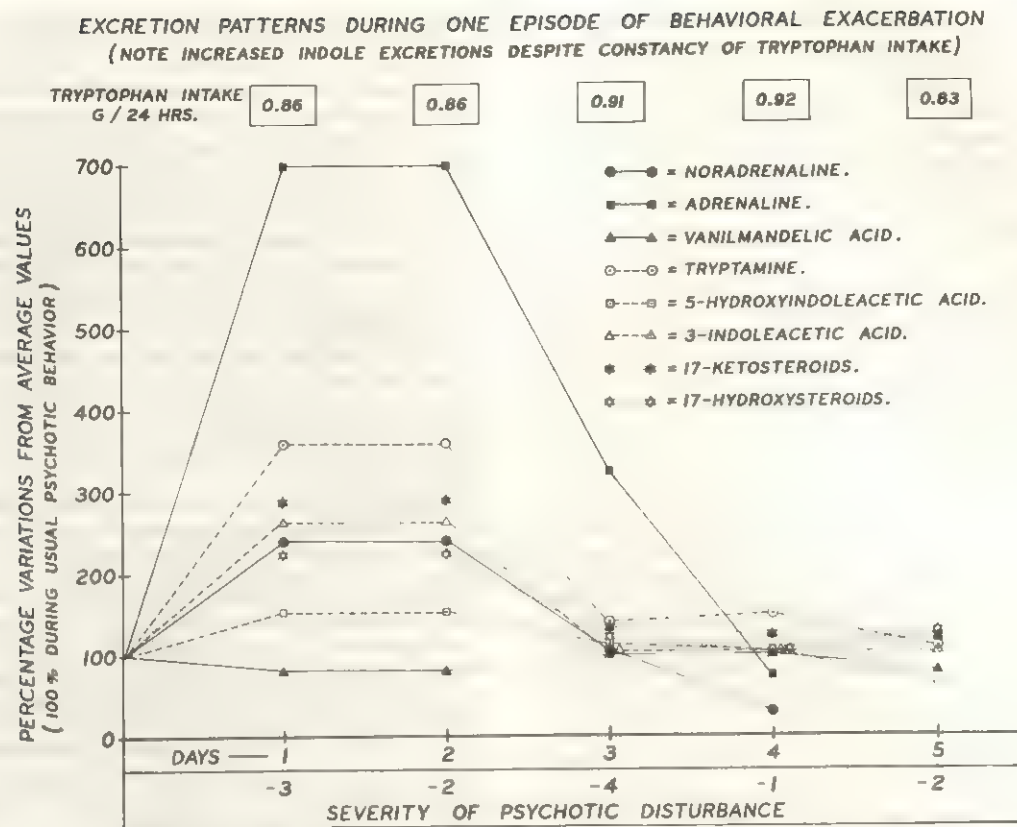


FIGURE 9. Excretion patterns. Urinary excretions of catecholamines, indole amines, and steroid hormones during periods of aggravation of schizophrenic symptoms in patient J. F. (From Berlet, H. H., Bull, C., Himwich, H. E., Kohl, H., Matsumoti, K., Pscheidt, G. R., Spaide, J., Tourlentes, T. T., and Valverde, J. M. Endogenous metabolic factor in schizophrenic behavior. *Science*, 144: 311, 1964.)

chemical basis of the affective disorders. This hypothesis accounts for several important clinical and experimental observations. The "somatization" of the depressive illness is adrenergic in quality and includes tachycardia, insomnia, anorexia, anxiety, and abnormalities in the digestive tract as well as in the sexual sphere. All these signs are strikingly similar to the amphetamine-induced organic psychoses. On the other hand, melancholia with its depression of vital functions, lack of interest, decreased vitality, and delusional ideas of guilt and hopelessness may be the result of disturbances in indole metabolism. Experimentally in animals, the dualistic hypothesis finds support in recent work using chronic treatment with MAO inhibitors, which block degradation of serotonin and catecholamines, combined with reserpine, which releases serotonin in its active form. These studies disclosed that behavioral and electroencephalographic activation can be related to disturbances in the balance between serotonin and norepinephrine; behavioral stimulation was associated with increases of brain serotonin while there was either a smaller rise or even a decrease in brain norepinephrine. Working with various mammalian species, different workers have also pointed out the importance of the equilibrium between both amines. Clinically encouraging results were obtained by Mendiguita and Penasco in the

management of endogenous depressions using reserpine with an MAO inhibitor. Investigators have correlated clinical improvement in depressive patients, who improved with reserpine and imipramine, but not with imipramine alone, with variations in indole metabolism and not in catechol turnover.

Metabolic disorders. Psychotic behavior and disorders of tryptophan metabolism have been observed not only with schizophrenia but also with a disorder of metabolism, Hartnup's disease. The similarities among the psychotic manifestations of Hartnup's disease, pellagra, and schizophrenia are worth noting. In this regard, a metabolic linking of homocysteinuria with schizophrenia has been suggested.

Hartnup's disease. This disease is associated with intermittent and variable malfunctions, including psychosis, cerebellar ataxia, migraine headaches, and, occasionally, progressive mental retardation. Comparatively late, a dermatitis develops. Like the dermatitis in pellagra, it is a red, scaly rash occurring chiefly on surfaces exposed to the sunlight. Hartnup's disease is characterized by biochemical alterations, including a generalized amino aciduria, except that proline, cysteine, and taurine remain within normal limits. The excretions of other catecholamines are at least 10 times the usual values. In the absence of elevated levels of these amino acids in the blood, this amino aciduria is ascribed to leakage through the kidney, probably due to defective reabsorption in the renal tubules.

A second biochemical defect is impaired absorption of

tryptophan from the intestine. For that reason, tryptophan breakdown products (3-indole acetic acid, 3-indole acetylglutamine, and indican) accumulate in the intestinal lumen. These products are then absorbed in the blood stream and eliminated in the urine. A decrease of nicotinamide occurs as a result of the poor absorption of tryptophan. This may account for the pellagra-like features of Hartnup's disease. During clinical remissions, the metabolic abnormalities recede.

Pellagra. The multideficiency of pellagra includes lack of tryptophan, nicotinic acid, and perhaps other vitamins, including pyridoxine. The behavioral changes sometimes observed in pellagra may strikingly reproduce the clinical pictures of schizophrenia. Not long ago, patients with pellagra were sent to mental institutions with a diagnosis of schizophrenia. In man, pellagra is also linked to the genetically determined disorder of Hartnup's disease by changes in tryptophan; abnormally high urinary excretion rates of indole metabolites have been observed, and tryptamine has been isolated from the urine of pellagrins.

Homocysteinuria. This syndrome is associated with the presence in the urine of homocysteine, a metabolite of methionine, and is characterized by such relatively constant features as mental retardation, fair hair, dislocated ocular lenses, malar flush, peculiar gait, and genu valgum. More variable features of this syndrome are excessively long extremities and digits, convulsions, thrombotic incidents, cardiovascular disorders, and fatty liver. Though resembling Marfan's syndrome in exhibiting pectus excavatum or carinatum, and ectopia lentis and arachnodactyly, it differs from Marfan's syndrome by the presence of mental retardation, malar flush, and osteoporosis.

Homocysteinuria is inherited as an autosomal recessive gene. Liver biopsies of homocysteinuric patients reveal that the enzymatic pathway fails to function because of a lack of activity of the enzyme cystathionine synthase. In view of this close metabolic association between methionine and the other members of this pathway and in view of the observation that the administration of either methionine or cysteine to a schizophrenic patient receiving a MAO inhibitor worsens the schizophrenic symptoms, it is of interest to point out the pedigree of a homocysteinuric female patient. Her mother, brother, sister, maternal grandfather, maternal grand uncle, and maternal grand aunt were all probably schizophrenic. Another patient, who had been diagnosed as having schizophrenia, was found on further study to be suffering from homocysteinuria. At present, however, the question of whether metabolic relationships between methionine and homocysteine are of etiological importance in the schizophrenic patient can be regarded only as a suggestive lead for research.

Wilson's disease. This disease is also known as hepatolenticular degeneration; the latter name is descriptive of the morphological pathology, which usually includes degeneration of the corpus striatum with cirrhosis of the liver. The characteristic symptoms include difficulty in swallowing and in speech, irritability and explosive behavior, and a progressive organic dementia. The chemical pathology is concerned with an altered distribution of copper, with abnormally high amounts in the cerebrospinal fluid, urine, brain, liver, and kidney. Total blood copper is significantly lower than usual. Moreover, ceruloplasmin activity is reduced.

Wilson's disease is probably associated with a genetically altered ceruloplasmin; copper is no longer held tightly bound to ceruloplasmin, a serum globulin. Despite the fact that the copper loosely attached to serum albumin is above normal levels, a decrease in the total copper content of the blood occurs. The copper of the albumin fraction is excreted in the urine and also deposited in brain, liver, and other tissues where the affinity for copper is greater. The urine contains high levels of amino acids, tryptamine, 5-hydroxyindole acetic acid, 3-indole acetic acid, and other indole metabolites in addition to the catecholamines, epinephrine, and dopamine.

Phenylketonuria. Phenylketonuria is a genetically deter-

mined condition involving a fault in the metabolism of phenylalanine, a failure in the conversion of that substance to tyrosine (see Figures 6 and 7). As might be expected, phenylalanine accumulates in all the fluids of the body, and metabolic products of phenylalanine are produced in excess. As with Hartnup's disease, excessively large amounts of 3-indole lactic acid, 3-indole pyruvic acid, 3-indole acetic acid, and indican are found in the urine; conversely, 5-hydroxyindole acetic acid is excreted at abnormally low levels.

These results may be explained by an inhibition exerted by phenylalanine on the absorption of tryptophan from the intestine. A similar explanation—impaired absorption of tryptophan—may apply to the low levels of serotonin observed in the brains of animals with experimental phenylketonuria. D. W. Woolley suggests that abnormalities of serotonin in the brain are linked to mental deficiencies and the psychoses. In addition to diminishing brain serotonin, excessive elevations of phenylalanine in the blood result in decreases in the concentrations of glutamic acid, glutamine, isoleucine, and GABA in the brain.

Another characteristic of patients with phenylketonuria is insufficient pigmentation, ascribed to an interference in the oxidation of tyrosine to dihydroxyphenylalanine, though only partial inhibition of this reaction has been demonstrated in phenylketonurics. Characteristically, patients with this disorder are blond and occasionally albino, even when they come from dark-complexioned Caucasian or Negro families.

The majority of victims have low intelligence quotients, and some never learn to talk or achieve toilet training. On the other hand, there are a few authenticated cases with intelligence well within the normal range. Convulsions start in the 1st or 2nd year of life and finally stop spontaneously. Abnormal electroencephalograms are observed even in the absence of seizures. These electrical abnormalities are reversible with diet therapy. It is striking that records of mental institutions reveal that phenylketonurics are sometimes admitted with a diagnosis of childhood schizophrenia. Older children exhibit motor restlessness, are hyperactive and may injure themselves.

For the normal development of intelligence, treatment consisting of an intake of phenylalanine reduced to about 4 to 5 per cent of the diet should be started in the first weeks of life. When the special diet may be stopped with impunity is not yet known, but it is known that a cerebral defect, once developed, is irreversible and probably involves permanent structural alterations of the central nervous system. The gray matter shows few abnormalities. In the white matter, in contrast, there are usually multiple areas of defective myelinization. In these patients, the pigmentation of the substantia nigra and the locus caeruleus is decreased, although these areas are normally pigmented in albinos.

Maple syrup disease. Maple syrup disease is so named because the urine of the patient has a striking odor similar to maple sugar. The nervous system deteriorates rapidly, and in most instances death occurs within the 1st month of life. The severe brain damage characteristic of this disorder is limited chiefly to the white matter, and myelination is defective. The inborn error of metabolism is transmitted as an autosomal recessive gene and is characterized by a failure in oxidative decarboxylation of four keto acids: α -ketoisocaproic acid, α -ketoisovaleric acid, α -keto- β -methyl-n-valeric acid, and, probably, α -ketobutyric acid. The metabolic deficiency occurs in the enzyme that catalyzes the conversion of α -ketoisocaproic acid to isovaleryl coenzyme A. In addition, there is a secondary rise in the keto acids, and the respective amino acids, including leucine, isoleucine, alosileucine, and valine, all of which also appear in the urine.

Blood-Brain Barrier

Knowledge of the blood-brain barrier is based almost entirely on animal experimentation. Hence the characteristics of the human blood-brain barrier can

only be inferred from clinical studies and results on animals.

Selectivity of the barrier. Although equilibrium is rapidly established between the vascular fluids and the interstitial fluids of most organs, many substances show a slow equilibration in the brain. Moreover, the brain is more accessible to certain substances if they are administered intrathecally than if they are given intravenously. An excellent example is the response to sodium ferri-cyanide. Given intravenously, this substance produces no symptoms, even in fairly high concentrations, nor can it be detected in the brain, although it penetrates all other tissues of the body. When, however, small amounts of ferri-cyanide are introduced into the cerebrospinal fluid, the animal develops pronounced symptoms and may die of convulsions. Thus, the intrathecal injection has circumvented a barrier between blood and brain. Consideration of the blood-brain barrier is of great importance in many problems, including the utilization of food stuffs by the brain, the therapeutic use of drugs, and the pathological effects of viruses and toxins on brain tissue. [In discussing all these problems, the four fluid compartments in the brain and the barriers between them must be considered.]

The acid aniline dyes (negatively charged) fail to enter the brain, although the basic aniline dyes (positively charged) do so readily. Not only the negatively charged dyes but also substances such as lactic acid and pyruvic acid, containing electronegative carboxyl groups, enter the brain slowly. The rate of entrance of these substances into the brain is considerably slower than that of glucose and is too slow to allow them to support brain metabolism. In contrast, observations on excised cerebral tissue reveal that lactic acid is as effective as glucose in maintaining brain metabolism. In excised tissues the blood-brain barrier is destroyed, and materials penetrate the brain easily at the cut surface.

Most ions, whether electropositive cations or electronegative anions, require a relatively prolonged period before equal concentrations are present in the blood and in brain tissue. Many studies have shown that anions such as bromide, iodide, thiocyanide, and chloride have a short equilibration period, usually only a few minutes, between the circulatory fluids of the vascular tree and the interstitial fluids of the various organs. Yet equilibration with the brain may not be complete after 3 hours. Sodium and potassium are the classical examples of cations that enter the brain slowly. Radioactive sodium concentration, for example, equalizes throughout the vascular and interstitial fluid of the various organs of the body within 11 minutes, and yet it requires 62 hours to attain equilibrium between brain and blood. Though potassium enters interstitial fluids more rapidly than sodium, this rate is slower for the brain than for other organs.

Only a few amino acids have been studied extensively in terms of their ability to pass the blood-brain barrier. These include glutamic acid, leucine, isoleucine, lysine, tyrosine, tryptophan, and phenylalanine. The ability of these substances to penetrate the brain is greater in the young animal than in the adult. Recently, it has been demonstrated that an increased blood level of one amino acid can influence the entrance of other amino acids into the brain. The most striking example is the inhibition of the uptake of tryptophan and tyrosine by a high blood level of phenylalanine.

Variations in the barrier. Not all parts of the brain are equally protected by the blood-brain bar-

rier. A portion of the hypothalamus with the pituitary and pineal glands, the choroid plexus, and the area postrema are more permeable than other areas. Nor is the permeability of the blood-brain barrier a constant factor. The barrier appears to exert less influence, and that on fewer substances, at the time of birth and probably in fetal life than in later life. The physiological status of the brain is also important. Any injury to the brain tends to reduce the resistance of the blood-brain barrier to penetration. Inflammation facilitates the passage of substances. Considerable evidence has accumulated that an increase of carbon dioxide reduces barrier function. There is also the possibility that the rate of permeability may be regulated in part by non-nervous tissue. It has been found that, using the perfused brain of cats, the administration of glucose fails to revive the brain unless an extract of liver is added at the same time.

Nature of the barrier. Many explanations have been offered for the existence of the blood-brain barrier. The current point of view is that what has been called the blood-brain barrier concept is not a generalized phenomenon. It is probably a summation effect of many factors, only some of which are integral parts of the boundary between blood and brain. The work in this field in the last 10 years leads largely to the conclusion that there will be no generalized concept developed to fit all the phenomena and that each condition and each metabolite must be considered by itself.

Dobbing, however, has suggested a unified hypothesis that postulates a multiplicity of factors, including those the brain has in common with other tissues and those that make the brain the specialized tissue it is. In the first group, Dobbing includes electrical charge, molecular size, degree of dissociation, extent of protein binding, and lipid solubility of the substances being considered. The second group consists of the negligible extracellular space in the brain, with consequent necessity for transcellular transport and the resistance to entry of substances into metabolically inert compartments. Brain metabolism, then, would dominate much of the transport of substances between blood and brain. Considered in this way, the blood-brain barrier is a reflection of, rather than a limiting factor in, *in vivo* cerebral metabolism.

Anatomical explanation. Considerable research is still devoted to determining the exact location of the blood-brain barrier. Theoretically, the barrier could function at any one of several sites, beginning with the capillary wall, going outward to the peripheral lining of the perivascular space, and finally to the surface of the glial cells (see Figure 10).

The capillaries have again and again been implicated as the site of the blood-brain barrier phenomenon. Two possible elements are involved: the endothelial cells themselves and the matrix that binds these cells together. It is generally agreed that lipid-soluble substances, such as CO_2 , O_2 , urethane, and formaldehyde, diffuse easily through the endothelial cells. The portion of the capillaries traversed by lipid-insoluble substances such as water, sodium chloride, and glucose is still under dispute.

Two main camps have developed in the blood-brain barrier controversy: one supports the perivascular glial membrane theory and the other the capillary endothelial theory. At this time, experimental evidence exists in support of both positions.

In the last few years, attention has turned to the relative lack of extracellular space in the brain as a possible explana-

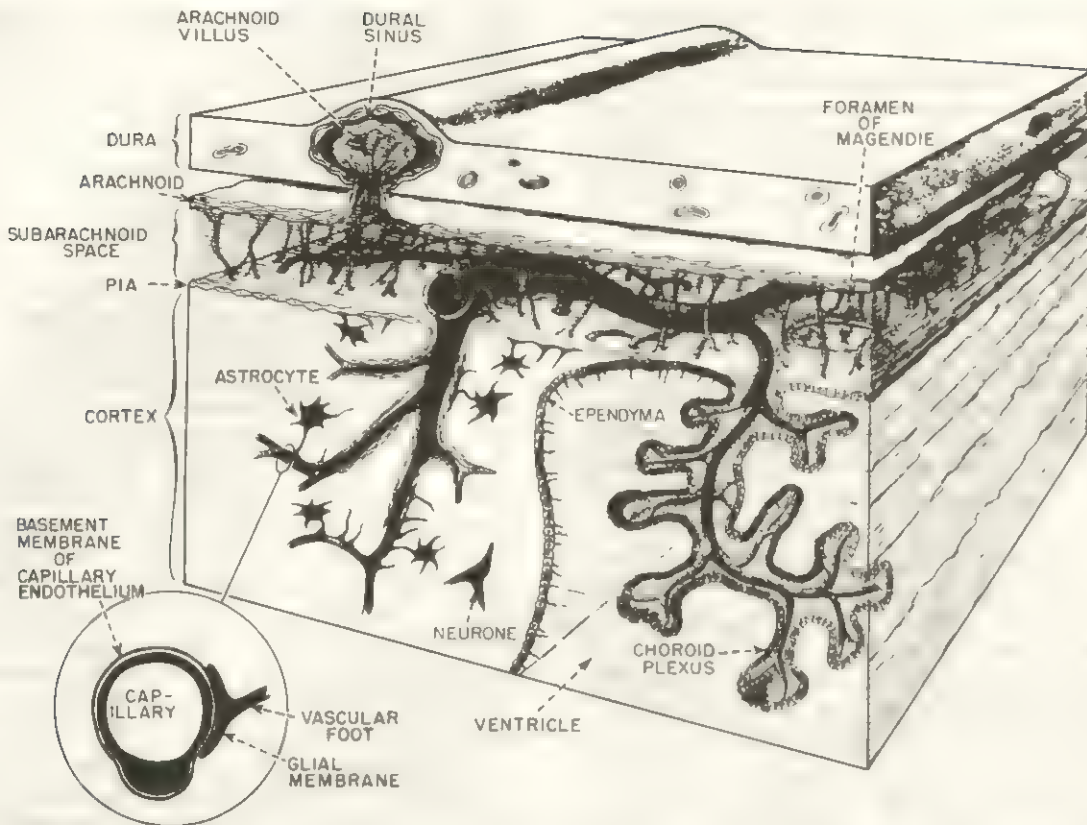


FIGURE 10. Semidiagrammatic section of central nervous system and investing membranes. This shows the relationships of various fluid compartments and barriers. The *enlargement at lower left* illustrates three probable sites of blood-brain barrier action: capillary endothelium, basement membrane, and perivascular glia. Note that invaginating pia does not accompany penetrating vessels, although only a few are illustrated. (From Tschirgi, R. D. Chemical environment of the central nervous system. In *Handbook of Physiology*, J. Field, H. W. Magoun, and V. E. Hall, editors, Section 1, Vol. 3, p. 1865. American Physiological Society, Washington, 1960.)

tion for the blood-brain barrier phenomenon.) The close packing of the cells in the brain results in a dearth of extracellular space, with a possible figure of less than 5 per cent being fairly well agreed on at this time. This situation means that material entering the brain has to enter a cell almost immediately, rather than entering the extracellular fluid. In contrast, in organs such as kidney and liver, the cells are surrounded by extracellular fluid, which may constitute 30 per cent of the organ. Astroglia function as a water ion compartment for the central nervous system; this compartment is involved in a selective transport of fluids and metabolites between blood and brain. These facts have led to the concept that the important factor in the blood-brain barrier may be a combination of glial cells and extracellular space, the so-called extraneuronal space.

Transport explanation. One of the most intriguing suggestions that has arisen from all of the studies of the blood-brain barrier has been the concept that the barrier may have a functional rather than an anatomical localization and may depend on transport phenomena. An active transfer linked to metabolic processes has been suggested by Tschirgi to account for transfer between blood and brain, between brain and cerebrospinal fluid, and between blood and cerebrospinal fluid.

Figure 10 indicates the possibility that a net movement of water and solutes from the vascular compartment into the extravascular compartments in the central nervous system could be balanced, at least in part, by a net movement of water and solutes from the subarachnoid space through the arachnoid villi into the blood stream. Such fluid formation depends on the local elaboration of metabolic energy in order

to explain the electrolyte composition of the cerebrospinal fluid. But the nature of this metabolic pump and its role in regulating the neuronal microenvironment are obscure.

Tschirgi has postulated a mechanism whereby sodium and chloride might be moved from plasma to the extravascular fluids of the central nervous system by an action of an exchange mechanism controlled by the carbon dioxide produced by metabolism.

This mechanism, according to his hypothesis, exists throughout the entire parenchymal perivascular membrane of the central nervous system, including the choroid plexus with the exception of the arachnoid villi in the dural sinuses. The net influx of electrolytes in water is seen as moving into the subarachnoid space and back into the blood stream largely through the arachnoid villi. Carbon dioxide, among other factors, would determine the rate. This mechanism for the transfer of sodium across the cellular membrane by exchange for metabolically produced hydrogen with the accompaniment of osmotically obligate water is essentially identical with that proposed for kidney tubular reabsorption of sodium. In the kidney, however, the pump is oriented to move sodium and water from the extravascular fluid into the plasma whereas, in the brain, Tschirgi proposed that it is positioned to move these substances from the plasma into extracellular fluid.

The transfer of substances from the blood into the brain can be compared to the renal tubular transport apparatus in the case of glucose, which is reabsorbed by means of active transport from urine to blood. When organic acids are used to study overloading, they show various inhibiting potencies on the blood-brain barrier. A rough correlation can be drawn

between their ability to inhibit blood-brain barrier transport and their maximal tubular rate of excretion.

The various factors that can influence the blood-brain barrier are shown in Table IV.

Current Research in Neurochemistry and Behavior

The early and voluminous work of Bennett and his group on cholinesterase and behavior or intelligence in rats has recently been confirmed by Kling, Finer, and Nair in regard to the effects of handling and light stimulation on the developing rat brain. This work points out the importance of sensory stimuli on the biochemical development of the brain. This field will undoubtedly prove a fertile one for investigation and will also mean that workers in the field of brain development will have to check and control environmental stimuli if their data are to be evaluated properly. Levine and Alpert had earlier reported the effects of handling on the phospholipids of the developing brain.

The studies of the effects of learning on the RNA of the brain have been reported from Hyden's laboratory. Unfortunately, his elegant methods of nucleotide analysis have few practitioners, and his findings await confirmation from other laboratories. Work on memory and its relation to RNA and to the hippocampus is being pursued from a number of points of view. The transfer of memory of a learned task by administration of RNA or a fraction of the RNA from a trained animal to a naive one is being vigorously pursued. The probable low permeability of the blood-brain barrier to RNA as such increases the complexity of the problem. Flexner and his colleagues have used puromycin to destroy recent memory in the hippocampus. This approach appears quite promising.

Ever since γ -aminobutyric acid was described as an inhibitory substance, many attempts have been made to correlate its inhibitory effects with behavior. The most successful experiment was by Jasper, Khan, and Elliott. They were able to demonstrate that the fluid from the surface of the brain contained more GABA when the electroencephalographic pattern showed sleep spindles than when arousal tracings were seen. More recently Wiechert and Herbst were able to provoke convulsions by upsetting the balance between glutamic acid and GABA.

Suggested Cross References

Many psychiatric disorders and symptoms are mentioned in this section with regard to associated biochemical findings. These include schizophrenia, the affective disorders, various lipidoses, demyelinating diseases, various forms of mental deficiency, epilepsy, and pellagra. More detailed information regarding these topics may be found under their respective titles in Area D, which deals with neurology, and

TABLE IV
Summary of blood-brain barrier phenomena^a

1. Lipophilic substances	Passive diffusion	No blood-brain barrier
2. Hydrophilic metabolites	Specific transport mechanisms ^b	
Nutrients (glucose, certain amino acids)	Blood \rightarrow CNS	Partial blood-brain barrier (above transport capacity)
Waste products (organic conjugated ions, indicator dyes)	CNS \rightarrow blood	Blood-brain barrier (counter-transport)
3. Hydrophilic non-metabolized nonelectrolytes (inulin, sucrose, mannitol)	No transfer	Blood-brain barrier (passive)

Blood-Brain Barrier Phenomena and Effects of Injuries on It

1. Injuries	Causing free diffusion or flow (mechanical, necrotizing or otherwise rupturing)
Indicators:	Detectable native or foreign blood constituents in general
2. Injuries	Causing functional alteration of specific transfer mechanism(s)
Indicators:	Substances presumed to be specifically handled by the actual mechanism(s)
Examples:	a. General transport inhibition: decreased CNS uptake of glucose "increased uptake" (abnormal blood-CNS passage) of acid dyes b. Selective (overloading) inhibition of CNS-blood extrusion of "waste acids": abnormal blood-CNS passage of acid indicators only

^a From Steinwall, O. Blood-brain barrier dysfunction: Some theoretical aspects. *Acta Neurol. Scand.*, 40: Suppl. 10, p. 25, 1964.

^b Carrier-mediated, saturable (limited transport capacity), inhibitable by competitive overloading or by unspecific toxic influences.

Area F, which covers the psychiatric disorders. Further information regarding chemical hypotheses relating to schizophrenia is discussed by Weiner in his section on the etiology of schizophrenia (Section 15.3), while Cohen's article on the manic-depressive psychoses (Section 17.1) contains references to the chemical aspects of the affective disorders. Further information regarding the anatomy and physiology of the various brain structures which are referred to in this section, as well as the subject of synaptic conduction and the neural transmitters, may be found in Sections 2.5 through 2.9. The following section on psychopharmacology by Harold Himwich contains information regarding the influence of psychotropic drugs on the brain constituents discussed in this section.

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2.3 PSYCHOPHARMACOLOGY

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Introduction

In this section, the ameliorative effects of psychotropic drugs on the behavior of patients with disturbed mental functioning is discussed. These drug-induced changes in behavior will be related to associated neurophysiological, neuropharmacological, and neurochemical changes. The actions of psychotomimetic agents will receive a similar analysis.

Sources and evaluation of information. The effects of drugs on human patients must be determined by observations made on man. However, electroencephalographic reactions in the structures of the limbic system must be ascertained by deep electrode implantation, and such applications on human beings are necessarily limited in number. Because it is difficult to obtain extirpations of human brain areas performed in order to explain biochemical changes induced by drugs during life, areas sensitive to psychotropic drugs have been analyzed in animal experiments. The results in infrahuman mammals cannot be extrapolated to man because differences in species may yield different results. But animal observations are suggestive in many instances. For example, a sufficient number of studies on members of many mammalian species, including man, have been performed to know that reserpine decreases brain amines in all mammals. This does not suggest a causal relationship between the brain changes produced by drugs in animals or man and the associated behavioral alterations in patients. It does, however, point out analogies between the specific effects of psychotropic drugs on the animal and human brain and the broader behavioral changes observed in patients, for example, whether the two different parameters indicate tendencies toward tranquilization. One may well take a pragmatic attitude toward the effects of drugs on patients with mental disease and compare the therapeutic values of psychotropic drugs with preparations for the control of diabetes, their dosage schedules revised in accordance with the severity of the symptoms. One need not go into the various debates as to whether psychotropic drugs cure the psychotic process or are chiefly of placebo value. The observed facts disclose the great symptomatic relief afforded to patients.

But what of the future? It is well known that, generally, the longer the patient stays in the hospital,

the worse the prognosis. It would seem that the most optimistic attack on schizophrenia is the early application of psychotropic drugs to the patient in the hospital and rapid discharge to the out-patient clinic for continued chemotherapeutic supervision.

Drugs Used in the Treatment of Schizophrenia

Reserpine. This drug, one of the two original tranquilizers, is now to a certain extent replaced by the phenothiazines. Reserpine is recommended, however, in intensifying the action of antihypertensive agents and in the management of overactive, brain-injured children.

Action. Nevertheless, reserpine subserves an important neuropsychopharmacological action: it prevents the binding of noncholinergic transmitters (for example, monoamines such as norepinephrine) to labile storage depots in intracellular granules. As a result of reserpine, the monoamines are not stored in the intracellular granules, and the concentrations of free neurotransmitters are temporarily increased. But as they are no longer protected from the action of the monoamine oxidase (MAO) enzyme, the neurotransmitters are rapidly metabolized, and the enduring effect of reserpine is to reduce the concentrations of free neurotransmitters.

These two different effects of reserpine on the concentrations of brain neurotransmitters are paralleled by biphasic actions on the electroencephalogram (EEG) and on behavior. About ½ hour after the injection of a single intravenous dose of reserpine large enough to cause depletion of serotonin and norepinephrine in the brain (1 mg. per kilogram), the EEG begins to reveal activation (see Figure 1). But about 4 to 5 hours after the injection a long continued sleep pattern appears (see Figure 1B). The initial period of EEG alerting corresponds closely to the time interval during which free monoamines are increased as the stores in the granules are diminished by the action of the reserpine. The sleep pattern occurs when the concentrations of the monoamines decrease.

When reserpine is first administered to patients, it may produce a period of worsening in the psychotic symptoms, a period of turbulence that is usually more marked and longer than that evoked by the phenothiazine derivatives. It is not unlikely that the short period of the activation of the psychotic symptoms corresponds with the time when brain amines are increased above the usual levels and that the tranquilizing action is associated with the long continued low levels of brain amines.

Site of action. The actions of reserpine on hypothalamic mechanisms are complex. It is true that noradrenergic activities are inhibited and that cholinergic activities are augmented, as observed in the constriction of the pupil and the bradycardia. One reason reserpine is not so potent in tranquilizing as the phenothiazines may be found in its stimulating action on limbic structures, which may exhibit spon-

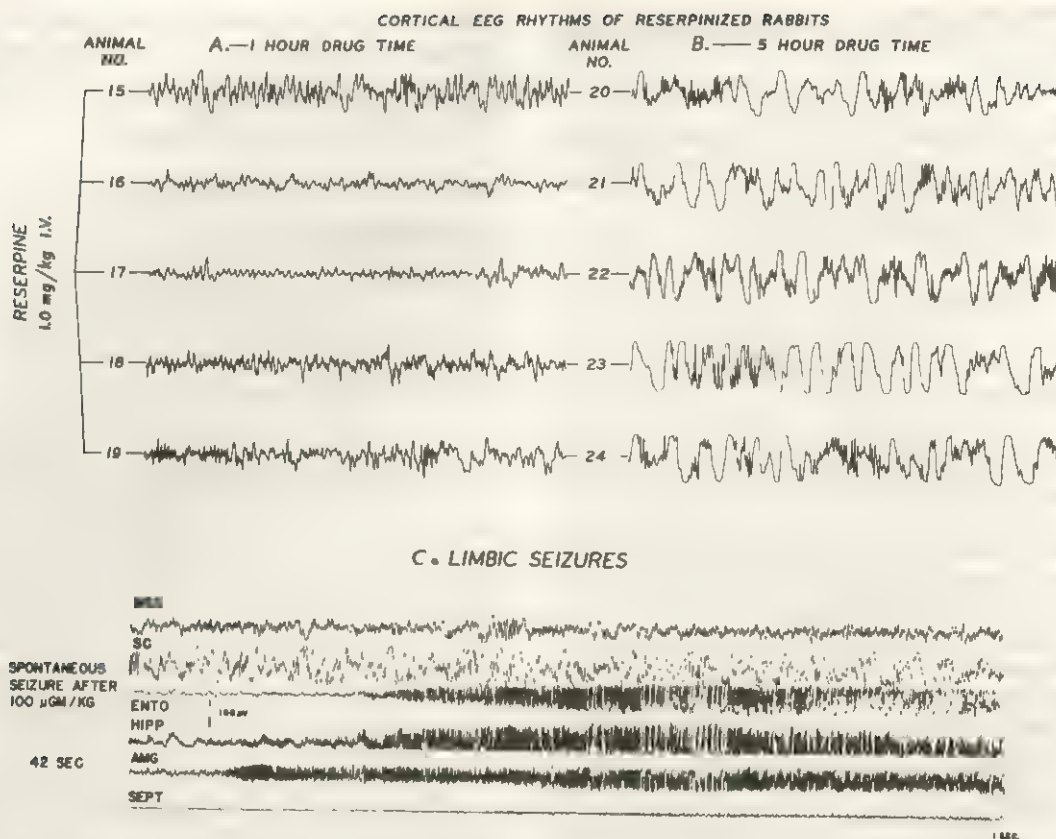


FIGURE 1. Effects of reserpine. This shows the cortical EEG tracings from 13 animals injected with reserpine (1.0 mg. per kilogram) before surgical preparation. Note the presence of EEG activation at 1 hour (A) and its absence at 5 hours (B). Electroencephalographic tracings were also recorded after the administration of 0.1 mg. of reserpine per kilogram (C). Note the spontaneous seizures of limbic structures. Recording leads are as follows: MSS, median suprasylvian gyrus; SC, sensory cortex; ENTO, entorhinal cortex; HIPP, hippocampus; AMG, amygdala; SEPT, septum. (A and B are unpublished observations. C is from Killam, E. K. and Killam, K. F. The influence of drugs on central afferent pathways. In *Brain Mechanisms and Drug Actions*, W. S. Fields, editor, p. 88. Charles C Thomas, Springfield, Ill., 1957.)

taneous seizures with reserpine (see Figure 1C). The total effect of any medicament on behavior depends, of course, on the summation of all its influences on the brain, and with reserpine the result is less influential in the direction of tranquilization than with the phenothiazines.)

Phenothiazines. The phenothiazine derivatives constitute the largest group of psychotropic drugs. From the clinical viewpoint, there are important quantitative differences between their actions, but the qualitative similarities of the various phenothiazines facilitate their discussion as a group. Some important phenothiazine derivatives are chlorpromazine (Thorazine), triflupromazine (Vesprin), promazine (Sparine), methoxypropazine (Tentone), mepazine (Pacatal), piperacetazine (Quide), prochlorperazine (Compazine), perphenazine (Trilafon), trifluoperazine (Stelazine), fluphenazine (Prolixin, Permitil), acetophenazine (Tindal), carphenazine (Proketazine), and butyrylperazine (Repoise). They act on the mesodiencephalic activating system, including its caudal and rostral components; the reticular formation; and the diffuse thalamocortical projections. and depress them

Action

Mesodiencephalic activating system. An important component of the mesodiencephalic activating system as a whole is cholinergic in function; and, atropine, for example, can block EEG arousal caused by practically any kind of stimulus. These inhibiting effects occur because the rostral component of the mesodiencephalic activating system, arising in the diffuse thalamocortical nuclei with their thalamocortical projections, is cholinergic in part. (On the other hand, the caudal portion, the reticular formation, responds to adrenergic stimuli. This response is probably not a direct action but is due to the effects of epinephrine and epinephrine-like substances on afferent collaterals to the reticular formation.) The integrated activity of the caudal and rostral components are responsible for the EEG-alerting reactions. The blocking effect of phenothiazines on the EEG is in accordance with their cholinolytic action, even though it is much weaker than that of atropine. Figure 2 presents an example of the prevention of EEG arousal with a single dose of chlorpromazine. This blocking action

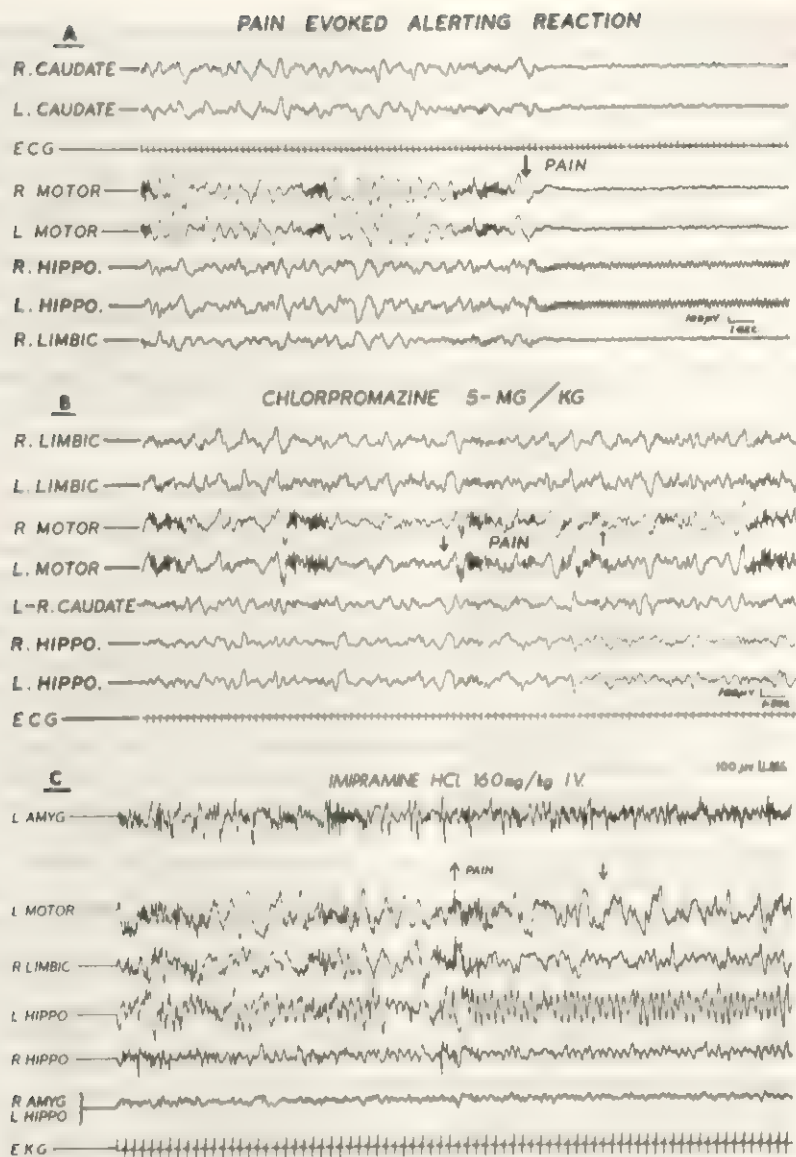


FIGURE 2. Alert EEG patterns evoked by painful stimulus and prevented by chlorpromazine and imipramine. *A*, bilateral leads taken from various cerebral structures as indicated: on right side, electroencephalographic control pattern of resting rabbit; on left side, the effects of pinching rabbit's leg. *B*, change produced by chlorpromazine (5 mg per kilogram) in electroencephalographic pattern in response to pain. Note the absence of the alerting reaction to pain. *C*, effects of imipramine HCl on EEG arousal following peripheral pain stimulation. Note that the EEG arousal response to pain stimulation is blocked after the administration of imipramine HCl, 16 mg per kilogram. (From Himwich, H. L. Anatomy and physiology of the emotions and their relation to psychoactive drugs. In *Scientific Basis of Drug Therapy in Psychiatry*. Proceedings of Symposium at St. Bartholomew's Hospital, London, September 7 and 8, 1964, pp. 3-24. Pergamon Press, London, 1965.)

may provide a basis for the alleviation of the distressing emotional cloak that surrounds noxious stimuli. It is well known that patients bear pain with less difficulty under phenothiazine therapy than without one of these drugs.

Reticular formation. Phenothiazine tranquilization also correlates with depression of the hypothalamus and midbrain reticular formation, areas containing relatively high concentrations of monoamine neurotransmitters, whose actions are inhibited by members

of this group of drugs. This hypothalamic depression is attributed to an inhibiting effect on the α -adrenergic blocking action by chlorpromazine, thus preventing the response of the postsynaptic receptor to the monoamine neurotransmitter (see Figure 4). As the blood-brain barrier is permeable to the phenothiazines, there is no reason to doubt their penetration into the hypothalamus. In addition, it has been found that the phenothiazines reduce to some degree the excitability of the extrahypothalamic limbic structures. There-

fore, the tranquilization produced by the phenothiazines seems to be associated with indirect influences on the hypothalamus and direct blocking action that prevents the reaction between the receptor sites and the monoamine neurotransmitters, norepinephrine and serotonin. Clinically, tranquilization is not specific in the treatment of schizophrenia; the drugs tranquilize irrespective of the diagnostic category and also relax people without mental disorders.

Thalamocortical projections. It is another question entirely to explain how hallucinations and delusions of schizophrenic patients are mitigated or eliminated by the phenothiazines. Because false sensory interpretations and unrealistic thinking in schizophrenic patients are favorably influenced, the therapeutic actions necessarily seem to involve neocortical functions. Because of the Papez circuit and similar reverberating feedbacks that involve both neocortical and limbic areas, the effect of the phenothiazines on the older brain parts may be indirectly brought to bear on functions allocated chiefly to the neocortex. Because of the drug-induced diminished intensity of the emotional reactions and the resulting decrease of anxiety, the defenses are no longer maintained.

Haloperidol (Haldol). This drug, a butyrophenone, acts in many ways like a phenothiazine; small doses inhibit the mesodiencephalic activating system, probably in its rostral component. Larger doses, however, evoke EEG alert patterns. Clinically, the butyrophenone is more potent than the phenothiazines in general, but severe extrapyramidal disturbances are also exhibited with it, especially in excessive dosages. In observations on rabbit brain, smaller doses were required for the butyrophenone to block EEG arousal and evoke EEG alerting than were necessary for the phenothiazines. Similarly, both chlorpromazine and haloperidol enhance the accumulations of norepinephrine and catecholamine metabolites produced by the monoamine oxidase inhibitors in the brain.

Drugs Used in the Treatment of Depression

Iminodibenzyls. These antidepressant drugs, the psychostimulants or thymoleptics, are employed best in the management of psychotic depression of endogenous origin: melancholia and the depressive phase of the manic-depressive psychosis. The iminodibenzyl derivatives, initiated with the use of imipramine (Tofranil), soon included amitriptyline (Elavil), desmethylinipramine (Pertofrane and Norpramin), and opipramol (Ensidon). Two somewhat different chemical forms of desmethylinipramine (Nor- triptyline and Vivactil) were also developed. The antidepressant effects of these drugs seem specific against endogenous depressions, and the stimulating actions on behavior of other kinds of depression and of nondepressed individuals are neither as marked nor as constant.

Monoamine oxidase inhibitors. These antidepressant drugs, the psychic energizers, secure their most favorable effects in atypical depressions in which either anxiety or hysteroid features are predominant. The monoamine oxidase inhibitors started with iproniazid (Marsilid) and now include isocarboxazid (Marplan), nialamide (Niamid), phenelzine (Nardil), and reversible ones like tranylecypromine (Parnate). Their therapeutic actions cannot be regarded as specific, for they exert euphorizing effects in individuals who are not depressed. The side reactions of the monoamine oxidase inhibitors are more dangerous and occur more frequently than those of the iminodibenzyls, but the untoward result can usually be prevented by lower dosages and appropriate medical treatment.

Phenothiazines. These drugs may exert antidepressant effects in addition to the tranquilization for which they are noted. Overall and his colleagues observed a paradoxical clinical result, a lifting of depression, with the phenothiazine thioridazine (Mellaril). A group of patients was selected on a basis of having depression as the major symptom, regardless of whether the psychiatric diagnoses fitted the usual depressive syndromes. Comparing the results of thioridazine with those of imipramine on these depressed patients, they found that there were essentially no significant differences in the salutary effects of these two drugs on the depressed patients.

Comparisons of the drugs. A study of the EEG in animals reveals that under certain conditions the members of all three groups of drugs with clinical antidepressant actions may evoke EEG alerting. It is possible that this alerting may be associated with the antidepressant clinical effects of the iminodibenzyls as well as of the phenothiazines. In regard to tranylecypromine (Parnate), this monoamine oxidase inhibitor administered in 2 mg. per kilogram doses (see Figure 3C) twice in 2 hours evoked EEG alerting.

The phenothiazines and the iminodibenzyls have a common basis for their ability to evoke EEG alerting. In contrast to the blocking effects of the acute administration of phenothiazines or iminodibenzyls, EEG arousal results (see Figure 2) if the same dosage is given chronically, day after day. Studies on chronic administration were made with four phenothiazines—chlorpromazine, trifluorpromazine, perphenazine, and trifluoperazine—and two iminodibenzyls—amitriptyline and imipramine. EEG tracings were recorded 18 hours after the last chronic dosage, and activated patterns were observed in the absence of any apparent stimulation. In most instances on the 6th day of chronic medication, and in all animals at 9 days, the EEG pattern exhibited increased spontaneous alerting. The percentage duration of alerting on these animals was greater than the percentage duration of alerting in unmedicated animals. This EEG alerting reaction is not one of paradoxical sleep but is,

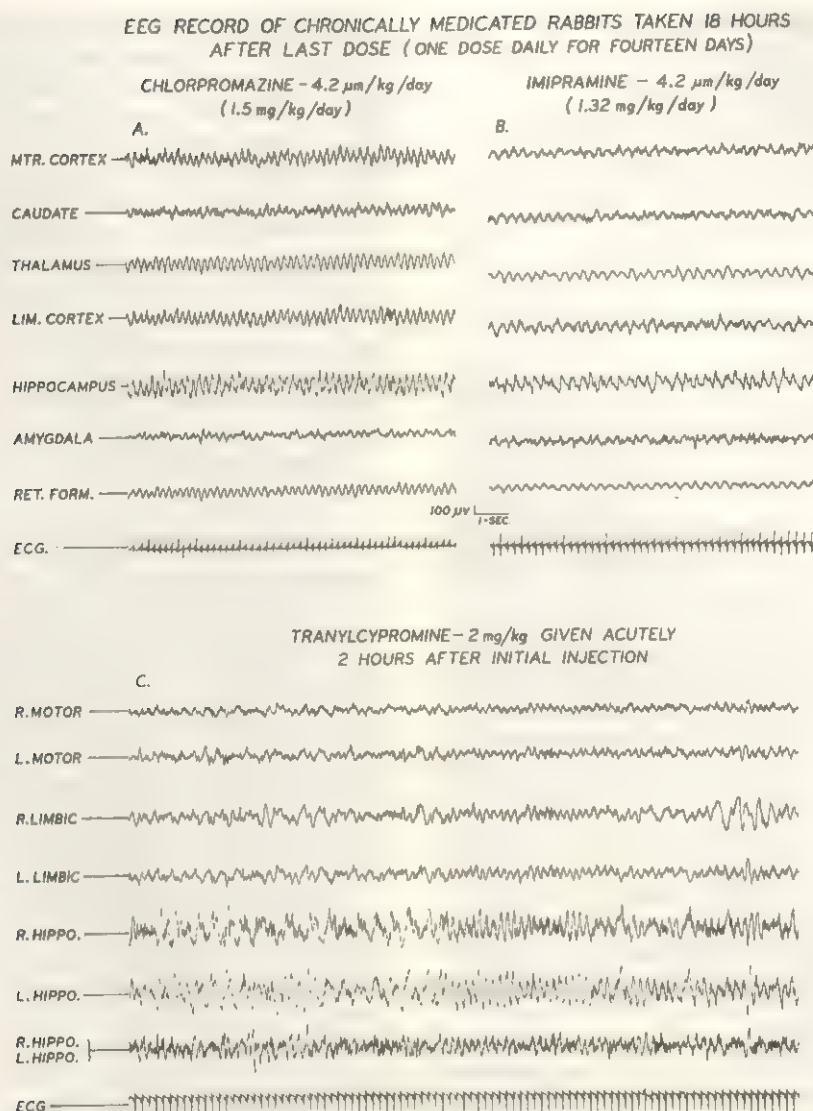


FIGURE 3. Effects of chlorpromazine, imipramine, and tranylcypromine. Spontaneous EEG activation resulted from chronic medication with chlorpromazine (A), imipramine (B), and tranylcypromine (Parnate) (C). (From Himwich, H. E. Loci of action of psychotropic drugs in the brain. *Fol. Psychiat. Neurol. Jap.*, 19: 217, 1965.)

rather, associated with wakefulness. Thus, in Figure 3 the effect of the chronic administration of chlorpromazine (A) and imipramine (B) observed 18 hours after the last dose revealed alerting.

The mechanism of action of the changes produced by chronic administration involves, among other factors, drug storage, especially in brain tissue, and the more rapid rate of metabolism of the drugs by increased amounts of the drug-metabolizing enzymes. These enzymes are contained in the microsomes, and the increased concentration of microsomes occurring with chronic dosage is referred to as enzyme induction. Enzyme induction, leading to a more rapid detoxication of the drugs, has been observed for various chemical agents and may also apply to the phenothiazines and iminodibenzyls. Irrespective of the processes involved, the members of these three groups of

drugs, when given chronically, all have the ability to facilitate the stimulating effects of EEG alerting.

Only the monoamine oxidase inhibitors have the power to elevate significantly the levels of brain neurohormones. But there are also differences between the phenothiazines and iminodibenzyls. In some ways the iminodibenzyls exhibit stimulating effects not shared to any great extent by the phenothiazines. In contrast to the phenothiazines, six of the seven iminodibenzyls studied evoked spikelike activity in the subcortical structures, particularly the olfactory bulb.

Psychotropic Drugs and Cellular Metabolism

To understand the clinical effects of these drugs, one might consider their pharmacological actions at the cellular level. Imipramine and chlorpromazine have different effects on peripheral actions, as exhib-

A genetic explanation may also explain the different clinical results with the use of butyrylperazine on patients in Germany and the United States. In America the results were poorer, despite the higher dosage required. Still another confusing phenomenon in the understanding of patients is that the same disease may have different modes of expression in people belonging to different cultures.

Minor Tranquilizers Used in the Treatment of Neuroses

For patients with grave forms of the neuroses, the same drugs are used as for patients with psychoses, namely, the major tranquilizers, but not for the same reason. In neuroses, the psychotropic drugs are given for the general calming action, an antianxiety effect, rather than as specifics. Nevertheless, in the milder forms of neuroses, including neurotic or reactive depressions, the minor tranquilizers bring strong adjunctive support to psychotherapy. By diminishing anxiety and tension, they help tide the patient over particularly bad periods, characterized by disabling anxiety, that may occur during psychotherapy. They may be also administered to overcome anxiety throughout the course of psychotherapy.

Chlordiazepoxide (Librium). In usual doses, chlordiazepoxide and the related diazepam (Valium) possess valuable assets in the amelioration of anxiety, whether or not associated with somatic complaints. Thiazenone and oxazepam (Serax) are similar medicaments. One action of these drugs, accounting for the antianxiety effect, is a polysynaptic depression, which releases muscular spasms and thus indirectly diminishes the muscular tension brought on

by anxiety. In antispasmodic activity, diazepam is superior to chlordiazepoxide. Both drugs exert weak or no effects on the neocortex and neurotransmitter depots, but their antianxiety action seems to parallel their depressant influences on limbic structures—the septum, amygdala, and hippocampus. Such a depression may simulate to a certain degree the tranquilization observed with animals subjected to extirpations of these structures.

In experiments in which the amygdala was stimulated and evoked potentials taken off the hippocampus (see Figure 5), the administration of chlordiazepoxide or diazepam reduced the hippocampal responses. It is known that the amygdala and hippocampus may exert facilitatory influences upon behavior, and the elimination of such stimulation is produced by extirpation of these areas. A similar reduction of the sensitivity brought about by the depressant effects of chlordiazepoxide and diazepam may diminish the reactions to stressful influences, thus ameliorating anxiety. Such a desirable clinical response also parallels the ability of these drugs to inhibit, to a moderate degree, the alerting reaction to stimuli.

Meprobamate (Miltown, Equanil). Meprobamate calms the tense and nervous depressed patient, so frequently seen in general practice, and is also used to allay the anxiety occurring with neurotic depressions, and depressed moods of exogenous or reactive origin. In usual doses this drug does not significantly influence the discriminative functions of the neocortex or those of either component of the mesodiencephalic activating system to affect EEG patterns. Neurotransmitter depots, moreover, are not altered.

On the other hand, meprobamate exerts potent ef-

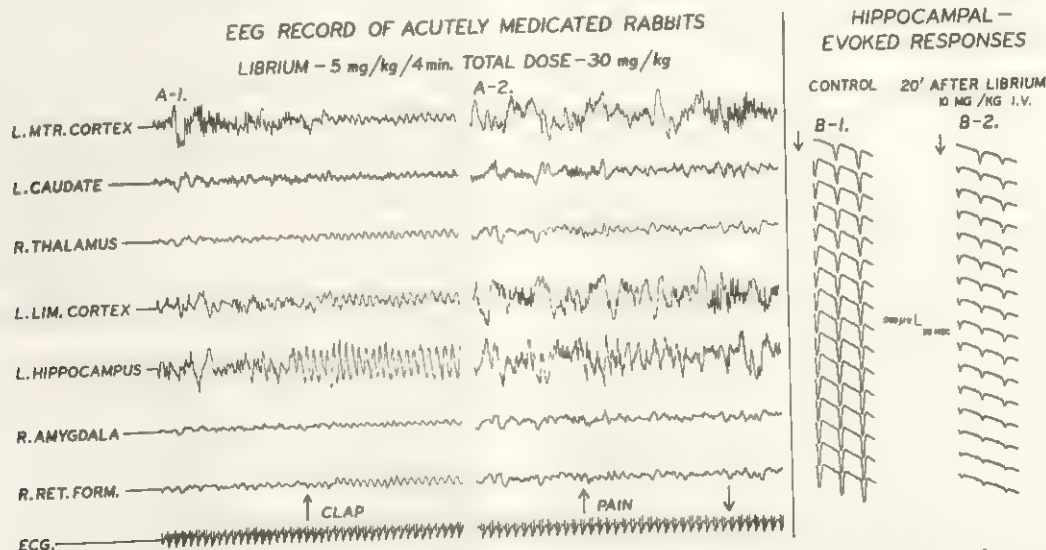


FIGURE 5. Effects of chlordiazepoxide (Librium) on spontaneous EEG recordings and evoked hippocampal responses following stimulation of the amygdala. A-1, control EEG, revealing the change from an alerting to a resting pattern (A-2), as the effect of the painful stimulus on EEG alerting is blocked by the administration of chlordiazepoxide. B-1, hippocampal responses to single shocks and repetitive stimulation of lateral nucleus of the amygdala. B-2, Response to repetitive stimulation 20 minutes after intravenous injection of 10 mg. of chlordiazepoxide per kilogram. Note gradual impairment of evoked response. (From Himwich, H. E. Loci of actions of psychotropic drugs in the brain. *Fol. Psychiat. Neurol. Jap.*, 19: 217, 1965.)

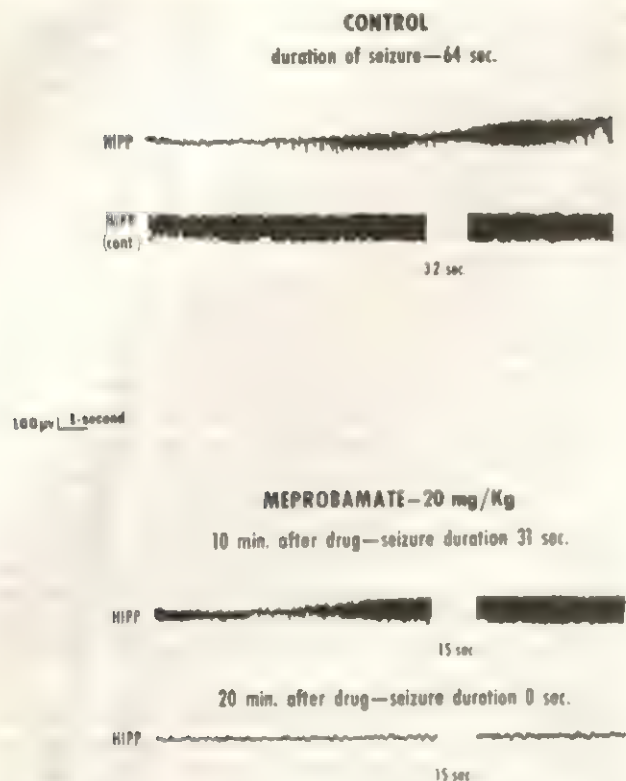


FIGURE 6. Effect of meprobamate. It shortens duration of after-discharge produced in the hippocampus by local electrical stimulation. Control record prior to drug administration is presented as well as records made 10 and 20 minutes after administration of meprobamate. Each tracing begins at the end of a stimulation period. (From Kletzkyn, M., and Berger, F. M. Effect of meprobamate on limbic system of the brain. *Proc. Soc. Exper. Biol. Med.*, 100: 631, 1959.)

fects on some limbic structures. In rats, meprobamate sets aside the irritability and savagery on tactile stimulation following the surgical production of septal lesions. Similarly, meprobamate has been found effective in rendering the hippocampus less sensitive to stimuli, as the after-discharge following electrical stimulation of that structure is first reduced and finally eliminated (see Figure 6). This reduction of hippocampal activity may bring on an attendant diminution of anxiety.

Barbiturates. The superior effect of the psychotropic drugs, in comparison with the barbiturates, in the treatment of psychotic patients depends on the more specifically directed actions of the major tranquilizers. In vitro results on brain tissue reveal that the most profound metabolic depression produced by pentobarbital is observed on the neocortex rather than on the subcortical areas. Similarly, in vivo, the barbiturates preferentially depress the primary sensory neocortical areas, a decrease associated with the deeper depression of neocortical metabolism. Further evidence is afforded by comparative studies of the distribution of the phenothiazines and the barbiturates in the brain. Chlorpromazine is concentrated

in the neocortex to a lesser extent than in subcortical structures: hypothalamus, hippocampus, amygdala, midbrain, and medulla. In addition, chlorpromazine is found in high concentrations in the basal ganglia, thalamus, and pons. In contrast, barbiturates exhibit a nearly equal distribution in all parts of the brain.

In experimental studies of behavior, the barbiturates are less specific and extinguish both the conditioned and the unconditioned reflex responses with approximately similar dosages. The phenothiazines depress the conditioned reflex at levels significantly lower than those required for the unconditioned reflex. Thus, the barbiturates possess the more generalized actions exerted in all parts of the brain. Functionally important is the power of the barbiturates to depress significantly the mesodiencephalic activating system due to a direct action upon its caudad component, the reticular formation. These drugs, therefore, block the EEG as seen in Figure 7, as well as the behavioral elements of arousal, both of which are mediated in part by the midbrain reticular formation. Thus behavioral responses to stimuli are diminished.

The barbiturates increase the neurohormonal stores moderately. This increase, however, is secondary to central depression. Moreover, they directly diminish the excitability of the hypothalamic functions, including the center for wakefulness. In addition, the limbic structures feeding into the hypothalamus are rendered less sensitive to stimuli (see Figure 6). All these depressant actions present possible sources of the sedative-hypnotic powers of the barbiturates.

An even more significant difference between the tranquilizers in general and the barbiturates as a group is that the barbiturates exert more widespread influences on the brain, including the neocortical areas, which are associated with the so-called higher functions of the mind. For this reason, the barbiturates interfere with therapeutic processes that require understanding and cooperation, especially important with neurotic patients. In addition, in large doses, sometimes taken with suicidal intent, they present the danger of death due to respiratory failure.

Thus, the more powerful psychotropic agents, especially the phenothiazines and the iminodibenzyls, used in the treatment of psychoses, exert various actions at many sites, particularly on the structures forming the limbic cortex, a broad and varied base. This situation is analogous to the complex behavioral effects of these drugs and their successes in the management of the varied symptoms of psychotic patients. Moreover, the clinical effects seem to be specific against such psychotic manifestations as hallucinations and delusions. The minor tranquilizers, on the other hand, are found to act in comparatively fewer limbic areas and to assume an adjunctive role in the treatment of the neuroses, chiefly by their ame-

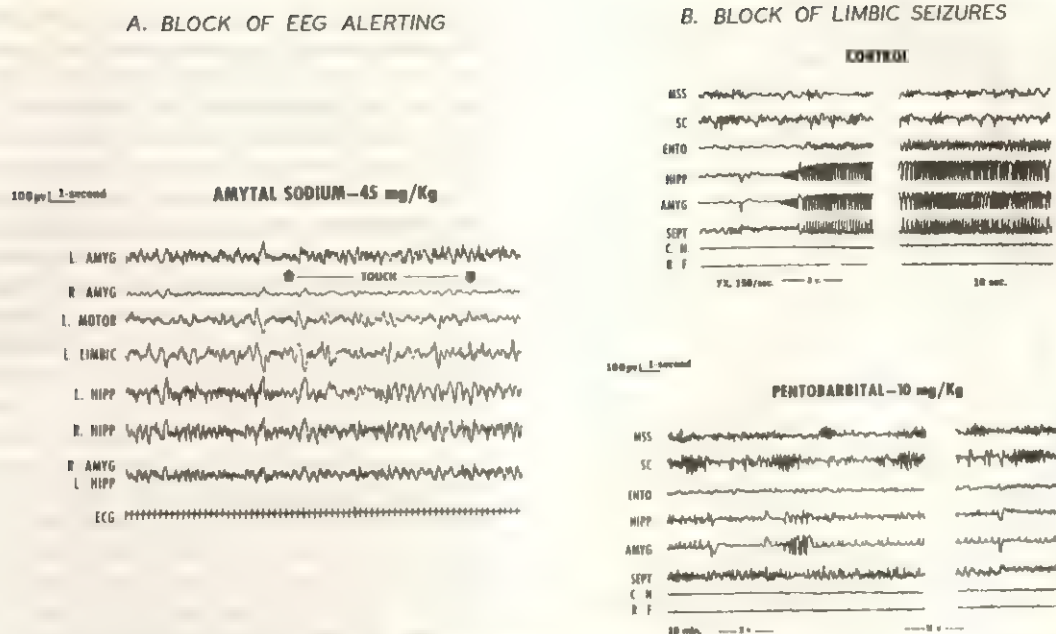


FIGURE 7. Blocking action of drugs. A, EEG alerting in response to touch is entirely eliminated by sodium Amytal as the reticular formation is inhibited. B, limbic-lobe seizures resulting from stimulation of the fornix were eliminated by pentobarbital. The blocking actions of pentobarbital on seizures were confined to the limbic lobe. Recordings were taken from median suprasylvian (MSS), sensory cortex (SC), entorhinal cortex (ENTO), hippocampus (HIPP), amygdala (AMYG), septum (SEPT), caudate nucleus (CN), and reticular formation of the mesencephalon (RF). (A, From Himwich, H. E. Tranquilizers, barbiturates and the brain. *J. Neuropsychiat*, 3: 279, 1962. B, From Killam, E. K., and Killam, K. F. The influence of drugs on central afferent pathways. In *Brain Mechanisms and Drug Actions*, W. S. Fields, editor, p. 71. Charles C Thomas, Springfield, Ill., 1957.)

literation of the anxiety associated with the neurotic processes.

The more potent major tranquilizers, used in the treatment of the psychoses, also present stronger and more frequent side reactions. The minor tranquilizers, employed with neurotic patients, exhibit fewer and milder side effects.

When the psychotropic drugs as a group are compared with the barbiturates, both at the basic and clinical levels, it is seen that the actions of the psychotropic group are more specifically directed in the treatment of mentally disturbed patients than those of the barbiturates.

Hallucinogens

Manifestations

Catechol and indole groups. The actions of psychotomimetic drugs belonging to the catechol or indole groups have been studied in controls and in former opiate addicts and psychotic patients, chiefly schizophrenics, by Harris Isbell and associates. Though behavioral alterations vary from person to person and even in a given individual, they are apt to include anxiety and difficulties in explaining sensations, in concentrating, and in understanding; all of these alterations are accompanied by flights of ideas. Elation is more common than depression. Perceptual alterations are many. Greater sensitivity to touch;

hyperacusis; changes in size, color, and depth vision; elementary kalcidoscopic visual variations; and true hallucinations are seen. In addition, depersonalization is frequently observed, and the patient thinks that the size, weight, shape, and appearance of various parts of the body change. More important, when these hallucinogens are not given in excessive doses, all of these psychotic manifestations occur in a state of clear consciousness. The characteristics of the psychotic reactions appear to be within the same spheres in the addicts and in the controls.

In active schizophrenics studied by Paul Hoch, however, greater accentuation of the psychotic symptoms is observed, with more marked disorganization of thought and less awareness of reality than in the controls, as the clinical profiles of the patients became more florid.

In "burnt out" schizophrenics, visual hallucinations and disturbances of body image are also observed. But emotional apathy and indifference appear to a greater degree in them than in patients with more active symptoms. This difference suggests a phenomenon observed with schizophrenic patients receiving monoamine oxidase inhibitors with either methionine, tryptophan, or cysteine: the symptoms characteristic of a given schizophrenic patient are repeated in more exaggerated forms during the behavioral exacerbations brought on by these treatments.

PSYCHOTOMIMETIC & NON-PSYCHOTOMIMETIC CONGENERS

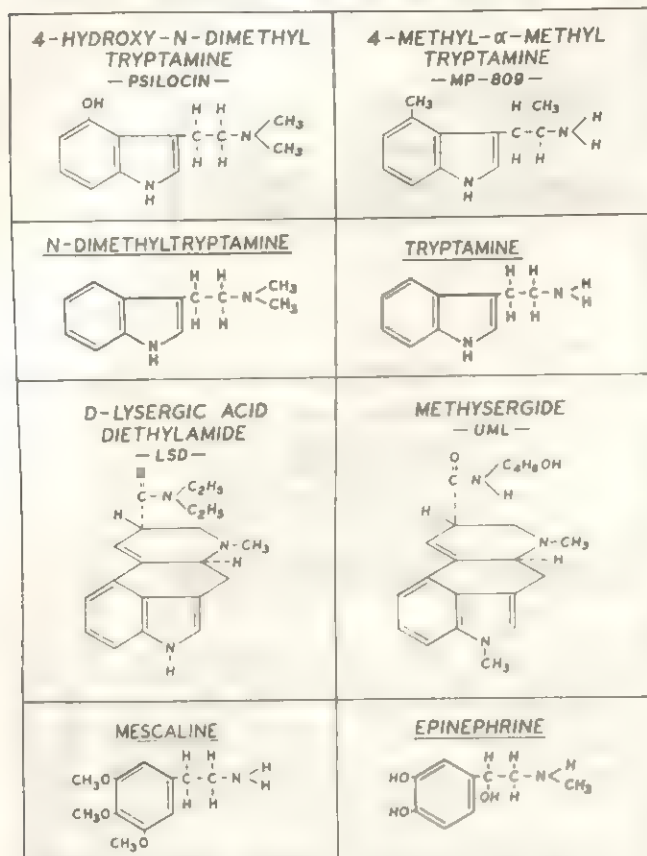


FIGURE 8. Psychotomimetic and nonpsychotomimetic congeners. Note that the indole psychotomimetics have either an *N*-dimethyl group (psilocin, *N*-dimethyltryptamine) or an *N*-diethyl group (LSD), but mescaline possesses *O*-methyl groups, and nonpsychotomimetic congeners are devoid of such groups. In contrast, 4-methyl- α -methyltryptamine and the other nonpsychotomimetic congeners—tryptamine and methysergide (UML, Sansert)—do not contain either *N*-dimethyl or *N*-diethyl groups, and epinephrine does not have *O*-methyl groups. (Prepared for this chapter by H. E. Himwich.)

Systemic reactions to psychotomimetic agents, studied quantitatively, reveal rises in rectal temperature, pulse rate, respiratory rate, systolic blood pressure, and pupillary diameter. In accordance with these signs of excitation, there is also a decreased threshold for the knee jerk.

Cholinolytics. In another group of drugs, including atropine and similar cholinolytics, are two agents, scopolamine and Ditrane, an *N*-methyl-3-piperidylbenzilate studied by Abood and Meduna in 1958. Like the catechol and indole psychotomimetics, the cholinolytics produced gross distortions of visual perceptions, hallucinations, and paranoid ideation with ideas of grandeur in some patients. Others, however, exhibited chiefly a confusional state, delirium with faulty orientation, clouding of the sensorium, and memory disturbances.

This emphasis on the delirious state suggests that cholinolytics act by different mechanisms than the indole or catechol psychotomimetics.

Tolerance. The behavioral changes with the indole and catechol psychotomimetics seem to apply somewhat more closely than those with the cholinolytics to the symptoms of schizophrenia. The action mechanism in noncholinolytic psychotomimetics develops rapidly and is evident after 3 days of drug administration, both in systemic and behavioral effects. The changes in knee jerks, blood pressure, and pupillary diameter are significantly diminished. Doses even quadruple the original do not restore the original severity of the mental changes. Tolerance is also rapidly lost, and the intensities of the reactions are fully restored 3 days after the discontinuation of lysergic acid diethylamide (LSD).

The spectrums of the objective and subjective reactions to the indoles—LSD, psilocin, and psilocybin—and to the catechol, mescaline, are strikingly similar. Because of this similarity, Isbell and coworkers suggested that all four drugs produce their effects via a common mechanism. They proceeded to test this hypothesis in studies of cross-tolerance. If the loss of sensitivity to the continued administration of LSD is called direct tolerance, then the tolerance to the subsequent administration of any other member of this group of four drugs is cross-tolerance. Isbell and colleagues demonstrated strong cross-tolerances among these drugs.

Mechanism of action. The observations on cross-tolerance reveal that both the indole and the catechol psychotomimetics must be considered in the analysis of the mechanism of action, as in the experiments performed by Himwich and collaborators. A series of observations on rabbits to study indole psychotomimetics (psilocybin, psilocin, bufotenin, *N*-dimethyltryptamine, LSD) and catechols (mescaline and dimethoxyphenylethylamine) revealed that each of these drugs is capable of exciting EEG alerting in the intact animal but not in preparations with brain stem transected just below the midbrain. Thus, a structure in the lower brain stem affords a site for EEG arousal by these two groups of psychotomimetics. Though the nonpsychotomimetic congeners of these drugs also bring on EEG alerting in an animal with intact brain, a series of transections reveal that they depend on an area in the midbrain.

Chemical structure. Another difference between the psychotomimetic and nonpsychotomimetic agents is evident in the chemical structure: the molecules of the psychotomimetic agents contain either *N*-dimethyl-(CH₃) or *N*-diethyl-(C₂H₅) groups in strategic sites, but the psychotomimetic catechols are *O*-methylated. The nonpsychotomimetics do not have either *N*-dimethyl or *O*-methyl groups (see Figure 8). The *O*-methylated catechols include mescaline and dimethoxyphenylethylamine; with the latter there is a direct connection between the screening studies of psychotomimetic drugs in rabbits and the clinical observations of Friedhoff and Van Winkle, as that compound appears in the urine of schizophrenic patients.

Limbic system changes. Experiments also disclosed changes in the limbic system of the rabbit, especially in the hippocampus, with characteristic slow theta electrical potentials accompanying the EEG arousal patterns. Investigations of Monroe and Heath have revealed the great sensitivity of the hippocampus, a sensitivity that appears to be specific, as seen in discriminative task performances of cats exposed to LSD. Stimulation of the reticular formation can evoke both EEG arousal with rapid low amplitude cortical waves and hippocampal theta rhythms, and stimulation of the posterior hippocampus can also cause EEG alerting, so it would seem that these two processes are closely related phenomena.

Biochemical changes. A biochemical description of a mechanism of action of psychotogenic agents can be suggested. Because the indole amines and catecholamines are prominently represented in the limbic system, it has been suggested that the psychotogenic substances either interfere with the metabolic processes of the indoles and catechols in the brain or take the place of normal brain constituents and evoke abnormal reactions. By either process, aberrant behavioral results may be expected. The recent discoveries of the role of indoles and catechols in the urine of schizophrenic patients add substance to such a conception.

Suggested Cross References

See the chapters on schizophrenia, the depressive reactions, the brain disorders, and mental retardation (Chapters 15, 17, 18 to 21, and 22, respectively) for information regarding the clinical features of the psychiatric disorders that are discussed in this section in relation to psychopharmacology. The clinical use of the psychoactive drugs is presented in Sections 35.1 and 35.2 in the chapter on organic treatment. For a further discussion of the hallucinogens, see Section 5.4 by Mandell and West.

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2.4 SLEEP AND DREAMS

WILLIAM C. DEMENT, M.D., Ph.D.

Sleep may be briefly characterized as a readily reversible suspension of sensorimotor interaction with the environment, usually associated with recumbency and immobility. As such, it appears to interrupt wakefulness periodically in vertebrate organisms, but its presence may become difficult to establish in lower organisms and plants, where it blurs with transitory intervals of inactivity resulting from environmental influences; or in higher organisms, where it is difficult to differentiate from such borderline conditions as hibernations, anesthesia, trance, and coma.

Sleep has great practical interest for biologists and psychiatrists from several points of view: (1) it provides a basal background state against which arousal or vigilance mechanisms may be superimposed and studied; (2) it poses problems related to its seeming obligatory universality; (3) it provides the physiological background for the experience of dreaming; and (4) it has clinical implications, especially in regard to sleep disturbances and the relationship of sleep to psychopathology.

The field of sleep research has been unusually active in the last few years. As a consequence, there is no simple answer to the question, "What is sleep?" The major complication in answering this question, even from a descriptive viewpoint, is the recent finding that sleep is not one thing but at least two entirely different things. It is now generally accepted that there are two kinds of sleep, which are suffi-

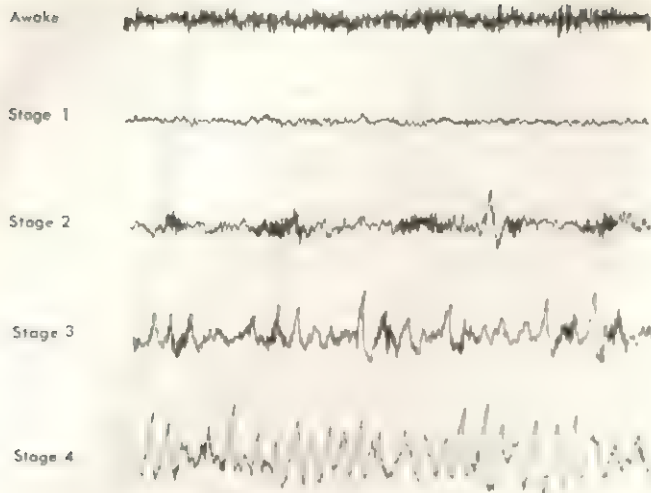


FIGURE 1. EEG tracings of sleep stages. These sample tracings of a subject's brain waves were made during a single night. The recording paper was moving under the pens at one-third the standard speed, which means that the waves are somewhat pushed together. The top line shows the 10-per-second alpha waves characteristic of the "awake" EEG. Their mean amplitude is about 50 microvolts. The stage 1 tracing shows a mixture of low voltage, irregular, relatively fast waves. The stage 2 tracing shows the characteristic waxing-waning bursts of regular waves (sleep spindles) lasting 1 to 2 seconds. The frequency of the spindle waves is about 12 to 14 per second, which causes them to be somewhat blurred at this paper speed. Nonetheless, they stand out sharply from the low voltage, irregular background rhythms. A moderate amount of high voltage, slow activity waves is seen in the stage 3 tracing. Stage 4 is characterized by continuous high voltage, slow activity waves. Their frequency is about 1 per second. (From Dement, W. C. *An essay on dreams*. In *New Directions in Psychology*, vol. II. Holt, Rinehart and Winston, New York, 1965.)

ciently disparate to raise the question of whether the term "sleep" should, in fact, apply to both. Moreover, within each of these major divisions, there are variations of one sort or another. It appears that our understanding of sleep mechanisms has developed to a point where no unitary explanation will suffice for all the phenomena that have been observed.

Unfortunately, there is no standard nomenclature for the two kinds of sleep, and a bewildering array of names have been used. The single term "sleep" served to cover all eventualities, with the exception of borderline states, until 1953, when Aserinsky and Kleitman at the University of Chicago reported the occurrence of rapid eye movements in sleeping subjects. It is now known that these rapid eye movements occur during a specific state, to which the term rapid eye movement (REM) sleep has been applied by some workers. In line with this, the remainder of sleep has been designated as non-rapid eye movement (NREM) sleep. A number of other labels have been applied. For example, REM sleep is also called "dreaming sleep," "paradoxical sleep," "fast sleep," "deep sleep," and "rhombencephalic sleep." NREM sleep has been called "slow sleep," "neocortical sleep," "light sleep," and "classical sleep."

Prior to the discovery of rapid eye movements, there was no suspicion that sleep was more than one thing. In general, it was felt that organisms with complex nervous systems existed on a sort of vertical continuum of sleep and wakefulness. It was assumed that, depending on the degree of central nervous activity, the organism would shift about on this continuum, through a range extending from deep sleep to a highly alert state. Thus, sleep was essentially a uniform state, varying only in intensity or depth. A great deal of early data was derived from single observations that were generalized to include the entire sleep period, the investigator feeling no need to repeat his observations in other segments of this presumably uniform state. Furthermore, some experimental studies must have confounded the two states. In the case of total sleep deprivation, for example, the organism is being simultaneously deprived of two entirely different things.

For a variety of reasons, the probability that most observations on sleep actually dealt with NREM sleep is quite high. The current situation is somewhat analogous to a Newtonian versus an Einsteinian view of physical systems. The latter does not invalidate the former; it is, rather, an extension. If most of the information obtained on sleep prior to the discovery of rapid eye movements is assumed to apply to NREM sleep, the more recent findings on both kinds of sleep simply fill out and extend the picture.

NREM Sleep

Ordinarily, the normal adult mammal, in going to sleep, passes from wakefulness into that state now known as NREM sleep. With occasional exceptions, this process is closely associated with a marked behavioral change from movement and uprightiness to stillness and recumbency. Humans—but probably not animals—can mimic many of the gross behavioral aspects of sleep. Such things as eye closure, stillness, and regular breathing can be easily simulated. Other attributes of sleep may be brought about by relaxation and recumbency alone. Because of these factors, more penetrating measures have been utilized to establish the presence of sleep. Of these, perhaps the most widely used is the electroencephalogram (EEG), which has been particularly well studied in the human.

EEG. For all practical purposes, the electroencephalogram (EEG) defines the presence of NREM sleep in the human. Actually, a small sample of brain waves contains a highly complex mixture of amplitudes and frequencies, but certain ones usually predominate and may serve to characterize the sample. It has been possible to divide the continuum of change in EEG rhythms through wakefulness and NREM sleep into several easily recognized stages. Interestingly enough, the widest range of gross variation occurs in NREM sleep, not in wakefulness. A typical categorization is illustrated in Figure 1. These definitions are strictly valid only for the human adult. In younger age

groups, the over-all frequency spectrum of the EEG is shifted toward the slow side, and classification must be altered to take this into account.

Figure 2 shows the plots of all night recordings for three representative nights of sleep. The dark bars represent REM sleep, which is discussed below. The time spent in the various stages and their periodicity are relatively constant from night to night in human subjects. These EEG stages have been presumed to indicate the depth of sleep, with the high amplitude, slow wave phase representing the maximum depth. It should be noted that stage 4, the high voltage, slow activity period, occurs mostly in the early hours of the night.

Prolonged sleep deprivation does not change the amplitude or frequency of stage 4 patterns. If amplitude and frequency are taken as some measure of depth of sleep, no increase in depth follows even as much as 11 days of total sleep deprivation. There is every likelihood that the various predominant wave patterns of these stages are produced by specific neural mechanisms and remain constant in their form, unless the mechanisms are altered by serious damage.

The NREM sleep EEG is not usually subdivided in other animals, with the exception of primates. For example, in the cat, the NREM sleep EEG is characterized by a combination of slow waves and spindles with little variability. It is of more than passing interest that an NREM sleep EEG is frequently seen in the cat when behavioral sleep, in the sense of recumbency, is not actually present. In most such cases, the animal is obviously not wide awake. However, some animals can apparently sleep in a sitting or standing position quite readily. These observations support findings in which a dissociation between EEG patterns and behavior has been demonstrated pharmacologically and surgically, with frank sleep or waking patterns accompanying their behavioral opposites.

Skeletal muscular activity. Sleep has always been considered a time of muscular relaxation in the service of rest and restoration, and in almost all cases a recumbent position is assumed. In humans, a deliberate reduction of muscular activity always precedes sleep.

In NREM sleep, there is immobility, and muscular tension in the usual sense is not present. However, if electromyographic (EMG) recordings are taken, one finds that EMG potentials continue to be present in a tonic fashion during NREM sleep. In addition, a number of spinal reflex responses may be readily elicited, particularly the tendon reflexes. And special conditions invariably associated with sleep are contractions, or at least resistance to forcing from inside, of anal and vesicular sphincters.

A great deal of body movement is initiated during NREM sleep, but it is a moot question as to whether or not sleep is actually present, in the usual sense, during the movement. EEG tracings at these moments generally show changes suggesting transient wakefulness, but the subject is not necessarily responsive, nor

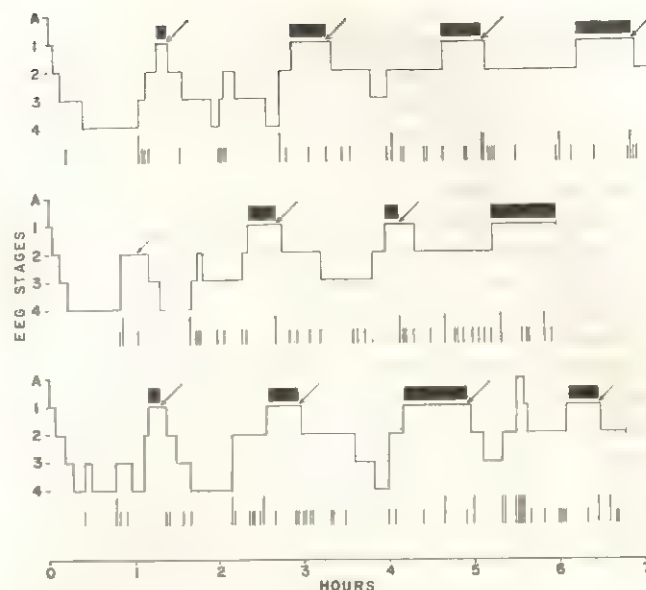


FIGURE 2. Plots of EEG stages during 3 nights. The thick bars above the EEG lines indicate periods during which rapid eye movements were seen. The arrows indicate the end of one EEG cycle and the beginning of the next. The vertical lines below each plot stand for body movements. The longer lines indicate large movement, changes in position of the whole body; the shorter lines represent smaller movements. (Reprinted by permission from Dement, W. C., and Kleitman, N. Cyclic variations in EEG during sleep and their relation to eye movements, body motility, and dreaming. *Electroenceph. Clin. Neurophysiol.*, 9: 673, 1957.)

is he likely to recall having moved. A recent study of sleepwalkers has shown that, even during actual locomotion, the brain waves do not show fully awake patterns. Thus, the sleepwalker is actually asleep, even though walking. All of this points to a diminution of motor activity during NREM sleep but no active and potent inhibition of motor functions.

Oculomotor activity. NREM sleep has its own characteristic eyeball activity, a slow, pendulous, side-to-side movement. One of the most precise indicators of some fairly abrupt transition from wakefulness to sleep, in humans at least, is the appearance of this slow oscillation of the eyes. These slow movements may occur even before there is evidence of a brain wave change. Their appearance is paralleled by a psychological alteration: the predominant mental content changes from the conceptual mode to the perceptual mode. In other words, the appearance of these eye movements correlates with the occurrence of hypnagogic imagery.

Respiratory activity. A respiratory change is often considered one of the cardinal signs of sleep. Snoring, in particular, makes the presence of sleep almost certain, unless it is being simulated. However, some investigators have found no difference in respiratory rates during NREM sleep and during quiet wakefulness. Nonetheless, in contrast to the vast repertoire of responses of the respiratory apparatus during wake-

fulness, NREM sleep is characterized by a relatively slow, regular respiratory cycle.

Of greater significance is an increase in alveolar CO_2 during sleep. This increase suggests a decrease in excitability of the respiratory center. Ventilatory response to CO_2 is found to be decreased during NREM sleep, with the decrement being proportional to the depth of sleep as measured by the EEG. The change in ventilatory response with the onset of sleep or arousal is so abrupt that a neural mechanism is strongly suggested.

Cardiovascular activity. As might be expected, heart rate is slowed during NREM sleep, although there is considerable variation from subject to subject, and blood pressure generally falls during the night. Peripheral vasodilation is closely associated with the onset of sleep. In cats, however, direct measurement of blood pressure by arterial cannulation has shown that almost no change occurs in the transition from wakefulness to NREM sleep. Using the nitrous oxide technique, one can demonstrate a statistically significant increase in cerebral blood flow; this is of theoretical importance in eliminating cerebral anemia from consideration as a cause of sleep. Cerebral oxygen uptake during NREM sleep does not appear to be changed. However, a recent investigation has shown that there is a drop in the whole organism's oxygen consumption that tends to parallel the EEG stages.

Other bodily activities. Falling body temperature, increasing basal skin resistance, and decreasing urinary output serve to distinguish NREM sleep from wakefulness. There is little evidence to support the presence of a characteristic change in the activity of the gastrointestinal tract. Spontaneous changes in basal skin potential occur much more frequently during NREM sleep stage 4 than at any other time. The basis for this autonomic hyperactivity, which is analogous to the very alert waking state, is unclear.

NREM sleep versus wakefulness. A large share of the studies of the physiological concomitants of sleep have been done on humans because their sleep is regular and predictable. However, one difficulty in attempting to assign particular significance to any physiological alteration is that many changes thought to be characteristic of sleep can be brought about merely by assuming a recumbent position.

Certainly an important feature of NREM sleep is its over-all low level of activity. Since most of our older notions about sleep as a whole are based almost exclusively on the physiology of the NREM phase, its low level of activity is responsible for the idea that the essential difference between wakefulness and sleep is the level of activity. This is unquestionably true when comparing NREM sleep to wakefulness as a whole, but it fails to take into account the tremendous repertoire of the waking state.

The main reason we think of sleep as a slowing down, a resting or idling state, is that we generally

compare it to the active waking state. The fact is that most of the changes thought to be characteristic of falling asleep are actually a result of recumbency and relaxation and can be easily achieved while still awake. If a subject lies down in a quiet room and closes his eyes and relaxes both physically and mentally, nearly every physiological measurement will show a decline in activity. The cardiac and respiratory rates will slow down, blood pressure will fall, body temperature will drop, metabolic activity will decrease. If recumbency and relaxation are maintained long enough, there may be no further change in any of these measurements when sleep finally intervenes. Accordingly, the essential difference between wakefulness and NREM sleep may not lie in the absolute level of activity in these various functions.

Interaction with the environment. The difference between wakefulness and NREM sleep may lie in the less easily quantifiable change in attentiveness and responsiveness to the outside world. Levels of activity in the waking state are usually higher than in NREM sleep because the former state is ordinarily a time of interacting with the environment. When we *voluntarily* suspend this interaction with the environment, we may achieve a low level of activity, but we are still awake. When the suspension is *involuntary*, we are asleep.

The onset of sleep is associated with a marked and abrupt change in sensorimotor function or sensory responsiveness. This change seems to be fairly accurately paralleled by EEG changes and the appearance of slow eye movements. A dramatic illustration of this parallelism has been observed in subjects whose eyes were taped open. The subjects were able to fall asleep under these conditions. While awake, they were stimulated repeatedly with a bright light, which they easily apprehended. However, at the instant the slow eye movement appeared, even before EEG changes were apparent, the bright flash of light was not consciously experienced or later recalled by the subjects. In another experiment, subjects whose eyes were taped open were stimulated intensively in all modalities and were still able to fall asleep.

Diurnal rhythm. Newborn babies show no consistent relationship of body temperature to time of day. However, within 6 to 10 weeks, there is a distinct diurnal variation, with lower body temperatures occurring at night. This cycle continues, for all practical purposes, throughout life. Its development and maintenance stem from being born into and living in a family and community run according to alterations of day and night. Nearly every visceral function, including temperature, gets pulled into the cycle.

During complete sleep deprivation in adults the 24-hour rhythms or circadian (around 24 hours) rhythms continue to occur. In studies at Walter Reed Hospital, body temperatures were recorded during sleep deprivation lasting 4 days. A diurnal variation was found that was nearly identical with that

seen during a base line period. The same sort of variation during prolonged wakefulness occurs in adrenal steroid excretion, urinary output, etc. Changes ascribed to sleep, particularly in human subjects, may be attributed to the diurnal rhythm of many bodily functions.

Summary. If one were to characterize the basic nature of NREM sleep, the definition would have to be in terms of some sort of change in the pattern of organization of cerebral activity in which there is a profound effect on sensorimotor interaction with the environment. Absolute changes in level of activity are in large part artifactual.

REM Sleep

The first hint of the dual nature of sleep came with the observation by Aserinsky and Kleitman, reported in 1953, that, during certain periods of sleep, the eyes of human subjects moved rapidly. Further studies of eye movements in conjunction with other variables established that these periods were so radically different from the remainder of sleep that the unitary concept of sleep simply would not suffice.

Electrical activity of the brain. Rapid eye movements during sleep take place within discrete intervals that are characterized by a particular EEG pattern similar to that of stage 1 (see Figure 1), a low voltage, relatively fast, mixed frequency pattern. Initially, this REM sleep pattern seemed to be identical with the NREM stage 1 pattern, which suggested that the eye movement periods represented the lightest phase of cyclic variation in depth of sleep. However, the pattern associated with REM periods actually includes saw-tooth waves that are unique to these periods (see Figure 3).

REM sleep exists throughout the family of mammals. In subhuman species, with the possible exception of the chimpanzee, the EEG during REM sleep is indistinguishable from that seen during wakefulness. Subcortical structures show unique patterns, with particular emphasis being placed on hippocampal theta rhythms seen in the cat, rat, rabbit, and (to some extent) the monkey, but not the human. This pattern is generally associated with a high degree of arousal when seen during wakefulness.

In addition, spikelike discharges appear in the pons and visual system during REM sleep. These discharges are unique to the REM period and are simultaneous with, or actually trigger, the rapid eye movements.

Oculomotor activity. Eye movements, which are one of the most striking characteristics of the REM state, are bilaterally synchronous in the human and move with a velocity that approaches or equals that exhibited during fixation shifts in the waking state. There is no particular pattern to the movement (see Figure 4), but a complex combination of all sizes and directions of arc are seen. The resemblance to purposeful waking movements is quite striking. During

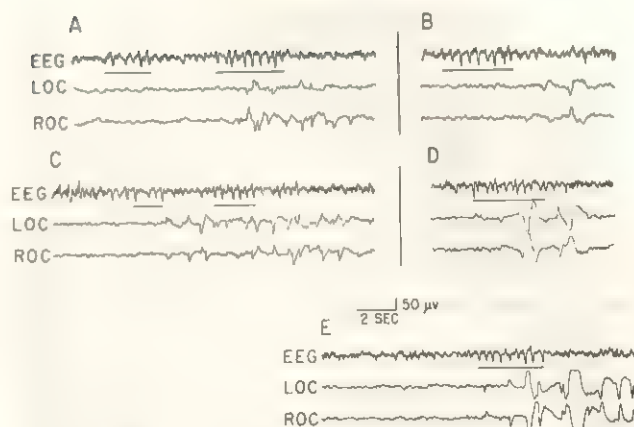


FIGURE 3. REM sleep EEG patterns. These sample tracings show the saw-tooth waves that precede bursts of rapid eye movement. EEG is monopolar from the central electrode; LOC, left outer canthus to ears; ROC, right outer canthus to ears. (From Dement, W. C. Eye movements in sleep. In *The Oculomotor System*, M. Bender, editor. Hoeber Medical Division, Harper & Row, New York, 1964.)

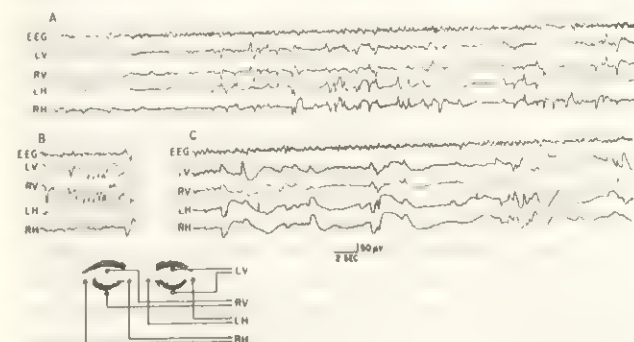


FIGURE 4. Sample tracings of rapid eye movements showing that they are binocularly synchronous. The concomitant EEG is low voltage, nonspindling. The four eye movement pens give the left and right vertical and horizontal derivations as shown in the diagram. (Reprinted by permission from Dement, W. C. Eye movements during sleep. In *The Oculomotor System*, M. Bender, editor. Hoeber Medical Division, Harper & Row, New York, 1964.)

these movements, subjects sleeping with the eyelids taped open look uncannily awake. In the monkey, eyelid relaxation in REM sleep permits direct observation of the eyeballs; the pupils are constricted during REM sleep, and there is a certain amount of slow eye movement.

Cardiovascular activity. In human subjects, the heart rate shows a small degree of acceleration and increased variability during REM sleep as compared to adjacent periods of NREM sleep. Blood pressure rises, and finger pulse volume, which is a measure of peripheral vasoconstriction, is usually decreased.

In the cat, the heart rate is more likely to be decreased during REM sleep, and blood pressure shows a consistent drop. Cerebrocortical blood flow is markedly increased in the cat, and plethysmographic techniques indicate an increase in cerebral pulse

volume. There is also a rise in cerebral spinal fluid pressure, which suggests an increase in cerebral blood flow.

Respiratory activity. Respiration is dramatically changed during REM sleep, with an over-all acceleration and a striking increase in variability. The major volumetric change appears to be episodic shallowing, and these periods are usually associated with bursts of eye movement and a decrease in oxygen saturation of the blood. Recent studies have shown that there is an increase in oxygen utilization during REM sleep in the human.

Gastrointestinal activity. An old study by Lockhardt described the inhibition of gastric motility during periods of sleep in the dog that were characterized by twitching limb movements. Although REM sleep was unknown at the time, these twitching movements were almost certainly those that characterize this state. Studies of gastric acid secretion have shown a slight elevation in REM sleep and a dramatic elevation during REM sleep in peptic ulcer patients.

Genitourinary activity. There appears to be a decrease in urinary output during REM sleep. Of great interest are recent studies indicating that the REM period is characterized by penile erection. This has been seen in newborn infants as well as adult males. It has also been seen in cats and monkeys.

Integumentary activity. Spontaneous changes in skin resistance are decreased during REM sleep, and there is no consistent change in basal skin resistance.

Neurophysiology. Microelectrode studies on unrestrained and unanesthetized animals reveal that REM sleep is almost invariably accompanied by a marked increase in spontaneous neuronal discharge.

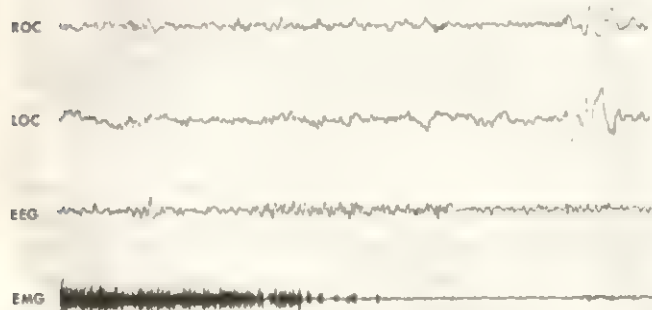


FIGURE 5. The onset of REM sleep. Electrode placements: ROC, right outer canthus referred to ears; LOC, left outer canthus referred to ears; EEG, left parietal electrode referred to left occipital electrode; EMG, bipolar electrodes placed on anterior neck muscles. Note that the tonic EMG potentials that were present all during NREM sleep disappear rather abruptly. A few seconds later, the first rapid eye movement potentials appear (at the right of the figure in ROC and LOC). Although it is not obvious in this brief segment of record, the EEG has changed to stage 1. (From Dement, W. C. An essay on dreams. In *New Directions in Psychology*, vol. II. Holt, Rinehart and Winston, New York, 1965.)

This increase has been seen in the visual cortex, mesencephalic reticular formation, pontine reticular formation, vestibular nuclei, lateral geniculate nuclei, and sensorimotor cortex. The discharge tends to be more paroxysmal than patterned. In addition, recent findings have shown an increase in pyramidal tract discharge.

Measurements of brain temperature indicate a substantial rise during REM sleep. There is also a marked negative shift of the transcortical DC potential. Evoked potential measurements suggest that the REM state is akin to the waking state in the handling of sensory input. There is also contraction of the middle ear muscles. When the middle ear muscles are cut, inhibition of auditory evoked potential disappears.

Muscular activity. One of the more dramatic aspects of REM sleep is the presence of peripheral twitching movements of limbs, facial muscles, etc. In dogs, particularly pets, these twitches account for the frequently described running movements that owners have inferred to be associated with dreams of chasing rabbits. However, the twitches are entirely phasic in nature, with virtually no tonic component.

An important feature of REM sleep is the presence of a tonic inhibition of motor output. Jouvet, the first to study muscular activity during REM sleep, observed the disappearance of EMG potentials (see Figure 5) and the complete abolition of decerebellate rigidity, which were present during NREM sleep. Reflex discharges are also completely suppressed. The organism during REM sleep is completely flaccid. The only muscles that maintain tonicity appear to be certain special groups, such as the extraocular muscles, middle ear muscles, and anal and vesicular sphincters.

REM sleep versus wakefulness. As the descriptive work proceeds, it is likely that any variable studied will show some kind of unique or dramatic change in association with the REM state. A question suggests itself at this point: How can we call the REM period a state of sleep or even one kind of sleep? REM sleep is very different from the ordinary conception of sleep as a state of rest, and it is very different from NREM sleep, a state of regular, low level activity. The real question, however, is: What holds the organism to its sleeping position in the face of all the central nervous activity? The probable answer is that REM sleep, in contrast to wakefulness, is a time during which a tonic inhibitory influence is brought to bear upon motor outflow. This has the effect of either attenuating or blocking the complex motor output that is elaborated at higher levels.

Temporal relationship of REM sleep and NREM sleep. Just as all mammals that have been studied show the occurrence of two kinds of sleep, they also show a characteristic cyclic alternation between the two during any lengthy period of total sleep. In the human, REM sleep interrupts NREM sleep on the

average of once every 90 minutes, lasts approximately 20 minutes, and accounts for 20 to 25 per cent of the total sleep time in young adults. In the cat, REM periods last about 7 minutes and NREM periods last about 10 to 20 minutes. In the rat, REM periods last about 1 to 2 minutes and NREM periods last about 7 to 8 minutes.

Figure 2 shows the typical sleep cycle for the adult human. NREM sleep is predominantly stage 4 in the early periods of the night, and the REM periods tend to get longer as the night wears on. This particular characteristic is more typical of humans than of other species.

The periods devoted to REM sleep and to NREM sleep vary according to age. In the immediate neonatal period in humans, REM sleep accounts for 50 per cent or more of the total time spent in sleep. Since the infant sleeps more than an adult, he experiences about four to eight times as much REM sleep as the adult. An even greater percentage of REM sleep occurs in the premature infant. This suggests that, at some point in its intrauterine existence, the human organism has nothing but REM sleep. This point of view receives support from observations on newborn kittens, in which REM sleep appears to occupy 100 per cent of the sleeping time.

In all normal adult organisms, NREM sleep generally occurs first and is then interrupted by REM sleep. Only in special circumstances do mammalian organisms go directly from wakefulness into the REM state.

Dreaming. REM sleep has also been called "dreaming sleep," for it appears to be associated with dreaming activity in a very intimate fashion. Human subjects, when awakened during REM sleep, report complex dream experiences in a high percentage of cases. In addition, the length of the REM sleep period corresponds to the length of the recalled dream. The patterns of the rapid eye movements themselves are intimately related to the visual imagery in a way that suggests the dreamer is, in fact, watching his dream. (Figure 6 shows an example of the correspondence between dream content and eye movements.) Supporting this notion are the facts that the eye movements *do* resemble purposeful waking movements and that the neurophysiological background of the REM state is compatible with a waking level of function.

However, the so-called scanning hypothesis of rapid eye movements has been called into question by a number of findings. Among these are the occurrence of rapid eye movements in newborn infants, decorated animals, and subjects who have been blind from birth. Also, the close relationship of eye movements to the pontine spike discharges, although it has not been shown in humans, suggests a different kind of mechanism. Eye movements may occur as part of a nonspecific neural activation in young or-

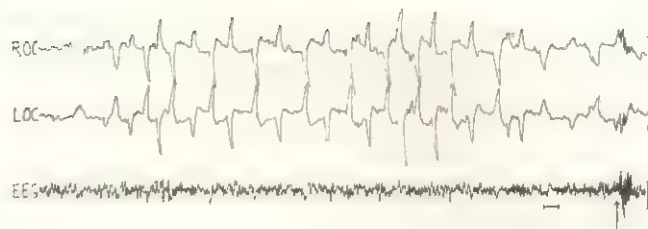


FIGURE 6. Example of rapid eye movement-dream imagery correspondence. After an amazingly regular sequence of 26 eye movements alternating leftward-rightward, the subject was awakened (arrow). In his dream narrative, he reported that, just prior to being aroused, he was standing at the side of a ping pong table, watching a game between two friends and looking back and forth to follow the ball. He stated that a fairly lengthy volley had just taken place. (ROC, right outer canthus monopolar electrode; LOC, left outer canthus monopolar electrode; EEG, monopolar parieto-occipital electrode. Calibrations, 1 second and 50 microvolts.) (Courtesy William C. Dement.)

ganisms that is later integrated into the total psychophysiological experience. In cats, as opposed to primates, the eye movements do not appear to resemble scanning movements; rather, they resemble nystagmoid jerks.

The problem of whether or not dreaming is exclusively confined to REM sleep seemed unimportant in the original series of studies because dream recall from awakenings during NREM sleep was at such a low level. However, more recent studies have suggested that something akin to dreaming does occur in NREM sleep, particularly at the onset of sleep, and that mental activity does take place during NREM sleep. The problem of the definition of a dream is basic to this difficulty. In general, the experiences during REM sleep appear to be more vivid, complex, emotional, and bizarre than those during NREM sleep. Recall of dreams from REM sleep seems less dependent on variables that seem to influence the incidence of recall from NREM sleep.

REM period awakenings to gather dream content from laboratory subjects have afforded considerable insight into the psychological aspects of sleep. The richness and variety of dream experience is quite impressive when the opportunity of recall is optimal. In addition, it has been shown that dream content can be influenced by external stimuli, presleep experiences, certain chemical agents, and hypnosis.

Summary. It has been suggested that, during the REM state, the brain is doing everything it would be doing if the same experience were occurring in the waking state, except that it is receiving no sensory input. In addition to an elaboration of motor output to the extraocular muscles, there are middle ear muscle contractions of a dramatic degree. And there is very likely an organized motor output to the skeletal muscles. The only thing lacking in this quasi-awake dream state is the sensory input. The endogenous elaboration of this "sensory input" is one of the mysteries of dream formation.

Mechanisms of Sleep

NREM sleep mechanism theories. In the past, sleep was thought of as a period of minimal functioning of the organism that ostensibly fulfilled a need for rest and restoration. The main problem was how this low level of function was achieved. This question now applies to NREM sleep only.

Reduction of afferent impulses. One of the most popular early theories attributed sleep to an active inhibition of nervous activity, mainly at the cortical level. However, Kleitman emphasized that sleep could also be thought of as a passive state, requiring no special mechanisms for its onset, and that the real problem was to explain the initiation and maintenance of wakefulness. He marshalled a great deal of evidence to support the hypothesis that the nervous system is maintained in a state of waking activity by the constant bombardment of afferent impulses and that the immediate cause of sleep is the reduction of afferent inflow below some critical level necessary for the waking state.

A classical experiment supporting this hypothesis was done by Bremer, who showed that transection of the brain stem at the midcollicular level, thereby depriving the forebrain of all but optic and olfactory input, immediately resulted in an uninterrupted condition of sleep, as judged by the cortical EEG and myosis of the pupils.

Normal humans prepare for sleep by imitating the effect of brain stem transection. By retiring to a quiet room, switching off the lights and radio, removing constricting clothing, lying down, and closing their eyes, they bring about a drastic reduction in afferent stimulation. In the absence of an afferent bombardment, the activity of the nervous system passively falls below some critical level, and sleep ensues.

Reduction of reticular impulses. A new twist was given to the above notion with the experiments of Moruzzi and Magoun, and subsequently many others, which showed that high frequency stimulation of the brain stem reticular formation caused EEG activation and behavioral arousal. It was also found that large lesions within the brain stem reticular formation resulted in a comatose state associated with EEG slowing that resembled changes seen during sleep. The new formulation was that the maintenance of a waking state could be attributed to a tonic barrage of ascending reticular impulses, and the steady flow of sensory messages coursing along the classical pathways appeared to be without importance for the physiology of wakefulness. The reticular activating system was conceived of as a crucial structure, interposed between the forebrain and the sensory input, that seemed to be capable of modulating or amplifying the influence of the latter. The reticular formation, particularly its mesencephalic portion, was found to receive collateral fibers from all the afferent pathways, together with centrifugal fibers from a variety of important forebrain structures. By adding

its own intrinsic activity to this multiple innervation, the reticular formation, could, it seemed, control changes in waking or sleeping behavior to some extent independent of the immediate environmental input.

Nonetheless, the essential factor producing sleep remained a passive one, except that, instead of occurring as a consequence of a reduction in direct afferent stimulation, it was the reduced number of impulses relayed by the reticular formation that allowed the activity of forebrain structures to fall below the waking level. In effect, the brain stem reticular formation became the wakefulness center.

However, many facts militate against this relatively simple hypothesis. For example, it has been shown that two stage lesioning of the reticular formation that ultimately produces a total destruction ordinarily large enough to induce perpetual coma is virtually without effect when enough recovery time is allowed between the two lesions. It has also been shown that high level brain stem transection, which effectively isolates the forebrain, is nonetheless eventually followed by the return of waking patterns in the EEG if the preparation is maintained in good condition. In addition, high frequency stimulation of many areas of the brain, including the cerebral cortex and the amygdala, has been shown to elicit arousal, although this arousal is presumed to be by centrifugal pathways to the reticular formation. And although the reticular activating system hypothesis explains the *how* of sleep, it does not explain the *why* of sleep. It is presumed that activity in the reticular formation falls partly because of neuronal fatigue. Yet this does not explain how sleep may be postponed so easily nor why it is frequently maintained so long after fatigue would be presumably reversed.

Microelectric recordings of individual neurons in the brain stem also fail to support this hypothesis. However, this evidence cannot be considered conclusive because of the small number of neurons that can be sampled. It is nonetheless true that there is apparently no decrease in rate of discharge of reticular neurons in NREM sleep versus quiet wakefulness. Prior to this, it was found that the transition from wakefulness to sleep was not necessarily accompanied by a reduction of spontaneous discharge in neuron populations in the cerebral cortex.

Neuroanatomical mechanism. A variety of studies have demonstrated that low frequency stimulation of many brain areas will precipitate the onset of EEG slowing and behavioral sleep. This is supported by evidence from our personal experience of the soporific effect of monotony. These considerations suggest the possibility of an active mechanism involved at least in the onset of sleep.

The concept of an active mechanism is not new. An early study by Nauta in the rat suggested some sort of sleep center, since destructive lesions in the ante-

rior hypothalamus seemed to result in insomnia. The work of Hess and his colleagues having to do with thalamic stimulation at low frequencies also suggested the presence of a diencephalic sleep center.

In recent years, the notion of active processes initiating sleep has been given great impetus by the work of Moruzzi and his colleagues. One of their first experiments involved the so-called midpontine pretrigeminal preparation. It was found that, immediately following a transection in this area, a larger portion of the total recording time was occupied by waking patterns in the cortical EEG. This suggested that the transection had eliminated the influence of some sleep-inducing mechanism located behind the lesion. Subsequent experiments showed that, after the basal artery had been clamped at the midpontine level, which shifted the rostral pontine region from the vertebral to the carotid blood supply, intracarotid injections of Thiopental sodium led to EEG synchronization, whereas intravertebral injections had exactly the opposite effects. This suggested that the more caudal regions of the brain stem exercised synchronizing effects on the EEG. There is a good deal of evidence that low rates of stimulation in the brain stem reticular formation and specific areas elicit EEG synchronization.

In contrast to the notion of synchronizing and sleep-inducing structures in the brain stem is the work of Jouvet on decorticate cats, from which he hypothesized that NREM sleep is actively induced by the action of the cerebral cortex. His major point is that the neocorticate cat has almost no NREM sleep but that REM sleep is virtually unimpaired. In addition, it is claimed that EEG synchronization cannot be elicited in subcortical areas by slow stimulation or barbiturates in the absence of the neocortex.

Endogenous poisoning. Although it seems that the precipitation of NREM sleep can be explained by a neural mechanism, a glance should be taken at other theories. The oldest notion with regard to sleep has to do with the idea that sleep is a result of an endogenous poisoning: certain toxins accumulate during the waking state and are eliminated during sleep. As metabolic activity eliminates the toxins, sleep ends, and wakefulness ensues. As Kleitman has pointed out, the major objection to this is that, during complete sleep deprivation, subjects almost invariably feel better and more alert the morning after a night without sleep than they did in the middle of the night.

There is no question that a variety of drugs and humoral agents can cause sleep, but there is no good evidence that sleep is associated with or dependent upon some humoral or neurochemical agent. In recent years, only the work of Monnier and Hösli supports such a mechanism.

Summary. It seems likely that the processes involved in the development of NREM sleep are complex and interrelated and probably both passive and active. The major problems lie in the establishing of a

hierarchy among the various possibilities and in separating out those effects that bear upon EEG activity alone (synchronization and desynchronization) and those that subserve behavioral wakefulness and waking performance.

REM sleep mechanisms

Neuroanatomical mechanism. Although REM sleep has been known a much shorter period of time, more definitive progress has been made in clarifying its underlying neuroanatomical substrate. In contrast to the NREM phase, REM sleep seems to depend on the integrity of a single organ located in the pontine reticular formation. There is apparently a mechanism for initiating REM sleep in this area, since lesions here seem to abolish it totally. Massive destruction of tissue elsewhere does not have this effect. It has also been shown that the motor-inhibitory process associated with REM sleep is located in this area.

Cats who had bilateral destruction of the nucleus locus coeruleus still seemed to enter the REM state. However, although certain EEG concomitants were identical with those seen in normal REM sleep, *behavioral wakefulness was retained*. This result suggests that the activity of the central nervous system during REM sleep involves elaboration of motor output, which is ordinarily prevented from reaching the periphery by a specific inhibitory mechanism. After destruction of the nucleus locus coeruleus, no such inhibition is present, and fully organized behavior patterns appear. However, the cats were totally oblivious to the environment during these "behaving" REM phases.

Biochemical mechanism. Once a REM period has occurred, another cannot be initiated or will not occur for some finite period of time. Stimulation of the brain stem in the region of the nucleus pontis caudalis may precipitate a REM period, but, once it has run its course, stimulation of this region is totally ineffective for about 15 minutes. This suggests the necessity of some sort of metabolic or biochemical buildup.

Other evidence suggesting a biochemical mechanism is the effect of drugs. Ordinarily, REM sleep is relatively constant from day to day, in contrast to NREM sleep, which seems to have the capacity to expand and contract temporally almost without limit. Certain compounds, however, will augment the amount of REM sleep, notably indole derivatives, including tryptophan, 5-hydroxytryptophan, and lysergic acid diethylamide. Monoamine compounds or compounds that effect monoamine metabolism will selectively block rapid eye movement sleep. Among these are Dexedrine, Parnate, and reserpine.

Finally, there is the curious effect of short chain fatty acids, first noted by Jouvet, who studied γ -hydroxybutyrate, and more recently reported by Matsumora and his colleagues, who studied a num-

ber of other such acids. Whether or not short chain fatty acids actually precipitate REM sleep is not certain, however, since they may simply have elicited favorable conditions for the REM-inducing mechanism.

Temperature factors. REM sleep appears to be absent in the presence of fever, and it persists or is augmented when body temperature is lowered to about 30° centigrade.

Function of Sleep

Although experimental research on sleep is extensive, and much is known, very little can yet be said about the function of sleep, either NREM or REM. Indeed, it is not certain that sleep is entirely necessary, even though we seem obliged to spend a good bit of time engaged in it.

Effects of sleep deprivation. The effects of total sleep deprivation have not been conclusive, and, as is now apparent, such studies confound the results of depriving the organism of two separate things. Since NREM sleep generally occupies the greater portion of total sleep time, the results of total sleep deprivation may reflect mainly NREM sleep deprivation.

The major effects of total sleep deprivation are an impairment of performance and the development of a tendency toward somnolence and drowsiness, of which the impaired performance may be merely a behavioral concomitant. No organic changes have been conclusively shown to be caused specifically by sleep deprivation. A major problem is keeping the organism awake long enough to demonstrate changes (if they occur) in the presence of greatly decreased motivation to stay awake plus the tendency toward somnolence. Recently a 17-year-old boy managed to stay awake for 11 consecutive days. This represented a considerable loss of NREM sleep (65 to 75 hours). When he was finally allowed to sleep, very little extra sleep occurred prior to his return to full alertness and normal performance.

The nature of NREM sleep is more consistent with notions of a state that subserves the function of rest and restoration than is the nature of REM sleep. However, crucial experiments that would demonstrate such a function are virtually impossible. There is no practical way to separate a specific effect of loss of rest from loss of sleep per se. Furthermore, the results of sleep deprivation experiments must always have the objection that one not only takes away sleep but adds an additional amount of activity, since wakefulness cannot be maintained in the absence of activity. Nonetheless, it appears that the total amount of NREM sleep can be greatly decreased without harm to the organism. The question remains as to whether or not all NREM sleep could be permanently dispensed with.

Effects of REM sleep deprivation. The function of REM sleep is possibly even less clear than that of its companion. Certainly, its physiological properties do not lend themselves to facile inferences. The high level of activity does not suggest a restorative or

resting function. However, REM sleep does have the property of behaving homeostatically and preemptively in the face of prior selective deprivation. A number of studies have shown that a certain amount of REM sleep must occur each day. If it does not occur, a deprivation effect occurs: REM sleep is made up by increasing its proportion during recovery if total sleep is held at the base line level.

The effects of prolonged selective REM sleep deprivation are somewhat surprising and seem to involve the development of neural hyperexcitability, as indicated by experiments showing enhanced auditory recovery cycle and decreased electroconvulsive seizure threshold. Nonetheless, adult animals that have been deprived of REM sleep for long periods of time do not seem drastically impaired. There has been speculation that the major function of REM sleep may be developmental, since much larger percentages are seen during the sleep of neonates and prematures. It has been suggested that REM sleep is a state that allows the developing nervous system to maintain high levels of activity and to execute or try out behavior patterns before they actually must be used in coping with the environment.

Clinical Implications¹

Sleep pathologies. There is no question that a disturbance of the mind can manifest itself in the sleeping state as well as during wakefulness. In fact, the sleeping state is often the more sensitive barometer of psychic turbulence.

Insomnia. One of the most common of all human ailments is insomnia, which is usually viewed as a symptom and assumed to be the result of some underlying anxiety, worry, conflict, or other emotional upset deriving chiefly from events in the life of the patient. There is little to do about *mild insomnia* beyond reassuring the patient, since there is no evidence that a small degree of sleep loss is harmful in any way. Naturally, it is difficult to evaluate the degree of insomnia without objective studies of sleep. The patient's description may not be an accurate portrayal. There is evidence suggesting that people who claim to be awake most of the night actually do sleep, as shown by sleep patterns in the EEG. But even when confronted with the EEG proof of sleep, they deny having slept. NREM mentation appears to be particularly intense in these subjects. Since an awareness of thinking is not compatible with their notions about the state of sleep, these people simply assume that they were awake. Another study has shown that body temperature and heart rate are chronically higher in subjects who sleep restlessly.

Severe insomnia may be viewed as a symptom of a very severe underlying disturbance. In addition, it may play a causal role either directly or as a precipitating stress.

¹ For full elaboration of these points, see Dement, W. C. *Psychophysiology of sleep and dreams*. In *American Handbook of Psychiatry*, S. Arieti, editor, vol. III, p. 290. Basic Books, New York, 1966.

Activity during sleep. Studies have been done on subjects who walk or talk in their sleep, and neither group has shown any special predilection to behave this way during REM sleep. In fact, sleepwalking tends to be initiated more frequently out of NREM stage 4 sleep early in the night, as does *pavor nocturnus*. Bed wetting in both children and adults does not appear to occur during REM sleep. In the younger group, it usually occurs during stage 4; in the older ages, it occurs in the waking state or the drowsy state. Of sleep pathologies definitely associated with REM sleep, only bruxism and rhythmic head banging have been identified.

Nightmares. These, of course, occur during REM sleep. It is quite likely that frightening dreams may precipitate a certain degree of insomnia by arousing the subject repeatedly, as may happen in the case of traumatic neurosis. One study has shown that the incidence of nightmares can be influenced by a large intake of an amino acid, tryptophan.

Idiopathic narcolepsy. This should probably be accorded the status of the pathology of sleep. It is an illness characterized by overwhelming sleep attacks, together with one or more of the following auxiliary symptoms: cataplexy, episodes of muscular weakness, usually induced by laughter or anger; sleep paralysis, attacks of inability to move, developing in the transition between arousal and sleep; and hypnagogic hallucinations, vivid visual and auditory sensations occurring at the onset of sleep.

Studies utilizing new techniques have shown that the sleep attacks of patients with narcolepsy and cataplexy are actually episodes of REM sleep. Because of the clear involvement of the REM sleep mechanism, cataplexy and sleep paralysis are viewed as the dissociated occurrence of the motor inhibitory component of REM sleep, and hypnagogic hallucinations appear to be nothing more than the vivid dreams associated with REM sleep. The essential identifying pathology in these patients is the occurrence of REM sleep at the *onset of sleep*, which never occurs in normal subjects. In a fair number of instances, cataplectic attacks have led to the development of a full blown REM episode.

Other conditions. Although not actually disorders of sleep, there are a few other illnesses in which sleep may play a role. For example, there are marked differences in epileptic seizure discharge in the various stages of sleep. Observations on the lowering of convulsive threshold associated with REM sleep deprivation suggest a causal relationship between seizures and sleep disturbances. REM deprivation in epileptic subjects may also increase seizure discharge in the EEG.

Gastric secretion during sleep in ulcer patients is markedly elevated during REM sleep and may account for the over-all elevated nocturnal secretion, which is thought to be one of the causal factors in the formation of peptic ulcer.

The cardiovascular changes during REM sleep as

well as the respiratory changes may be implicated in nocturnal disturbances in patients with hypertension, emphysema, and congestive heart failure.

Diagnostic value of disturbed sleep. Although it is a common observation that severe sleep disturbances accompany severe emotional disorders, there have been few studies in which precise correlations have been made between sleep disturbances and other measures of clinical change. One problem is that casual estimates of sleep behavior by hospital personnel are often very misleading. For example, catatonic patients may lie in bed all night with a degree of immobility that suggests deep sleep while actually not sleeping at all.

The few studies that have been done suggest that sleep disturbance has a very high correlation with clinical change. In one study, catatonic schizophrenics showed no tendency to sleep, even after being kept awake for an entire night. And in occasional cases where an acute psychosis has developed during prolonged sleep deprivation, the usual tendency to sleep has been drastically reduced.

Psychosis of sleep deprivation. Even though total sleep deprivation must have at least two separate aspects, it is possible that it is the combination of both that is psychotogenic. Recent studies of a subject who remained awake for 264 hours without showing the development of any significant psychopathology indicate, however, that psychosis is not an inevitable outcome of prolonged wakefulness. And, since 15 and 16 days of selective REM deprivation in human subjects did not precipitate a full blown psychosis in another study, it is unlikely that reported psychotogenic effects of total sleep deprivation for periods of less than 10 days were due solely to REM deprivation. It seems likely that there were predisposing factors in those cases where full blown psychosis appeared. Along this line, chronic schizophrenics deprived of all sleep for 100 hours showed a reemergence of the acute psychotic picture in every instance.

Studies of REM sleep in mental illness. Early REM deprivation studies suggested that the procedure might have an adverse effect, which led to the speculation that some abnormality of REM sleep might be associated with mental illness. In an early study, REM sleep was found to be present in a group of chronic schizophrenics, although there was no systematic attempt at quantification. More recent studies have not demonstrated dramatic quantitative differences between schizophrenics and normals. However, a significant reduction of REM time was noted in patients termed "actively ill."

Fisher and Dement studied five borderline schizophrenic patients and found a mean nightly REM time that was significantly higher than the mean for a comparable group of normals.

The finding of a high nightly REM time was confirmed in another study on a group of chronic schizophrenics in remission. Other abnormalities in this group of patients were failure to inhibit muscle potentials and an abnormal abundance of eye move-

ments in some cases. Studies of severely depressed patients have not produced consistent results.

Possible role of REM deprivation in the development of acute psychosis. An all night sleep recording will not necessarily reveal the presence of a state of REM sleep deprivation. The REM-NREM ratio obtained from an all night recording is probably the net result of many factors, the degree of REM deprivation being only one. In view of this and because of the apparent ubiquity of severe sleep disturbance in the period just prior to the full blown emergence of an acute psychosis, a possible mechanism by which interference with REM sleep may play a role has been proposed. In this formulation, it is assumed that a predisposed individual sooner or later encounters in his life experience a situation that is extremely stressful. The resultant anxiety leads to some degree of insomnia, with a disproportionate reduction in REM sleep. This situation could continue for a long time. As REM deprivation mounts, neurochemical changes in the brain increase what might be called drive pressure. In the average individual, this change might be without serious consequence, but in the schizophrenic it could be overwhelming and devastating. His weak defenses cannot cope with the greater impulsivity, the greater appetites, the hyperexcitability, etc. A vicious circle can be visualized: anxiety is heightened, which, in turn, interferes even more with REM sleep. Studies in normal subjects have shown that the effect of partial REM deprivation is cumulative for at least 20 days.

Finally, the individual reaches the point of acute psychotic disruption, generally characterized by markedly disorganized behavior, uncontrolled agitation and excitement, etc. In addition to this general effect, it is also possible that the neurochemical change induced by REM sleep deprivation may engender the formation of abnormal, possibly psychotomimetic, substances. The occurrence of abnormal compounds in the urine of schizophrenic patients and the fact that indole amines provide the nucleus for the most potent psychotomimetic compounds and also increase the amount of REM sleep support this possibility.

If this formulation is valid, it follows that the most effective way of reversing the acute psychotic state would be for REM sleep to occur. There is some evidence that phenothiazines permit the occurrence of REM sleep in acutely ill patients. Also, there is the possibility that electroconvulsive therapy causes changes in the brain that are analogous to those that occur during REM sleep.

Sleep therapy. Studies of a variety of sleep therapies have failed to show consistently favorable results in the treatment of mental disorders with this method. However, it is invariably the case that patients receiving sleep therapy are never monitored in

a way that would permit one to conclude that REM sleep has—or has not—occurred. In recent years, sleep therapy has been used sparingly, usually as an auxiliary procedure. It is obvious that the whole subject must be reevaluated in the light of recent findings pertaining to REM sleep. In view of the difficulty of precipitating REM sleep pharmacologically, it is not likely that REM sleep therapy will receive an immediate clinical trial.

Suggested Cross References

For a more complete discussion of the fundamental neuroanatomical, neurophysiological, and neurochemical topics mentioned in this section, see Sections 2.5 to 2.9, 2.10, and 2.2, respectively. In this section dreams are discussed mainly from a physiological and adaptational point of view. Dreams are discussed from a more psychodynamic viewpoint in Mack and Semrad's chapter on classical psychoanalysis (Chapter 6) in Area C, on current theories of personality and psychopathology, and in Neubauer's section on children's dreams (Section 44.3) in Area H, on child psychiatry. A discussion of the clinical use of dream material can be found in Stewart and Levine's section on psychoanalysis and psychotherapy (Section 34.1) in Area G.

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Neurophysiology and Neuroanatomy

2.5 THE NEURON

ROBERT W. DOTY, Ph.D.

General Structure, Composition and Metabolism

Structure. A neuron is a cell of most peculiar shape (Figures 1 and 2). This can easily be emphasized by enlarging a Betz cell or spinal motoneuron 40,000-fold, i.e., from its actual diameter as a barely visible 50- μ speck to an irregularly shaped balloon the size of a tall man. On this enlarged scale such a neuron sends a sin-

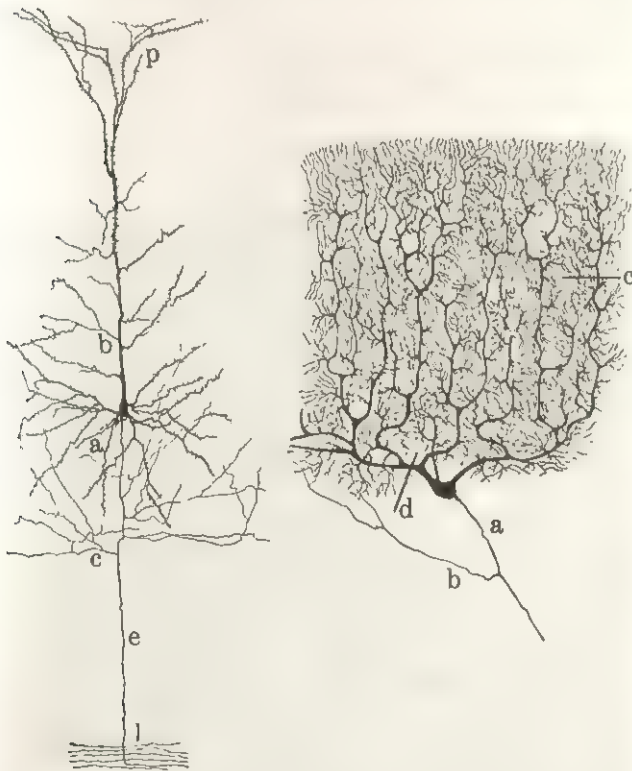


FIGURE 1. Cells stained by Golgi method. *Left*, pyramidal cell from neocortex of a mouse, similar in configuration to Betz cells of man; *a*, basilar dendrites; *b*, apical dendrite and branches; *c*, recurrent collaterals of the axon; *e*, descending axon; *l*, white matter. *Right*, Purkinje cell from human cerebellum. Profusely branched dendritic surface accommodates up to 100,000 synapses. In all vertebrates the dendritic arborization of these cells is fan-shaped, being spread extensively in the anterior-posterior plane as viewed here from the side, and very narrow in the right-left plane. *a*, axon; *b*, axon collateral; *c*, *d*, space in which stellate cells are accommodated. (From Ramon Cajal, *S. Histologie du Système Nerveux de l'Homme et des Vertébrés*, vol. I. Translated by L. Azoulay. Consejo Superior de Investigaciones Científicas, Madrid, 1952.)

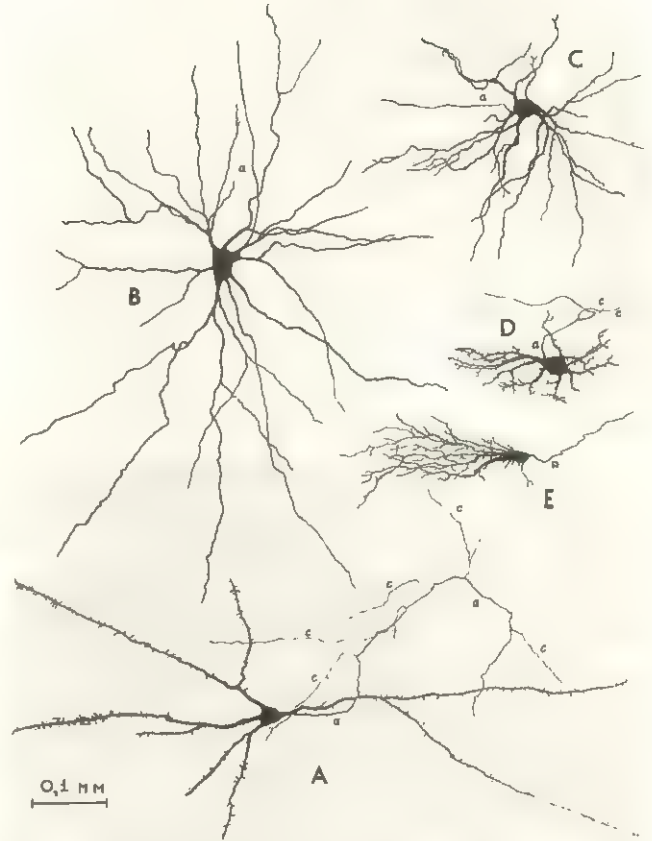


FIGURE 2. Types of neuron in brain stem and spinal cord of dog as seen with Golgi stain. *A*, reticular type of neuron; *B*, motoneuron from nucleus of seventh nerve; *C, D, E*, sensory neurons from cuneate nucleus, descending trigeminal tract and main sensory trigeminal nucleus, respectively. *a*, axons. (From Leontovich, T. A., and Zhukova, G. P. The specificity of the neuronal structure and topography of the reticular formation in the brain and spinal cord of carnivora. *J. Comp. Neurol.*, 121: 347, 1963.)

uous pipe, the axon, 0.4 m. in diameter, for up to 40 km. (from cortex into lumbar cord, or cord to foot or hand). Axons 4 km. long are common on this scale, crossing the corpus callosum or projecting to or from thalamus and cortex. A large field of repeatedly branching dendrites might extend up to 40 m. or more. Since on this scale the nerve impulse would move down such an axon at a speed of 7,000,000 km. per hour, the fiction had best be dispensed with to return to real axons which conduct at sufficiently dramatic rates from 3.6 to 360 km. per hour (1 to 120 m. per second).

The neuron's bizarre shape is dictated by two of its major functions. First, neurons provide surfaces for integrating information from diverse sources. As many as 10,000 synaptic endings may play upon one

neuron and 80 per cent of this receptive area may be provided by its dendrites. Second, the ultimate effect of this synaptic input is to generate temporally encoded digital events (impulses) which are transferred down the often prodigious lengths of the axon to form a portion of the input to still another neuron or to an effector organ.

The shape of individual neurons is revealed clearly only by the Golgi stain which in a manner wholly mysterious deposits silver throughout the entire extent of occasional cells (Figures 1 and 2). While all neurons have the same general features of soma (= perikaryon = cell body), axon, and dendrites, there are about 60 distinguishable types of neurons in mammals. Since both man and mouse have the same 60 types of neurons, a profound principle is immediately clear: the human intellect must arise from and be explicable in terms of mechanisms of neural operation common to all mammals. Wherever this principle has been tested, in the electrophysiology of the human

brain or in the functional correlates of interference with comparable neural structures in man and animals, as well as in neuroanatomy and neurochemistry, the results have been decisively consistent with this thesis of commonality among mammalian nervous systems.

Since the general functions of neurons are reflected in their shape, it is also to be expected that more subtle specializations can be discerned in the varying morphologies of the approximately 60 types of neurons. For the brain stem and spinal cord, neurons fall into three distinct morphological categories, which in turn correspond to three functional groupings (Figure 2). Neurons receiving afferent fibers from peripheral sources characteristically have short but profusely branched dendrites densely covered with "spines" (Figure 2, *C*, *D*, and *E*). Brain stem neurons of this type are thus categorized as "sensory." Electron microscopy reveals these spines to be complex structures associated with synaptic endings (Figure 3 herein, and Figure 4 in

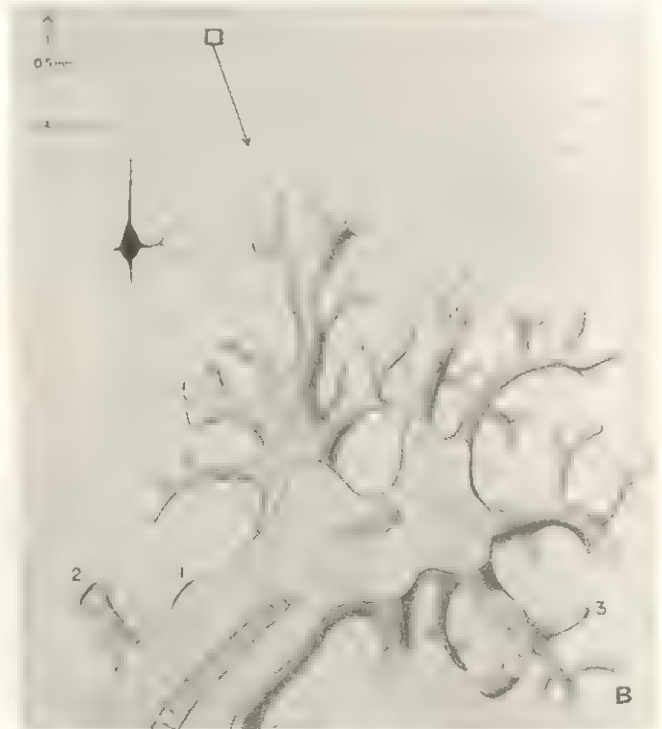
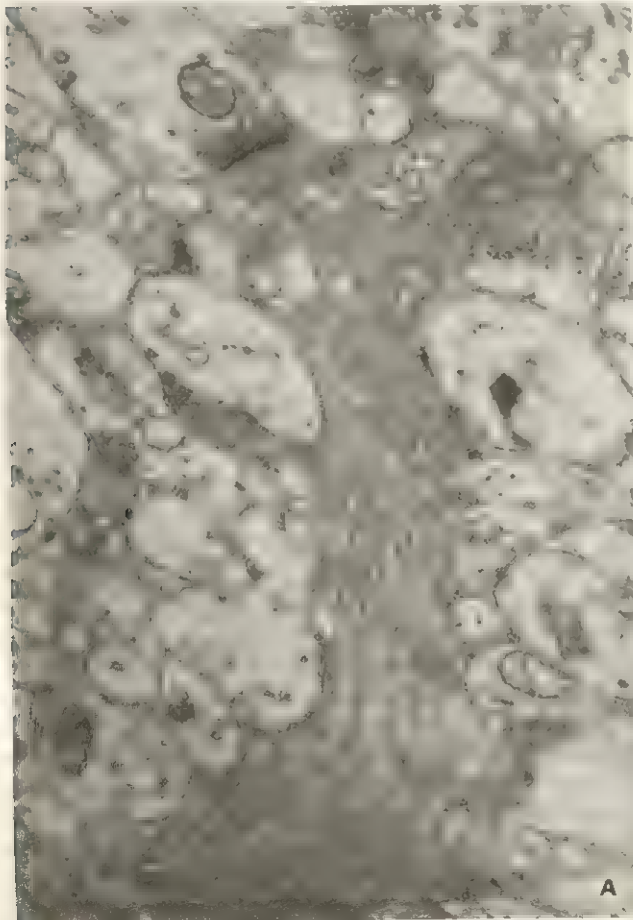


FIG. 3. Dendritic tubules and spines in neocortex of adult cat. *A*, electron micrograph of section through a large dendrite showing prominent 230-Å diameter tubules cut at various angles. Two dendritic spines can be seen in the *upper portion* with typical synaptic ending containing synaptic vesicles apparent on the *left*. *B*, diagram of dendrite terminating in uppermost cortical neuropil (*upper left*). Diagram shows tubules extending into finest terminals, portion of elongated mitochondrion and two typical mitochondria, two multivesicular bodies, and thickening of postsynaptic membrane on dendritic trunk (1); spine (2); and terminal process (3). (From Pappas, G. D., and Purpura, D. P. Fine structure of dendrites in the superficial neocortical neuropil. *Exp. Neurol.*, 4: 507, 1961.)

Section 2.6). Motoneurons have few or no spines on their dendrites but otherwise have a large dendritic field often similar to that of sensory neurons (Figure 2B). The third category consists of "reticular" neurons which are distinguished by few, poorly ramified dendrites having large but rather sparse spines (Figure 2A). The axons of reticular neurons usually branch in a complex fashion, sending collaterals up and down the brain stem. The reticular neurons constitute the elements of the medullary and mesencephalic reticular formations, where anatomical and electrophysiological studies indicate that single cells receive afferents from many sources. Neurons of the reticular type also make up the substantia gelatinosa of Rolando, the central gray, substantia nigra, zona incerta, hypothalamus, globus pallidus, and many other nuclear groups; and in addition they are found scattered in specific sensory and other nuclei. Since units are encountered electrophysiologically which in all these structures respond "nonspecifically," i.e., to stimuli applied to two or more widely different loci, and since in sensory nuclei these nonspecific units are continuously active while those responding specifically to a single afferent source are silent until stimulated, it is possible that the reticular type of neuron will be found to have these distinctive physiological features wherever it is located.

A more certain relation between morphology and physiological characteristics is established for the basket cell system surrounding the Purkinje cells of the cerebellum or pyramidal cells of the hippocampus. In each case this dense system is the source of a deep and protracted inhibition of the Purkinje or pyramidal cells. Other opportunities abound in the visual system for identifying unique types of cells with specific physiological functions, and indeed it will no doubt ultimately be possible to infer from structure alone most of the analytical properties of a given set of neurons.

Composition. One is accustomed to thinking of the human brain with its 10 billion richly interconnected neurons (actually there are 10 billion granule cells in the cerebellum alone!) as the most complex object in the known universe. If it is possible to enhance the awesomeness of this fact, it is because each of these 10 billion units itself approaches a similar complexity in its construction. The cell body of a moderately large neuron contains 6 billion molecules of protein (assuming molecular weight = 277,000), 10 billion lipid molecules (molecular weight = 1000), perhaps 600 billion molecules of ribose nucleic acid (RNA), and 21×10^{12} potassium ions. Such a neuron is aflood with hundreds of species of complex molecules still unidentified. Beyond the overwhelming impression of mere numbers is the intricacy of the molecular framework. The RNA Nissl substance (Figure 5) constitutes about 9 per cent of the dry weight of the cell and is organized in parallel threads, suggestive of a crystalline structure, running in a continuous network of membrane-bound cavities throughout the cytoplasm but not pene-

trating axon or dendrites. This is the endoplasmic reticulum which after rupture of the neuron can be isolated as microsomes, i.e., irregularly shaped vesicles 300 to 600 Å in diameter bounded by a single 80-Å membrane, which in turn account for almost all of the neural synthesis of proteins. A second reticulum, agranular but with 100-Å membranes and 200-Å lumen, also permeates the cytoplasm and seems to correspond to the Golgi apparatus of other cells. A system of tubules is characteristic of dendrites (Figure 3) and other filaments, and tubules are found in the axon (Figure 4). The prominent nucleus, packed with deoxyribonucleic acid (DNA), is surrounded by a double membrane, and free within it is suspended a spherical mass of several thousand RNA particles, the nucleolus (Figure 5). A small nucleolar satellite of DNA, $0.5 \mu^3$, is prominent only in cells of females and bears one of the X chromosomes (Figure 5). The satellite is present in neurons of males, but it is much smaller and is seldom observed except in neurons that have been intensely stimulated. Scattered in the cytoplasm are numerous structures of unknown function such as multivesicular inclusion bodies (mostly in dendrites; Figure 3B) and granular inclusion bodies.

The mitochondrion (Figure 3) is another type of complex structure within the cytoplasm, and its intricately enfolded surfaces provide the complete metabolic machinery for obtaining usable energy from the

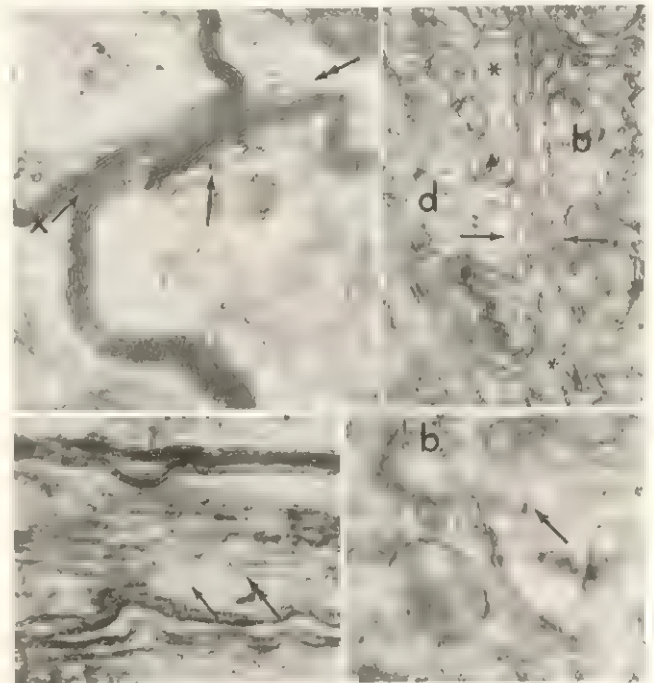


FIGURE 4. Neurotubules and filaments in myelinated axon in inferior olive of adult cat. Arrow points to filament, double arrow to tubule. Tubules measure 200 to 250 Å in diameter. The dark multiple lines at top and bottom are the layers of myelin. (From Walberg, F. An electron microscopic study of the inferior olive of the cat. *J. Comp. Neurol.*, 120: 1, 1963.)

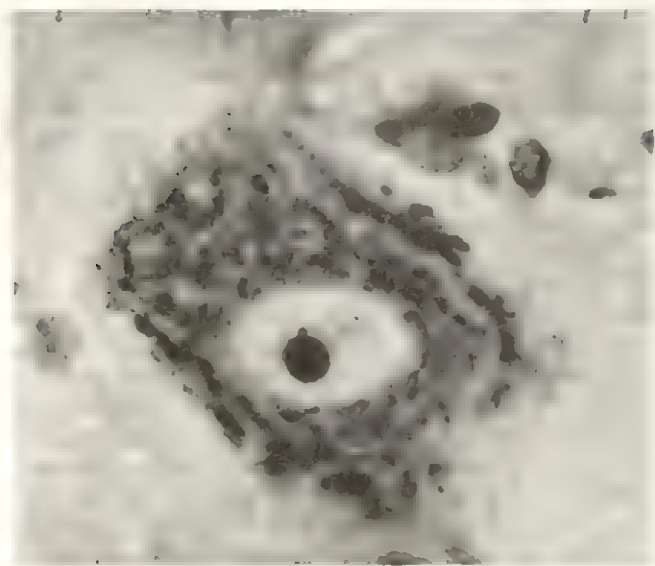


FIGURE 5. Nucleolar satellite containing one of the X chromosomes as seen in motoneuron of the cat. Satellite is prominent in neurons of females only and is visible here as small dark spot just above the dark round nucleolus within the nucleus of this cell. The Nissl material containing high concentrations of RNA is seen scattered profusely within the cytoplasm. (From Barr, M. L., Bertram, L. F., and Lindsay, H. A. The morphology of the nerve cell nucleus, according to sex. *Anat. Rec.*, 107: 283, 1950.)

TABLE I

Distribution of ¹⁴C 22 Minutes after Subcutaneous Injection*

	Specific activity	Per-centage as Glucose	Percentage as Lactic, Pyruvic, and Tricarboxylic Acid Cycle Inter-mediates	Per-centage Amino Acids	Percentage of Aspartate and Glutamate in Amino Acid Content
	c.p.m./gm. fresh tissue				
Blood.	14,490	90	5	3	11
Liver	11,560	79	12	8	39
Heart	7,320	34	19	46	76
Frontal cortex...	14,280	3	24	71	80
Parietal cortex...	13,470	3	20	74	79
Temporal cortex...	11,640	8	20	70	77
Corpus callosum...	10,930	7	32	56	72
Spinal cord.....	5,720	6	45	48	63
Muscle.....	3,060	66	18	12	39

* From Gaitonde, M. K., Marchi, S. A., and Richter, D. The utilization of glucose in the brain and other organs of the cat. *Proc. Roy. Soc. London., Ser. B*, 160: 124, 1964.

oxidation of glucose. The intense metabolic activity of neurons is reflected in the great numbers of mitochondria found in them. From presently available measurements it seems that neurons have a greater percentage of their mass devoted to mitochondria than any other cell in the body, half again as much as liver cells, the nearest contenders. Mitochondria make up about 66 per cent of the dry weight of the neuron and average roughly 1,500 per cell. Maintenance of a sta-

ble intracellular environment despite an enormous surface area for exchange with extracellular fluids places an extraordinary metabolic demand upon neurons. An indication of this is seen in the fact that as neurons mature after birth, adding greatly to their surface area by growth of dendrites, 64 per cent of the new protein formed goes into mitochondria.

Metabolism. From measurements on Betz cells isolated from the precruciate cortex of cats it can be estimated that each mitochondrion can process about 10 atoms of oxygen each microsecond. Almost all of this oxygen goes to burn glucose. Accounting in man for about 2 per cent of the body weight, the brain takes about one fourth of the total blood flow and removes proportionately more oxygen from the blood than any other organ in a resting state. Venous blood from the brain is only about 62 per cent saturated with oxygen and there is a continuous anaerobic metabolism producing lactic acid even during normal circulation. Within 22 minutes after subcutaneous injection of ¹⁴C-glucose into cats the cerebral cortex contains almost double the specific ¹⁴C activity of the heart. A large proportion of the glucose has already passed into the glycolytic and tricarboxylic acid metabolic pathways, and, in striking contrast to other tissues, over 70 per cent of the glucose has been converted into amino acids (Table I). The amino acid metabolic system of brain is highly developed and unique in its capacity to produce γ -aminobutyric acid. It is significant that about 80 per cent of the amino acids produced are glutamic and aspartic acids, both of which appear to be involved in some aspect of synaptic excitation of neurons.

Neurons versus Glia

All estimates agree that glial cells are several times more numerous in brain than are neurons. Efforts to understand cerebral function must thus face this fact and cope with the frequent suggestions that glial rather than neural activity underlies or is importantly related to mental phenomena or memory. All evidence so far strongly suggests that the glia perform mere ancillary service to supply the highly specialized environment required for neural function and that the latter is the *sine qua non* of mental life. Only neurons have the form and facility for transmitting information from and to the external world with millisecond timing and thus unquestionably serve as the afferent and efferent portals of the mind. Only neurons have the interconnectivity and demonstrable capability for rapid computation of integrated outputs derived from multiple and hence distant sources, i.e., from other brain loci. Consciousness is so fragile a phenomenon that 10 seconds without oxygen erases it, and only neurons have the intense metabolism expected to be associated with this phenomenon. Finally, RNA is associated with the manufacture of protein in accordance with phylogenetic engrams, the genetic code, and is thus at least an a priori candidate for a role in onto-

genetic engrams; and, again, only neurons have the extraordinary RNA metabolism likely to be associated with such function. Neurons thus meet all the major known requirements for correlation with mental processes, and glia do not. Assumptions, then, that important aspects of mental function are held in glia at least one step removed from neurons are thus, to say the least, gratuitous.

Types of glia. There are three types of glia: astroglia, microglia, and oligodendroglia. The astroglia weave a continuous sheet of cytoplasm into all interstices about the neurons and interpose themselves between the neurons and blood vessels. They thus appear to serve as regulators of the ionic environment of the neurons and their rather vacant appearing cytoplasm is consistent with this concept. The microglia are of mesodermal origin; i.e., they arise embryologically from non-neural tissue. Since they appear in great numbers at points of infection or degeneration, it is felt that their function may be primarily phagocytic. The oligodendroglia are more interesting. They are similar to the Schwann cells which form tubes around peripheral nerve fibers and which secrete the fatty insulating substance, myelin. Certain oligodendroglia probably perform similar functions in the central nervous system. Others undergo changes in metabolism consequent to changes in the neurons with which they are associated, and neurons of Clarke's column (nucleus dorsalis of the spinal cord) have proportionately more oligodendroglia around them the longer their axon. The oligodendroglia thus may serve as a metabolic reserve system for the neurons. From measures of glia in tissue culture, tumors, or fiber tracts (e.g., corpus callosum) their metabolism seems to be only 0.1 to 0.25 that of neurons, with the oligodendroglia having the highest rate. Thus, despite their large numbers, glia probably account for only a small proportion, 5 to 15 per cent, of the total metabolism of the brain.

Astroglia and oligodendroglia undergo periodic, sometimes rhythmical contraction in tissue culture. Such contractions, commonly lasting about 2 minutes and requiring 7 to 13 minutes for relaxation, can be triggered by electrical stimuli. The contraction is in this case preceded by an electrical response lasting 4 to 6 seconds. Neither the electrical response nor contraction is "all or none" in nature. Since similar electrical responses can be obtained in the intact brain, there is some possibility the contractile phenomena may also be characteristic of glia under normal circumstances as well as in tissue culture.

Neurons as Secretory Cells, and the Relation of Their Secretion to Their Function

In their possession of a prominent nucleolus, endoplasmic reticulum, and high levels of RNA, neurons closely resemble other cells capable of intense secretory activity such as those of the pancreas or salivary glands. Secretory activity is clearly evident in many neurons of the hypothalamus which manufacture hormones subsequently transferred to the hypophysis. All neurons, however, at their termination, seem to produce particles which are extruded onto other cells. These particles are the synaptic vesicles (Figure 3) which analyses show to be associated with synaptic transmitters such as acetylcholine or noradrenaline. There is every reason to believe that synaptic transmission is effected by the sudden release of groups of these particles from the presynaptic terminals and that a sporadic, low level release of individual vesicles is occurring at all times. It will be the thesis of this sec-

tion that, in addition to or in association with the transmitter substances, other chemical agents pass continually between neurons and are necessary to establish and maintain neural interconnections. In this view the secretory activity of neurons is thus related directly to their function, both in supplying the abrupt transients for synaptic transmission and in determining which neuron will accept or supply synapses from or to which others.

Since the microscopic structure of the nervous system can so far be viewed only in fixed preparations, the impression is easily gained that its organization is static. Living mammalian neurons in tissue culture, however, are in continual motion, sending out and retracting pseudopodia, forming synapses which remain for days or months but move about over a limited range on the surface of the contacted neurons. There is organized cytoplasmic streaming, and particles can be seen passing in persistent directions either up or down the axon. Material is transferred from nucleus or nucleolus to cytoplasm, particularly when the neuron is stimulated. The neurons produce slow, pumping movements, taking 6 to 8 hours in a cycle of contraction and expansion and seeming to effect thereby an extrusion of cytoplasm down the axon. The presence of surprisingly normal electron microscopic, histological, and electrophysiological characteristics in such explanted neurons strongly suggests that similar motility may be a common feature of neurons in their normal environment.

That axons in the mammalian central nervous system are capable of changing their connections is shown in the following experiments.

In the first stage several dorsal roots on one side are cut both rostral and caudal to a single surviving dorsal root. During the course of several months the terminals of the cut roots die and disappear, leaving a "clear" field to the single surviving dorsal root. That this root sends new terminal fibers into the fields formerly innervated by its neighbors is now shown by cutting it and comparing the zone of degeneration of this root on the deafferented side with that of the corresponding root on the other, intact side. It is found that the degeneration on the deafferented side extends in the dorsal and ventral horns several segments beyond that on the "intact" side. A similar extension of the normal innervation zone of dorsal root fibers follows partial deafferentation by extirpation of neocortex or section of a pyramidal tract. Physiological changes accompanying these deafferentations are concordant with the histological results and offer some basis for explaining certain pathological responses which follow such lesions in man.

Aside from the physiological demonstration that these enlarged central innervation zones can produce functioning synapses, little is known about the pattern, type, or stability of these new connections. In peripheral autonomic ganglia the situation is more favorable for analysis. Experiments show not only the "probing" of fibers to form new connections as "vacancies" occur in the synaptic surface of neighboring cells, but a subtle coding which selects the connections which will be most enduring (Figure 6). The cervical sympathetic ganglion receives its preganglionic fibers via the thoracic ventral roots T₁ through T₇ from neurons in the anterolateral cell column of these segments. The cervical sympathetic ganglion cells give rise to postganglionic fibers which, among other things, innervate the circular muscles of the iris and the smooth muscle

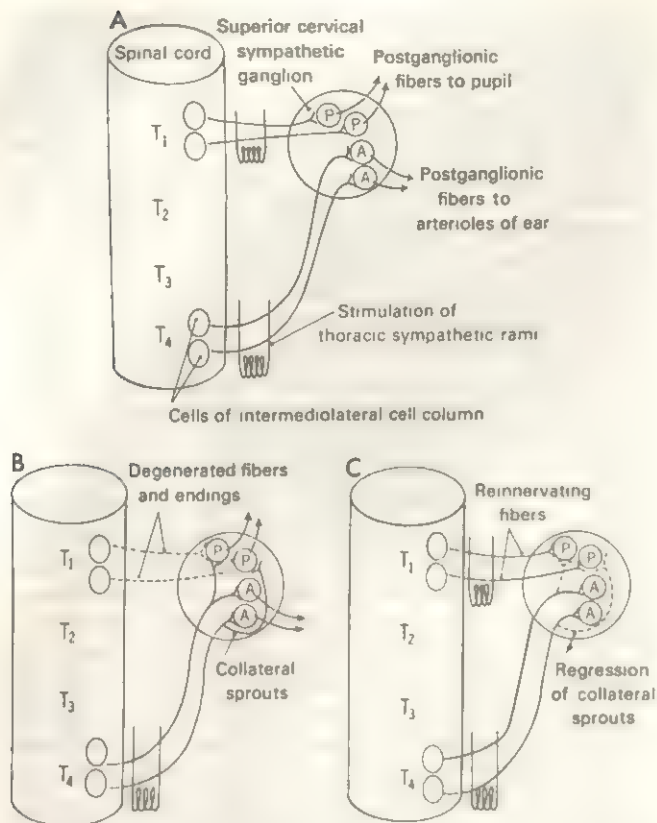


FIGURE 6. *A*, Stimulation of root at T₁ produces pupillary dilatation and at T₄, decreased ear temperature. *B*, After degeneration of T₁ fibers, T₄ fibers have grown onto cells with synaptic vacancies and stimulation at T₄ now produces pupillary dilatation as well as decrease of ear temperature. *C*, In-growing T₁ fibers select type of neurons they formerly innervated and displace T₄ fibers from them, thus restoring normal specificity of functional connections. (Adapted from Guth, L., and Bernstein, J. J. Selectivity in the re-establishment of synapses in the superior cervical sympathetic ganglion of the cat. *Exp. Neurol.*, 4: 59, 1961.)

of arterioles in the ear, producing pupillary dilation, and a fall in skin temperature of the ear as a consequence of arteriolar constriction. In the cat stimulation of the T₁ root normally produces pupillary dilation without affecting ear temperature while that at T₄ does the reverse; i.e., the fibers from these two roots go to different populations of ganglion cells. If the T₁ (and T₂-T₃) fibers are crushed, the fibers from T₄ expand their innervation zone so that, 1 month after the crushing, stimulation of the T₄ root produces pupillary dilation as well as decrease of ear temperature. Yet after 6 months, when the T₁ fibers have grown back into the ganglion, the normal situation is found to be restored. These facts provide strong *prima facie* evidence that the fibers normally innervating ganglion cells going to the ear send out collateral sprouts to form functional connections with those supplying the iris, and that these "strange" connections recede following reestablishment of contact of these ganglion cells by the fibers formerly innervating them. It also demonstrates considerable precision in the ultimate organization of cellular interconnections despite the potentiality for more diffuse, yet functional, synaptic relations.

A third example of changing neural connection is found in the visual cortex of kittens. When examined in the first weeks of life, prior to any visual experience of the animal, about 80 per cent of the cells in area striata can be influenced by stimuli to either eye; and this situation is normally maintained throughout life. However, if the animal is prevented from

using one eye for several months by suturing the eyelids together, or even if it is merely prevented from using the two eyes concurrently because of a divergence of 20° in the optical axes produced by section of a medial rectus muscle, only 5 to 20 per cent of the cells have significant binocular input. This recession of previously effective synapses in the absence of concurrent action suggests that at least in this stage of life there is some competition for synaptic space upon particular neurons and that the normal pattern of innervation represents a dynamic balance rather than a fixed arrangement.

These abnormalities of the kitten visual system become permanent as measured both electrophysiologically and behaviorally. A kitten raised without vision in either eye has difficulty learning to see but is ultimately able to do so. In the case of monocular deprivation, however, the normal eye becomes so dominant that the animal apparently can never learn to use the deprived eye. A similar permanence is achieved if vision is normal throughout the 1st year of life, for it appears that these abnormalities of binocular vision cannot be produced if the procedures are carried out on adult cats.

Effects on postsynaptic structures. Despite the presence of a "critical period" in the last instance it is clearly possible from all the foregoing to hypothesize that certain neurons in the central nervous system are continually sending out collateral, probing fibers which may establish temporary liaison with a variety of other neurons but which can maintain enduring connections only where the chemistries or activities of the two cells mesh appropriately.

In many cases it can be inferred that fibers secrete some material essential to the nutrition of the neurons they innervate since the neurons degenerate or even die following denervation.

Of course, it is possible that the denervation produces degeneration from lack of stimulation rather than from lack of a secreted neural substance. That this is not entirely the case is shown again by relations in the visual system. Within a year after section of the optic tract or loss of an eye in primates neurons of the lateral geniculate nucleus have degenerated to the point where they have lost up to 80 per cent of their normal volume. Yet in man mere lack of activity in lateral geniculate neurons of many months standing, as evidenced by blindness and caused by pressure on the optic chiasm from a pituitary adenoma, does not produce serious degeneration, since vision returns within hours after relief of the pressure. Similarly in the adult cat maintenance in total darkness for 17 months does not produce a decrease in efficacy of the postsynaptic response of the large cell system of the lateral geniculate nucleus. This lack of effect might arise because darkness is a stimulus to certain elements of the visual system, but when the dark activity is presumably removed by destruction of the photoreceptors (leaving retinal ganglion cells intact), the effect is not degeneration but increased functional capacity of the system as tested by the postsynaptic response to electrical stimulation of the optic tract.

The trophic effect of neurons upon peripheral structures is even more striking. Sensory neurons induce the formation of taste buds in the tongue and motoneurons induce motor end plates on muscle fibers. In the nictitating membrane of the cat, normally innervated by adrenergic postganglionic fibers from the cervical sympathetic ganglion, the hypoglossal nerve is able to form functional endings which are cholinergic in nature. For skeletal muscle the presence or absence of innervation effects changes in metabolism and functional characteristics throughout the entire muscle fiber. For instance, in the normally innervated fiber, microjets of acetylcholine solutions directed at the surface of the fiber elicit electrical responses only in the region of the end plate, but in denervated fibers

their entire surface becomes sensitive to such application. Within a few days after reinnervation the sensitivity recedes to be limited again to the end plate region. De-efferented muscle fibers also consistently show fibrillation, i.e., arrhythmic, brief contractions at 1 to 30 per second.

The duration of contraction in response to an electrical stimulus is slowed in de-efferented muscle, particularly in those muscles normally participating in rapid, phasic movements as contrasted to the protracted (tonic) contractions necessary for maintenance of posture. This phenomenon has been particularly well studied in the hind leg of the cat where it is found that the slow, "postural" muscles are innervated by a population of motoneurons whose electrophysiological characteristics are distinctly different from those innervating the fast, "phasic" muscles. Motoneurons to slow muscles tend to fire at low frequencies, e.g., 10 per second, but in long sustained periods of activity, whereas those to fast muscles more commonly fire in briefer bursts at higher frequencies (30 per second). In a single twitch the slow muscles normally take 60 to 80 milliseconds to reach their peak of contraction whereas a time of 25 milliseconds is typical of a fast muscle. Within a few weeks after denervation these figures change to 75 to 100 and 45 milliseconds, respectively. Within a few days after reinnervation these values approach the normal range. More interesting still, if the innervation to a fast muscle is directed onto a slow muscle, contraction of the slow muscle becomes much faster, falling to about 40 milliseconds, and the reverse occurs with fast muscles innervated by nerves normally supplying slow muscles (Figure 7). While there are some complex interactions with the amount of neuromuscular activity, which are not considered here, these experiments together with the facts cited above demonstrate that neurons exert a powerful influence upon the complex morphology, chemistry, and functional characteristics of the cells upon which they terminate.

There is every reason to believe that these effects are produced by substances secreted at the neural terminals. Furthermore, there is strong suggestive evidence that essential ingredients of this postulated secretion are manufactured in the cell body and pass continually down the axon. When an axon is severed, that portion lacking connections with the cell body disintegrates. Within 19 hours there is a detectable change in the appearance of the neural filaments, and by 1 week many fibers are only vacant tubes of myelin. The Schwann cells phagocytize the axoplasm and myelin. Conduction of nerve impulses survives for up to 3 days in the severed axon, but its failure is hastened by frequent stimulation. The fact that the axon has been severed is also somehow communicated back to the cell body, for within a matter of hours it begins to undergo drastic changes in metabolism and structure. Cell volume doubles within 5 days, apparently mostly from intake of water, and then begins a prolonged increase in number and size of mitochondria, and in proteins and RNA associated with the outgrowth of a new length of axon. The new axon is regenerated at a rate of about 4 mm. per day. To produce this rate of growth, the neuron must manufacture several times its own volume of cytoplasm each day and must do so to form ultimately a total of 50 to 1,000 times the volume of its soma, depending upon the length of the axon (0.1 to 1 m.). Motoneurons that are prevented from establishing peripheral connections frequently die after a few months, probably from "exhaustion."

Were this rate of growth a feature of normal neurons, axonal processes could move about within the central nervous system from one cell to another, i.e., grow 60 μ , the diameter of a large neuron, within 20 minutes. Evidence for the continued outgrowth of central axons is presently lacking. It is, however, firmly established that phosphoproteins move down the axons of normal motoneurons from the cell body toward the periphery at about the same 4 mm. per day seen above in the case of regeneration. The mass of material manufactured and moved is probably not nearly so great in normal neurons as in neurons regenerating axons, but it is clear that it occurs. Smaller molecules can move even more rapidly, apparently

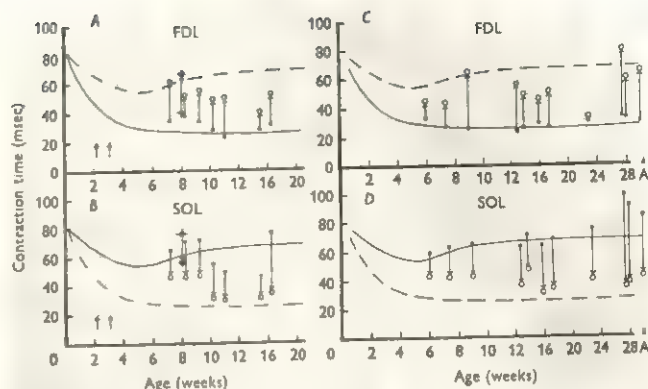


FIGURE 7. Effects of innervating soleus (SOL), a slow muscle, with nerve fibers normally going to flexor digitorum longus (FDL), a fast muscle; and vice versa. Cross union of nerves performed on kittens 16 to 22 days old (arrows) and contraction time (in milliseconds) of muscles tested at various times thereafter. The continuous lines plot the normal development of contraction time for the muscle being studied whereas the broken line plots this function for the muscle whose nerves now supply the studied muscle. In A and B the solid points are values for muscles (in contralateral limb) reinnervated by their own nerves whereas in C and D the solid points are for undisturbed, normal muscles of the animal used. Open circles in all cases indicate values for muscles receiving alien innervation, and it is obvious that these values consistently approach those expected on the basis of their innervation rather than their anatomical type. (From Buller, A. J., Eccles, J. C., and Eccles, R. M. Interactions between motoneurons and muscles in respect of the characteristic speeds of their responses. *J. Physiol.*, 160: 417, 1960.)

through rather than with the axoplasm, since phospholipids can be observed to move out of hypoglossal motoneurons along the hypoglossal nerve at 70 mm. per day.

Retrograde effects. The nature of the signal received by the cell body from the axon is unknown, and there are many unexplained factors in the phenomenon of changing cell metabolism consequent to loss of fiber terminations. For instance, such changes occur in dorsal root ganglion cells only when the peripherally projecting fibers are cut, and not when the equally long centrally projecting dorsal root fibers are cut. Cells in the thalamus degenerate within a week or two after extirpation of the neocortical area to which they project. In the rapidity with which degeneration ensues these thalamic changes are much different from those in spinal cord motoneurons following nerve section. Yet for some thalamic cells, such as those in the medial geniculate body of the cat, full degeneration is procured only by very widespread cortical removals, and loss of limited regions within this field produces little or no apparent change. This may be explained by supposing that the axons of these cells branch extensively and degeneration follows only upon removal of a certain number of these branches. The delicate trophic balance between neurons is further illustrated in cases where the degeneration proceeds transynaptically even in a retrograde direction. For instance, in both man and macaque loss of striate cortex produces degeneration in the lateral geniculate nucleus, and after several years the geniculate cells gradually die and disappear. The loss of the cells upon which they formerly terminated then also causes the retinal ganglion cells to die, even though many of them have collateral terminations in the midbrain. A similar retrograde transynaptic degeneration is seen in the medial mammillary nucleus following extirpation of the cingulate cortex in rabbits. Cells of the medial mammillary nucleus terminate in the anterior thalamic nuclei. When the cells of the anterior thalamus degenerate following loss of their cortical terminations, the terminations from the medial mammillary nucleus must also be disturbed, and de-

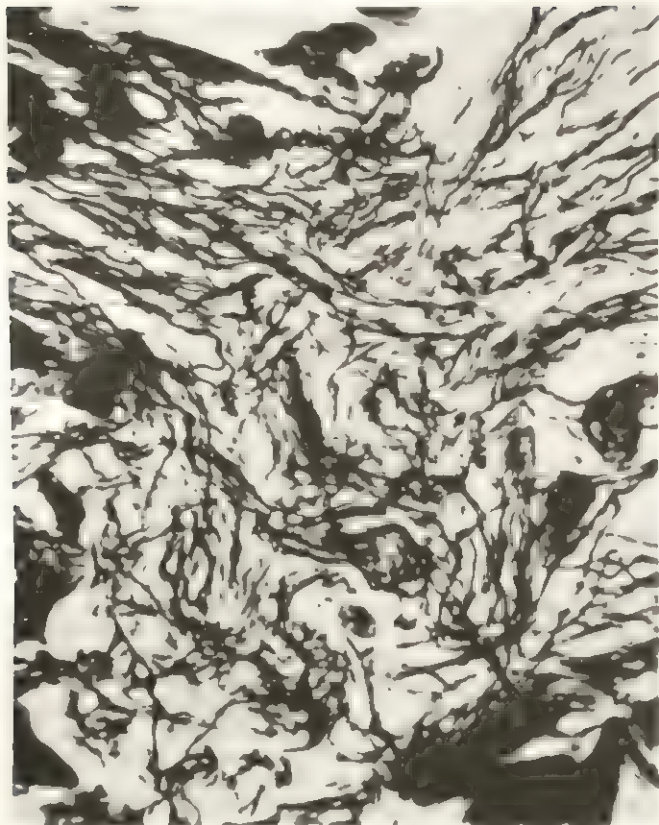


FIGURE 8. Photomicrograph of optic fibers transversing the area of scar tissue of cut optic nerve in a newt. A restoration of the original position of the fibers in the nerve (and ultimately in optic areas of the brain) is effected. (From Sperry, R. W. Mechanism of neural maturation. In *Handbook of Experimental Psychology*, S. S. Stevens, editor, p. 247. Wiley, New York, 1951.)

generation is then seen in the latter nucleus as well, as early as 2 weeks after the cortical loss.

It is, of course, possible or even likely that certain retrograde changes or the maintenance of a normal metabolic state requires some material that passes along the axon towards the cell body. That particles could move in axons seemed to be demonstrated for neurotropic viruses as well as by the observations in tissue culture. The viruses of herpes, rabies, and poliomyelitis move exclusively along peripheral nerves to gain access to the central nervous system. They progress at about the same rate of 2 to 4 mm. per day seen for substances moving centrifugally in the axon. The movement of these viruses, however, may be in perineural spaces rather than within axons so that until the location of the viruses can be demonstrated with the electron microscope this evidence for the centripetal movement of particulate matter within axons is not decisive.

A retrograde influence of muscle fibers upon the neurons innervating them seems necessary to explain the coordinated movements seen in supernumerary limbs grafted on salamanders. The muscles in the grafted limbs are found to contract concurrently with their homologues in the intact, normal limbs. There is no learning involved in these movements and *prima facie* it appears as though the neurons that terminate on the grafted muscles accept only those central synapses which are cognate to the type of muscle innervated. An alternative explanation is that the motoneurons send out collaterals to contact various muscles and that from the many connections so formed only those "appropriate" to each motoneuron survive, much as in the case with sympathetic preganglionic fibers in

Figure 6. Such an explanation seems to suffice for some cases, but perhaps not for all. Such selectivity in motoneuronal termination is not the case in the mammalian neuromuscular system, although nerve fibers do form more effective connections with the type of muscle previously innervated than they do with "strange" muscles. On the other hand, when nerves in the hind limbs of kittens are directed into "strange" muscles, there is good evidence that a small but significant change occurs in the central connections influencing these redirected motoneurons.

Selectivity of connections. While the case for centripetal influences of terminus back upon cell body thus remains somewhat confusing, it can be conclusively demonstrated that central fibers display an extraordinary degree of specificity in their site of termination. This can best be illustrated by examples from the visual system, although equally specific effects are obtained with vestibular or cutaneous systems. If the optic nerve is cut in fish or amphibia, the retinal ganglion cells are able to send fibers through the scar tissue along the former course of the optic tract to reestablish connections in the optic tectum. The fibers penetrate the scar in an apparent tangle of confusion (Figure 8) but then sort themselves out according to retinal locus and follow highly specific courses through the optic tract, ultimately terminating again on essentially the same cells as they did initially. There is some possibility that the final site of termination may be refined by processes analogous to those in sympathetic ganglia (Figure 6), but both behavioral and electrophysiological evidence is consistent in revealing the reestablishment of the former order. Again, learning plays no part since in a frog with eyes rotated so that its world and behavior is upside down and reversed, fibers growing in from the reversed eyes after section of the optic nerves reestablish the old connections as well as the maladaptive behavior in response to the reversed visual world. Mammalian optic nerve fibers cannot regrow in this manner, but their initial organization as to locus and type of ending are at least equally precise. Fibers from the retinal ganglion cells in the monkey sort themselves out at the chiasm into crossing and noncrossing groups and then arrange themselves within the tract according to ultimate destination in the lateral geniculate nucleus. The precision of termination carries through several stages of the system since cells found in area striata with a particular type of response to various colors of light have this same type of response to stimulation of either eye.

Maturational effects on neuron modifiability. In dealing with these concepts, care must be taken to distinguish the effects obtained in the adult, stabilized system versus those obtained in embryonic or juvenile stages.

For instance, if the eyes are rotated in amphibia sufficiently early in life, the optic nerve fibers are able to induce central changes sufficiently extensive that inverted vision and behavior does not result. In newts it is even possible in embryonic stages to remove the eyes from a species with poor vision and replace them with the larger eyes of a species having better vision. The larger eyes induce a larger optic tectum in their hosts.

As maturation proceeds, the nervous system is progressively less capable of rearrangement, and most connections ultimately seem to become immutable, all as in the situation with the kitten visual system cited above.

The stubborn fixity of these inherent, all pervasive connections cannot be overemphasized. A monkey with the flexor and extensor muscles of its arm reversed must undergo months of careful training before it is able to make even a simple, limited movement in the

sense opposite to its inherent central neural arrangement, i.e., to contract its reverse-inserted extensor muscles to produce a flexion of the arm to obtain a banana. Human patients with similar reversals have similar problems, and those with innervated skin reversed from upper to lower lips or bottom to top of finger, while able to report the proper orientation of an object touching them at these points, still continue to experience the touch as though it came at the original location of the skin. The probably small percentage of connections within the human nervous system that are modifiable can thus with effort and training be used with some success to override the effects of those which are not. The degree of modifiability, however, remains severely limited and even modified behavior requires for its expression a vast substrate of inherent connections. The gist of these pages has been that both the mutable and immutable connections are likely to arise from and be maintained by the secretory interchange between neurons.

Suggested Cross References

Further information regarding the metabolism and chemical constituents of the brain may be found in Section 2.2.

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but adequate explanation of the origin and polarity of this electrochemical potential, the resting potential of the cell, can be given wholly in terms of potassium ion concentrations. There is a high concentration of K^+ within the cell as compared with the outside, and these ions are relatively free to move through the cell membrane. The mobility of K^+ being much greater than that of the large organic anions within the cell, the tendency for outward diffusion of the positive charge (K^+) will leave the interior of the cell negative. However, if the interior of the cell is sufficiently negative, then the positive charges will be electrostatically attracted and held. An equilibrium will thus be set up where the difference in chemical concentration of K^+ inside and outside the cell is exactly balanced by the negative electrical potential holding K^+ within the cell. This potential is thus known as the "equilibrium potential," and it can be mathematically defined in terms of concentrations and mobilities for any ionic species.

If the concentration of external K^+ is increased, the resting potential diminishes according to such mathematical prediction. By this and other means it can be shown that the resting potential arises almost entirely from the difference in potassium ion concentration inside and outside the cell.

Mechanisms of K^+ - Na^+ gradient. This concentration difference is maintained by two mechanisms. Both mechanisms must operate in the face of the fact that sodium ions are present in high concentration outside the cell and are to some extent free to enter it. The first mechanism is simply the selective adsorption of K^+ rather than Na^+ by large, "fixed" anions. Thus, a muscle fiber deprived of all energy sources by anoxia, metabolic poisons, and activity to the point of exhaustion, and in a solution at $0^\circ C.$, can still adsorb K^+ and extrude Na^+ against their concentration gradients. This probably arises because the hydration diameter of K^+ is slightly smaller than that of Na^+ , thus allowing a closer approach between positive and negative charges and hence, on a statistical basis, holding K^+ more strongly than Na^+ . It is presumably this same principle of selective binding which allows potassium to be held in the soil while sodium is leached out and runs off to salt the sea. In addition to this, potassium is also accumulated inside the cell by metabolic processes. This second mechanism is known as the "sodium pump" which contributes a metabolically dependent fraction of the resting potential by actively extruding Na^+ from the cell in exchange for K^+ . Despite two decades of intensive research, the manner in which this metabolic pump operates to extrude Na^+ is still obscure.

2.6 THE NERVE IMPULSE AND SYNAPTIC TRANSMISSION

ROBERT W. DOTY, PH.D.

Resting Potential

The interior of most cells is electrically negative with respect to the outside. Nerve and muscle cells are unique in using this difference in electrical potential as a source of energy for rapid communication from one part of the cell to the other. A simplified

Excitation

Application of electric currents through axons or other excitable tissues produces both passive and active changes. The passive changes are spoken of as "electrotonic," and their magnitude is directly proportional to the current applied (Figure 1). An electrotonic potential diminishes exponentially with distance from its point of origin. In its spread along an axon or dendrite such an electrotonic potential will be altered and slightly delayed by the electrical characteristics of these structures, i.e., by their electrical resistance and parallel capacitance along an extended surface resembling a cable.

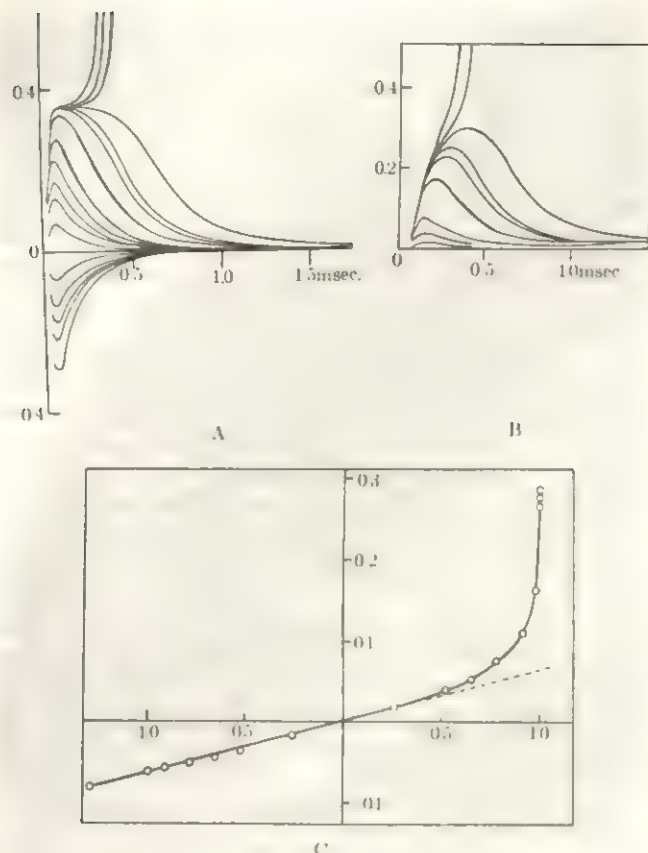


FIGURE 1. The local response of an isolated single, large axon from a crab. *A*, the responses recorded at the site of electrical stimulation. Anodal stimuli (downward deflections) produce only electrotonic potentials which are directly proportional to stimulus intensity. Cathodal stimuli (upward deflections) also produce electrotonic potentials; but with stimulus intensities half or more that required for elicitation of a propagated spike potential (uppermost lines), the response is more than a mirror image of the anodal response. This additional potential, the local response which is generated by the axon, is shown in *B*, where the electrotonic component (as determined by comparable anodal responses) has been subtracted from the records in *A*. These relations are plotted in *C* for values taken 0.29 millisecond after application of the stimulus. *Abscissa* here is the strength of stimulus as a fraction of threshold showing departure from a purely electrotonic, linear function at values about half threshold. *Ordinate* in each case is the potential as a fraction of the spike potential. (From Hodgkin, A. L. The subthreshold potentials in a crustacean nerve fiber. *Proc. Roy. Soc. London, Ser. B*, 126: 87, 1938.)

Mechanisms of excitation. Anodal current applied externally to axons merely adds to their resting potential, thus producing a hyperpolarization. This is only a passive effect without active response from the axon. The axon membrane shows some electrical rectification since externally applied cathodal currents pass more readily than do anodal currents. Cathodal current diminishes the resting potential; i.e., it acts to depolarize the axon, and the response of the axon is to add to this depolarizing effect, producing a "local response" which augments the depolarizing action and prolongs it. As more depolarizing (cathodal) current is applied, the local response becomes progressively larger (Figure 1) until at a critical level (the threshold) an explosive "all or none" change occurs which generates the nerve impulse. It is interesting that the threshold is attained by reducing the resting potential, and if the resting potential should be already lower than this critical, thresh-

old level of depolarization, the axon or cell will be inexcitable. Hyperpolarization never produces excitation but instead makes excitation more difficult the further the membrane potential is increased away from the threshold level of depolarization.

In round numbers the resting potential of a normal axon or nerve cell is about -70 mv. With depolarization to a level of about -65 to -55 mv., the membrane potential within about 0.2 millisecond reaches $+30$ mv. and then almost as abruptly begins to return to the resting level. This action is the "spike potential" associated with the nerve impulse. By changing the internal and/or external concentration of Na^+ , it can be shown that the maximum of the spike potential is the equilibrium potential for Na^+ and that during the rising phase of the spike potential most of the transmembrane current is carried by Na^+ . The spike potential thus arises from a sudden, transient change in membrane permeability to sodium ions. During the course of the spike the permeability to potassium ions also increases. The time course of this change is many times slower than that for sodium ions and the repolarization is not accomplished so rapidly as depolarization. These changes in permeability can be thought of actually as changes in conductivity which, in a manner similar to the variable resistors in an equivalent circuit, control the power drawn from the ionic concentration differences (batteries). Because of the very brief time course of the conductivity change, very little ionic movement actually occurs, most of it going simply to discharge or charge the membrane capacitance. Since these changes in sodium and potassium permeability are to a considerable degree concurrent, the ionic exchange attributable to this capacitance is 3 to 4 times that which would be expected were the changes consecutive.

The measured influx is about 3 sodium ions/100 \AA^2 of membrane surface. This influx is almost negligible in the relatively large internal volume of an axon so that thousands of impulses are required before internal ionic concentrations change significantly. With structures of smaller diameter, however, such as terminal dendrites where the surface to volume ratio may be 1,000 times greater than in axons, ionic concentrations are much more readily altered by activity.

Actually, the situation is somewhat more complicated than just described since it sometimes takes several hundred milliseconds before the resting state is fully restored. The spike potential is commonly followed first by a negative afterpotential (as recorded externally and referring to a state of transmembrane depolarization) which is relatively brief and during which a neuron may be hyperexcitable (since it would take less current to reach the threshold). An after-hyperpolarization or positive after-potential then ensues which is much longer than the negative after-potential and during which the excitability of the neuron is reduced. The positive after-potential seems to be the result of an increased permeability to potassium ions and varies greatly from one type of cell or axon to another.

Excitation increases the metabolism of axons, perhaps partly in relation to the restoration of ionic balances. In any case it has been repeatedly shown that the metabolism associated with activity is qualitatively different from that at rest.

The manner in which the sodium permeability is so abruptly and briefly altered remains unknown. The controlling systems seem to depend upon phospholipids rather than protein in the membrane. Treatment of axons with phospholipase quickly destroys their excitability, whereas the structural protein can be dissolved to the point where the nerve is a mere pulp without seriously affecting its ability to generate spike potentials. Calcium ions also play a very important role in regulating membrane permeability to sodium ions and hence control the triggering mechanism for the spike potential. The axoplasm per se plays no essential role in these events. In large axons it can be replaced with various solutions of electrolytes without altering the phenomena of excitation and conduction.

Excitation is normally initiated in axons by currents in the cell body or, in the case of afferent fibers, by currents set up in receptor structures. The latter are spoken of as "generator

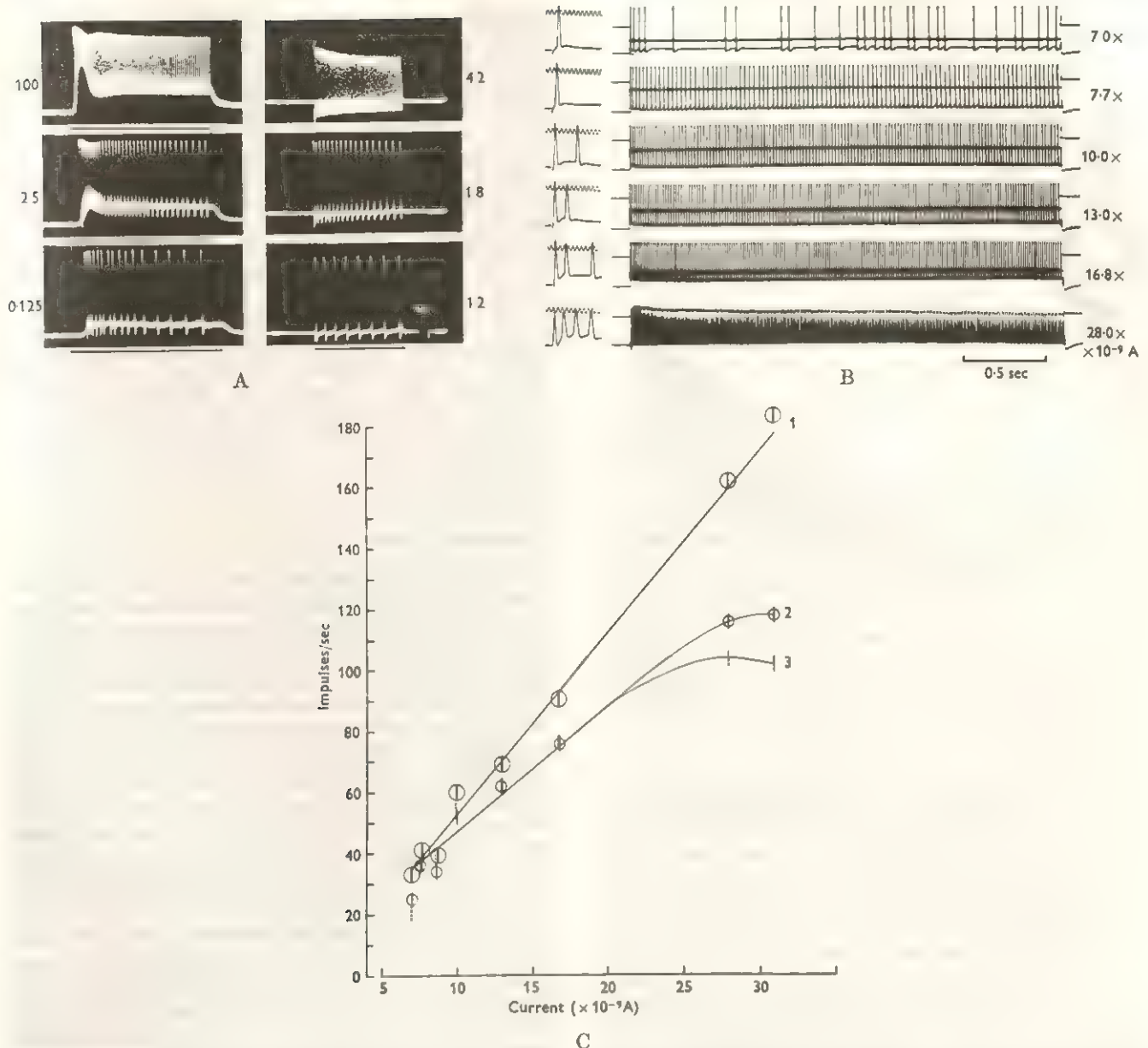


FIGURE 2. Firing frequency as a function of depolarizing currents. *A*, from eccentric cell in the eye of the horseshoe crab. At left is response to light of relative intensities, 100, 2.5, and 0.125 (flash indicated by black line beneath records). On right are similar frequencies of discharge in the same cell elicited by intracellular depolarizing currents of 4.2, 1.8, and 1.2 $\times 10^{-9}$ amp. Black line, 1 second; calibrating pulse, 20 mv. *B*, response of rat motoneuron to intracellular depolarizing currents. Rhythmic discharge occurs at 7.7×10^{-9} amp. or above, but 7.0×10^{-9} amp. merely increases rate of sporadic discharge. Records on left with 1,000 per second sine wave show responses at onset of current. *C*, relation of impulse frequency to depolarizing current for records in *B*, 1, at 0.33 second after onset; 2, at 1.3 seconds; 3, at 2.6 seconds. For curves 2 and 3 the slope constant is 4.1 impulses per second per μ amp., and for the visual cell of the crab in *A*, 4.4 impulses per second per μ amp. Such precise correlation is instructive, but fortuitous, since the cell in *A* is at room temperature and that in *B* is at 37° C. (Part *A* is from Fuortes, M. G. F. Initiation of impulses in visual cells of *Limulus*. *J. Physiol.*, 148: 14, 1959. Parts *B* and *C* are from Granit, R., Kornhuber, H. H., and Shortness, G. K. Quantitative aspects of repetitive firing of mammalian motoneurons, caused by injected currents. *J. Physiol.*, 163: 911, 1963.)

potentials" and are D.C. potentials, usually proportional to the logarithm of the stimulus energy. The effect of a steady, depolarizing potential is qualitatively similar in afferent endings or cell bodies (Figure 2), but quantitative differences are great, depending upon the characteristics of accommodation and recovery in various instances. The general effect, however, is to produce a continuing series of impulses at frequencies proportional to the intensity of the depolarizing current.

Conduction

A transmembrane current of 6×10^{-10} amp. is sufficient to excite an axon. During the spike potential the axon generates a current of about 30×10^{-10} amp. Thus there is about a 5-fold gain between the stimulating and action currents. The action current obviously will pass through adjacent regions of the axon



FIGURE 3. Myoneural junction in sartorius muscle of frog. Note complex folding of muscle membrane subjacent to the nerve ending, and presence of great numbers of particles, the synaptic vesicles, in the latter. (From Birks, R., Huxley, H. E., and Katz, B. The fine structure of the neuromuscular junction of the frog. *J. Physiol.*, 150: 134, 1960.)

and is sufficiently strong to excite them, and in this manner it produces a self-propagating spike potential. Thus, the nerve impulse is conducted successively from each point of excitation by means of eddy currents. The velocity of its propagation will depend upon how quickly the eddy currents can produce a threshold change in consecutive regions along the axon. If the external resistance is made high, as for instance by immersing a single axon in oil, the resulting restriction of current flow will slow the conduction velocity since the threshold depolarization will be reached at each new point somewhat later in the course of the action potential at the antecedent point. If, on the other hand, a shunt is provided so that the neurally generated currents can flow through a metallic conductor to a point far down the axon, the excitation will jump immediately to that distant point and thus lessen the conduction time. Both of these maneuvers, incidentally, prove the fact that it is the eddy currents which are responsible for the propagation of the nerve impulse.

A jumping or "saltation" actually occurs in vertebrate nerves, but from a channeling rather than a shunting of the currents. The fatty insulating material, myelin, present throughout the 0.4 to 1.5 mm. between nodes of Ranvier, prevents the eddy currents from entering the axon except at the nodes. Such saltation helps to increase the conduction velocity of nerve fibers, but its major advantage is probably one of con-

serving metabolic energy. It is obviously more efficient to limit the ionic exchange and resultant metabolic demands of excitation to a small area, probably about 1 per cent, of the axon rather than to involve the entire axonal surface in the process.

In intact peripheral nerves the internodal distance is proportional to the diameter of the fiber. However, when a nerve is cut and the fibers regenerate, the internodal distances are about the same for all types of fiber, yet the conduction velocity differences are still maintained. Thus, conduction velocity is a function of fiber diameter rather than internodal distance. The importance of the fiber diameter in conduction velocity arises from the fact that the longitudinal resistance of the fiber is a function of its diameter. The lower the longitudinal resistance, the more rapidly the eddy currents depolarize a node to the threshold level, and thus the more rapidly the impulse can be propagated. This emphasizes the fact that the eddy currents must flow through the axon to cause its excitation, and from this it is easy to understand how the arrangement of myelin and the random alignment of nodes between fibers renders the influence of one fiber upon another virtually nil in vertebrate nerves.

Myoneural Junction

The myoneural junction provides a conveniently accessible site for studying the transmission of excitation from one cell to another. The junction, or end plate, is a complicated structure characterized by repeated folds in the muscle membrane (Figure 3). Arrival of the nerve impulse at the axon terminal induces a 30- to 40-mv. depolarization in the muscle fiber which normally has a resting potential of about -90 mv. This depolarization is the "end plate potential" (EPP). It is several times the magnitude necessary to achieve the critical level of depolarization at which excitation becomes self-sustaining to propagate over the membrane of the muscle fiber (thus triggering the mechanical contraction of the fiber).

Chemical initiation of the end plate potential. It might be supposed that the EPP arises merely from the electrical excitation received from the axon terminal. It has, however, been conclusively shown that this is not the case but rather that the EPP arises under the influence of chemical transmitters released from the axon terminal. Indeed, many lines of evidence point to the probability that the end plate region and other subsynaptic surfaces are electrically inexcitable, i.e., that the membrane in these regions lacks the characteristics necessary for the abrupt change in sodium ion conductance needed to support a spike potential. Instead, subsynaptic membranes change their permeability only under chemical influences. A few types of invertebrate and vertebrate synapses are known in which electrical transmission does occur from one cell to another, but these instances are relatively rare.

The most critical evidence favoring chemical transmission at the myoneural junction is as follows.

The EPP endures for several milliseconds longer than the muscle spike potential, and its time course is unaffected by the discharge of an artificially induced spike potential propagating

ponderance of afferent over efferent fibers is typical of the mammalian spinal cord. The great importance of afferent inflow to the coordination of movement is seen in the fact that total deafferentation of a monkey's arm produces a condition of paralysis despite intactness of pyramidal and extrapyramidal systems. With training the animal can learn to use this arm to a limited extent, but the deficiency remains profound.

Probably the main reason for the great dependence of movement upon the afferent system is the presence of the powerful proprioceptive system coming from the muscle spindles. These spindle afferents in turn are driven by a special set of motoneurons called "gamma" motoneurons or "fusimotor" neurons which cause contraction of special muscle fibers in which the spindle receptors are embedded. By means of this fusimotor system the central nervous system initiates afferent discharge which sums with that set up by the already present state of stretch of the muscle and feeds this combined information back into the spinal cord to control the "alpha" motoneurons which produce ordinary muscular movements. Many of the afferent fibers from the muscle spindles are among the largest and fastest nerve fibers known. The intricacies of the "gamma feedback loop", i.e., the fusimotor-spindle-alpha motoneuron system, are beyond the scope of this text. It should be realized, however, that a single spindle afferent fiber forms at least four major types of connection in the spinal cord. (1) It ends directly upon motoneurons which are synergistic in their action to the muscle in which the afferent fiber originates, as well as upon motoneurons innervating surrounding portions of the originating muscle. These monosynaptic connections are excitatory. (2) It forms connections with interneurons which in turn play directly upon motoneurons supplying muscles antagonistic to that from which the spindle afferent originates. Such connections inhibit the action of the motoneurons supplying antagonistic muscles. (3) It forms powerful monosynaptic, excitatory connections within nucleus dorsalis (Clarke's column) upon the cells which project into the dorsal spinocerebellar tract. (4) It excites an interneuronal system which by multisynaptic relays comes to play upon other afferent fibers near their synaptic terminations and reduces their action by means of "presynaptic" inhibition (see below).

A motoneuron, of course, sends its axon into the ventral root; but it also sends collateral fibers into a small group of cells at the ventrocentral margin of the spinal cord gray known as "Renshaw" cells. The system of Renshaw cells produces inhibition upon motoneurons synergistic to those which supply them with collaterals. In other words, when a motoneuron discharges, it inhibits its neighbor via the Renshaw system. There is also a weak effect of inhibiting the inhibition, i.e., "disinhibition," of antagonistic motoneuronal pools.

In addition to these afferent and collateral systems there are many others driven by afferents from the joints, tendons, and skin, from contralateral as well as ipsilateral sources, together with a great variety of influences playing into the spinal cord from higher centers. Most of the current knowledge involves large cell, large fiber systems which are comparatively easy to analyze. Unfortunately, these are numerically the least important systems since there are 3 to 4 times as many unmyelinated fibers 0.3 to 1.3 μ in diameter, as there are larger myelinated fibers which range up to 12 to 20 μ in diameter.

Electrical Events in Motoneurons

Motoneurons can be impaled by microcapillary electrodes having a tip diameter of 1 to 2 μ . The entrance of the capillary tip into a neuron is signalled by an abrupt change in recorded potential from zero to about -70 mv. as the tip is advanced a few microns. Motoneurons can be unequivocally identified as such by their being excited antidromically upon stimulation of a ventral root. Similarly, in preparations with severed dorsal roots the motoneuron can be further specified exactly as to which muscle it innervates simply by finding which muscle

nerve excites it antidromically. The Renshaw cells, which are also activated by antidromic stimulation of motor axons, cannot be confused with motoneurons since their response is not of an antidromic type.

A double-barrelled microelectrode is often employed so that the membrane potential can be set electrically (by a "voltage clamp") or the internal ionic environment altered by electrophoretic injections with one barrel, while the second barrel of the electrode is used to record the reaction of the impaled cell. When by such means a motoneuron is hyperpolarized, it becomes less likely that it will be invaded by antidromic impulses. This manipulation reveals three all or none stages in the antidromic invasion of the neuron (Figure 5). The interpretation of these stages is as follows. (1) With intense hyperpolarization only a small potential, the "M" spike, is recorded in the soma. The M spike represents the distant impulse subsiding at the first myelinated segment as it fails to propagate into the hyperpolarized region. (2) With less severe hyperpolarization the antidromic invasion proceeds somewhat farther, presumably into the initial segment of the axon where it produces the "IS" spike which, however, is still remote from the recording electrode. (3) Usually at normal levels of membrane potential the cell body and probably the dendrites are invaded, giving rise to the "SD" spike which is the fully developed, all or none spike of the motoneuron *per se*. With orthodromic excitation or with excitation from intracellularly applied currents the motoneuron discharge is always initiated by a potential exactly like that of the antidromically analyzed IS spike. Hence it seems certain that excitation originates in the initial segment rather than in the soma or dendrites (Figure 5). Thus the initial segment of the axon is critical in the excitatory processes of the neuron since it has the lowest threshold and its discharge will propagate a spike both down the axon and up over the soma and into the dendrites.

The SD spike is commonly followed by delayed depolarization and/or by hyperpolarizing and finally by depolarizing after-potentials (Figure 6). The dendrites presumably make important contributions to these potentials since they are not seen following an IS spike. The delayed depolarization usually is of the order of 3 to 7 mv. on the falling phase of the SD spike and lasts 3 to 6 milliseconds (Figure 6A). The after-hyperpolarization is much more protracted, attaining about 5 mv. at 10 milliseconds and then, for motoneurons innervating fast contracting muscles, endures for about 70 to 80 milliseconds; and for motoneurons innervating slowly contracting muscles it may last 150 milliseconds. This after-hyperpolarization is independent of that produced by the Renshaw system (which has similar effects lasting about 50 milliseconds) and arises from a slight change in membrane permeability permitting a greater outward flux of potassium ions.

By stimulating the neurons directly with depolarizing currents supplied through an internal microelectrode, a number of interesting and important features are revealed. First, the form of response of the neuron is essentially identical to that which occurs to natural, orthodromic excitation (Figure 5, Part III). At a certain level of depolarizing current the neuron begins to discharge repetitively and regularly so long as the current is maintained. (Figure 2, B and C). Below this current level it merely discharges sporadically. The frequency of discharge is highest immediately after onset of a continuous current, falls slightly during an adaptation period of 0.1 to 1.0 second, and is then maintained steadily for long periods. Within the physiological range of discharge from a minimum steady rate of about 15 per second to a maximum steady rate of 50 per second the relation of the frequency to the intensity of the depolarizing current is essentially linear (Figure 2C). There is, however, a 10-fold range in the slope of this frequency-intensity relationship; i.e., some neurons will have an output 10 times greater than others for the "same" input. This means that the effectiveness of a given excitatory background upon a given neuron will depend upon the neuron's size, geometry,

locus of synapses, and other factors. The neuron's characteristics in this regard can be predicted from its after-potentials (Figure 6B). The minimal frequency of steady repetitive firing is related to the peak of the later after-depolarization and matches the frequency at which the innervated muscle is

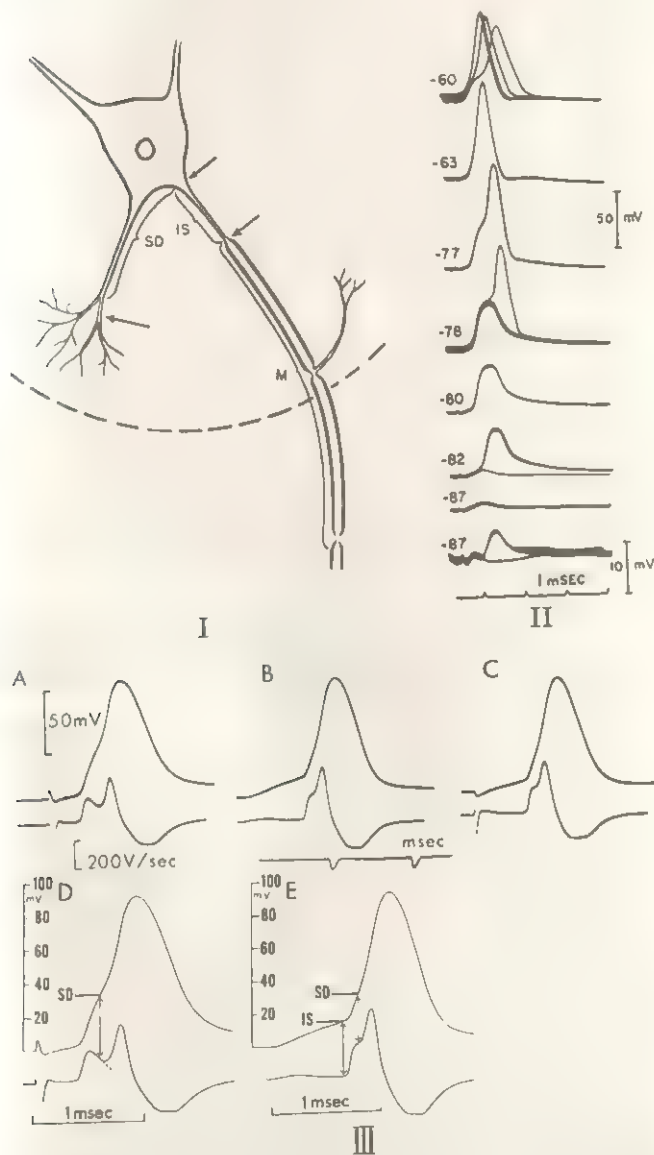


FIGURE 5. Components of potentials generated in motoneurons. I, segments of motoneuron; II, the responses obtained by antidromic stimulation when membrane potential, -80 mv. at rest in this cell, is set at different levels by intracellularly applied currents (see the text). In III a motoneuron with -70 mv. resting potential is stimulated antidromically (A, D), by a monosynaptic EPSP (B, E) and by a depolarizing intracellular pulse (C). The lower trace of each pair is an electrical differentiation showing the rate of change of potential in the upper traces, making more clear the fact that similar components are present in each case. In D and E the perpendicular lines indicate the start of the IS and SD components and the horizontal lines indicate their respective thresholds. (From Eccles, J. C. *The Physiology of Nerve Cells*. Johns Hopkins Press, Baltimore, 1957; and from Eccles, J. C. *The excitatory responses of spinal neurones*. In *Progress in Brain Research*, J. C. Eccles and J. P. Schädé, editors, vol. 12, p. 1. Elsevier, Amsterdam, 1964.)

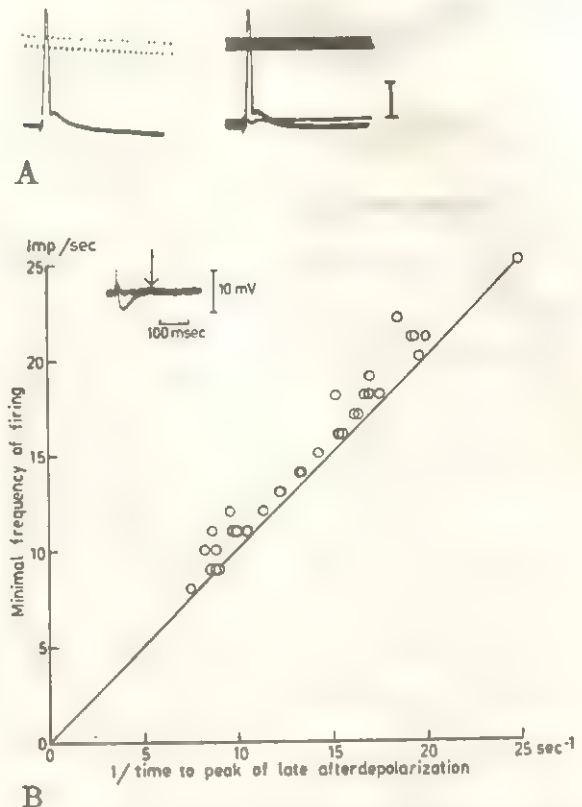


FIGURE 6. After-potentials in motoneurons. A, from L_4 segment in rat showing delayed depolarization ("hump" following spike) and beginning after-hyperpolarization following orthodromically elicited spike. Record to right shows repeated traces with near threshold stimuli in which spike sometimes did not develop, thus providing base line of resting potential from which to judge the magnitude of the after-hyperpolarization. Calibration 20 mv. and 1,000 Hz. B, relation between minimal frequency of steady repetitive firing (e.g., at 7.7×10^{-9} amp. in Figure 3B) of cat motoneurons and reciprocal of the time to peak of after-depolarization (arrow on inset). Inset, at slow sweep speed, shows antidromic response of neuron with deep after-hyperpolarization and late after-depolarization (barely visible at this gain). (Part A is from Granit, R., Kernell, D., and Smith, R. S. Delayed depolarization and repetitive response to intracellular stimulation of mammalian motoneurons. *J. Physiol.*, 168: 890, 1963. Part B is from Kernell, D. The limits of firing frequency in cat lumbosacral motoneurons possessing different time courses of after-hyperpolarization. *Acta Physiol. Scand.*, 65: 87, 1965.)

known to begin mechanical summation of contractions. The maximum steady frequency, on the other hand, is closely related to the duration of after-hyperpolarization and in turn matches the maximum useful frequency for obtaining tetanic fusion in the innervated muscle. Thus, the temporal characteristics of neurons fit them precisely into various physiological roles, and it seems safe to assume that similar principles will hold for many other neuronal systems of the brain. For instance, it is found that interneurons in the spinal cord fire much more rapidly for a slight change of intracellular depolarizing current than do motoneurons. Interneurons should thus be well suited for "amplifying" incoming signals, and with their higher output frequencies they provide the natural "depolarizing pressure" required for sustained activity in the motoneurons.

Excitatory postsynaptic potential. A single orthodromic synchronous volley entering the dorsal roots

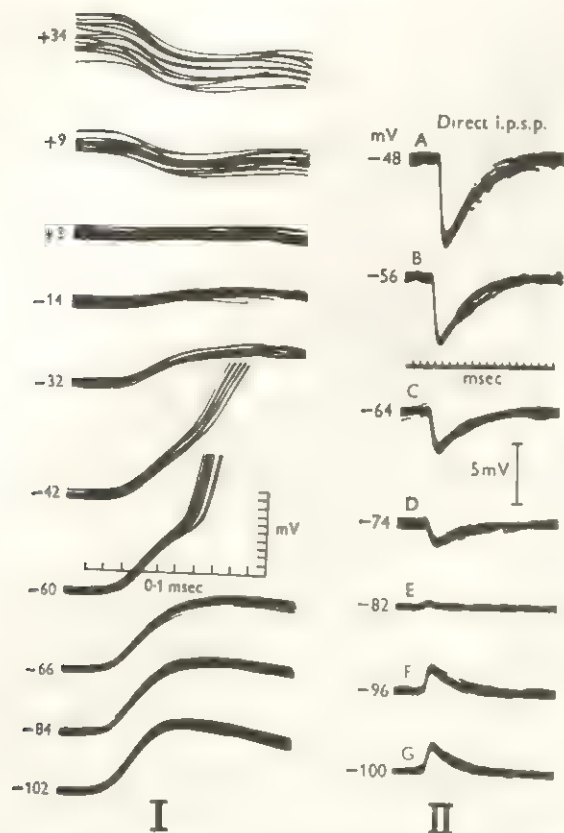


FIGURE 7. Excitatory (I) and inhibitory (II) postsynaptic potentials of cat motoneurons as modified by setting of the membrane potential at different levels. Upward deflection indicates depolarization. Membrane potential controlled through one of the two electrodes impaling the cell and its level is indicated at the left of each set of about 20 superimposed responses. I, biceps-semitendinosus motoneuron with resting potential of -66 mv. Equilibrium potential for EPSP is $\sim +3$ mv., and when membrane potential is greater than this value (e.g., $+9$ and $+34$ mv.), it also moves towards $+3$ mv. during the EPSP process. In II, a biceps-semitendinosus motoneuron with a resting potential of -74 mv. is subjected to inhibitory volleys from quadriceps afferent fibers. The equilibrium potential for the IPSP is apparently about -80 mv., and the potential moves towards this value whether depolarized (-64 , -56 , and -48 mv.) or hyperpolarized (-82 , -96 , and -100 mv.) (see the text). (Part I is from Coombs, J. S., Eccles, J. C., and Fatt, P. Excitatory synaptic action in motoneurons. *J. Physiol.*, 130: 374, 1955. Part II is from Coombs, J. S., Eccles, J. C., and Fatt, P. The specific ionic conductances and the ionic movements across the motoneuronal membrane that produce the inhibitory post-synaptic potential. *J. Physiol.*, 130: 326, 1955.)

after stimulation of an appropriate muscle nerve produces a brief depolarizing action in an impaled motoneuron. This depolarization is the excitatory postsynaptic potential (EPSP) arising from activity of afferent fibers with direct, "monosynaptic" connections to motoneurons.

The amplitude of the EPSP will depend upon how many afferent fibers are synchronously discharged, and hence the EPSP can be graded by changes in stimulus intensity. (Up to the point of exciting all fibers, the number of fibers excited in a nerve will depend upon the intensity of an electrical

stimulus.) The EPSP rises to a maximum within about 1.0 millisecond and then decays with a time constant of about 5 milliseconds (Figure 7). This rather long course of action probably results from residual transmitter action. Since a significant fraction of the depolarization continues even out to 12 milliseconds, a second EPSP induced within this time can sum with the first. The neuron discharges by initiating an IS spike when depolarization from the EPSPs reaches 5 to 18 mv.

Because spontaneous neural discharge is omnipresent in the central nervous system, it is very difficult to determine whether random "miniature EPSPs," analogous to the MEPPs at the myoneural junction, occur in the absence of presynaptic spikes. However, when all conduction is blocked in the isolated spinal cord of the frog by treating it with solutions with a high magnesium content, a background of EPSPs, many with identical amplitude, can still be recorded.

This suggests that the quantal release of transmitter occurs spontaneously at central synapses as well as at the myoneural junction (as it also does in autonomic ganglia).

Inhibitory postsynaptic potential. Brief hyperpolarizing potentials are produced in an impaled motoneuron by stimulation of nerves from muscles with action which is antagonistic to that innervated by the impaled neuron. Since hyperpolarization carries the membrane potential away from the threshold level, it has the effect of inhibiting the activity of the neuron. Hence, these potentials are termed inhibitory postsynaptic potentials (IPSPs).

The IPSPs are essentially a mirror image of the EPSPs (Figure 7), although their time course is slightly shorter. The amplitude of the IPSP also depends upon the number of fibers active in the synchronous afferent volley.

It can be inferred that the same fiber can generate EPSPs in one set of motoneurons and IPSPs in other motoneurons. These "direct" inhibitory connections, however, have a slight but significantly longer latency than the excitatory. Measuring from the time when the afferent volley enters the spinal cord over the dorsal roots until action is produced in an impaled motoneuron, it takes about 1.0 millisecond longer to evoke an IPSP than it does to evoke an EPSP. This 1.0-millisecond delay is *prima facie* evidence for the existence of an interneuron in the inhibitory pathway. The following evidence is sufficiently convincing to validate the existence of such an inhibitory interneuron. It might first be supposed that the inhibitory nerve branches were smaller than the excitatory ones as they approached their termination in the cord, or that it took a longer time to mobilize and release the inhibitory as opposed to the excitatory transmitter, thus accounting for the extra delay for the IPSP. This is not the case, however, since upon stimulation within the ventral horn, where the presynaptic fibers producing EPSPs and IPSPs can be directly stimulated, the latencies for the two processes are identical. The delay at the synaptic terminal is about 0.3 millisecond in each case. IPSPs can be produced by concurrent stimulation of two separate afferent sources where neither alone has any effect. There thus must exist remote from the motoneuron a common site (i.e., an interneuron) where such summation occurs. Finally, interneurons in the intermediate nucleus of the cord have been found that fire in appropriate relation to the timing of the IPSPs. Stimulation in this nucleus can produce IPSPs.

Ionic Basis of EPSPs and IPSPs

One of the most ingenious triumphs of neurophysiology has been the identification of the ionic events underlying the generation of EPSPs and IPSPs. This was accomplished by determining the equilibrium potentials for the IPSP and EPSP processes and then altering the intracellular concentration of various ions to determine which ionic species contributed to

these equilibrium potentials. The procedure is illustrated in Figures 7 and 8. The motoneuron is impaled with a double-barrelled microelectrode. Through one barrel of the electrode the membrane potential is "clamped" at any desired voltage level and with the other barrel the response of the neuron to excitatory and inhibitory volleys is then recorded. In Figure 7, *Part I*, at -60 mv., the excitatory volley produces an EPSP which is sufficient to attain the threshold and discharge a spike potential. This still occurs when the membrane potential is artificially set at -42 mv., but at this level the processes are slowed by the lack of adequate driving voltage. At -32 mv. the EPSP is considerably reduced, and the neuron probably could not discharge since it is being held depolarized beyond the threshold level. The equilibrium potential is seen to be about $+3$ mv. where no current flows during the EPSP since the electrical potential balances the ionic concentration differences which underlie the generation of the EPSP. When the membrane potential is set at still more positive voltages, the current actually moves in the opposite direction, towards the equilibrium potential, during the impingement of the excitatory volley. A similar analysis is shown in Figure 7, *Part II*, for an inhibitory volley producing IPSPs which, at the resting level of -74 mv., produced hyperpolarizing IPSPs. The equilibrium potential is found to be approximately 80 mv., and when the membrane potential is moved beyond this equilibrium to -96 or -100 mv. the potential change during the inhibitory action is reversed since it still moves towards the equilibrium potential.

The equilibrium potential for the SD spike is approximately $+40$ mv., which is the same as that found for the spike process of peripheral nerve. This and other evidence indicate that the process generating the SD spike changes the membrane conductance only for sodium ions. The equilibrium potential of -10 to ± 0 mv. for the EPSP is the same as for the EPP, and both appear to be generated by simultaneous changes in membrane permeability to all the major electrolytes, i.e., Na^+ , K^+ , Cl^- .

The equilibrium potential of -80 mv. for the IPSP process can be shown to arise from a change in membrane permeability to ions with a hydrated diameter similar to that of K^+ or Cl^- . The case for the participation of Cl^- is illustrated in Figure 8. The motoneuron was in this case penetrated with an electrode containing KCl. Immediately after penetration an inhibitory volley produced the usual IPSP as shown in Figure 8A. Within a short time (Figure 8, B and C), however, the gradual diffusion of Cl^- from the electrode was sufficient to produce a significant change in the intracellular concentration of Cl^- . As this occurred, the equilibrium potential of the IPSP changed, ultimately becoming less than the resting potential (-59 mv.). Thus, during the inhibitory volley the membrane potential moved towards a new equilibrium potential for the IPSP, i.e., in a depolarizing direction. When the membrane potential was artificially set at -41 mv. (Figure 8D), the inhibitory volley again produced a hyperpolarizing response as the potential still moved in the direction of the new equilibrium potential of the IPSP. Chloride ions were then deliberately injected into the cell for 1 minute by passing a current of 3.2×10^{-8} amp., electrode-negative. Following such a loading of the neuron with Cl^- , inhibitory volleys produce depolarizing potentials sufficient to attain threshold and produce an SD spike (Figure 8, E, F, and G)! During the course of about 1 minute (Figure 8, E to L), the excess chloride leaves the cell and the previous situation is restored (compare L with C, in Figure 8). Such an effect would result if the membrane became highly permeable to Cl^- during the IPSP. With a high intracellular concentration of Cl^- the equilibrium potential for Cl^- would be considerably less than the membrane resting potential and hence as the IPSP changed the permeability for Cl^- this equilibrium potential would predominate.

Anions fall into two groups: those which can and those which cannot mimic these effects of Cl^- . The distinguishing characteristic for effectiveness versus ineffectiveness in this re-

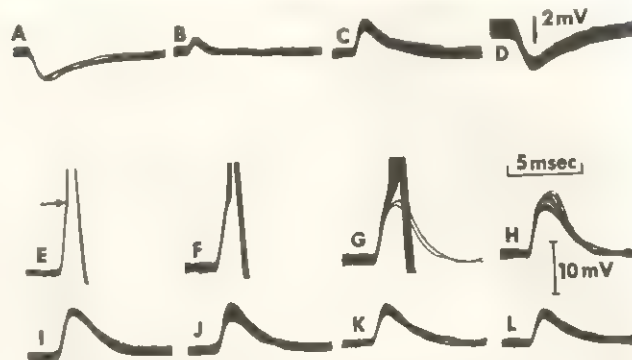


FIGURE 8. Intracellular recording, through a double-barrelled microelectrode filled with 3 M KCl , of IPSPs generated in a cat biceps-semitendinosus motoneuron by quadriceps afferent volleys. A, shortly after penetration of the cell; B and C, reversal of IPSP by diffusion of Cl^- from electrode; D, restoration of hyperpolarizing effect of IPSP when membrane potential set at -41 mv. Cl^- was then deliberately injected into the cell for 1 minute, thus changing the equilibrium potential for Cl^- to a level less than the threshold of the cell. Hence, the membrane potential moves towards this level during the IPSP and, crossing the threshold, discharges the cell (E, F, G). Diffusion gradually reduces the intracellular concentration of Cl^- (G to K), until the previous level (C) is reached (L) (see the text). (From Eccles, J. C. *The Physiology of Nerve Cells*, p. 107. Johns Hopkins Press, Baltimore, 1957.)

gard seems to be purely a function of the hydrated diameter of the ion. Only the smaller anions such as Cl^- , Br^- , NO_3^- , etc. are effective. Since K^+ and Cl^- are the only ions within this range of diameters normally present in the cell in significant amounts, it must be assumed that these are the only ions which participate in the IPSP process. Proof of the participation of K^+ in the IPSP is difficult since the intracellular concentration of K^+ is so high that it cannot easily be changed significantly. However, all evidence currently available points strongly toward the normal equilibrium potential for the IPSP being the balance between the equilibrium potentials of Cl^- (approximately -70 mv.) and K^+ (-90 mv.) to give the observed value of -80 mv. for the IPSP.

Presynaptic Inhibition

Both EPSPs and IPSPs are "postsynaptic" events; i.e., they occur in the cell upon which the afferent terminals impinge. The inhibitory action arises because the IPSPs sum with and thus reduce the magnitude of EPSPs. In "presynaptic" inhibition, which is probably a more common arrangement than postsynaptic inhibition, the magnitude of the EPSPs is also reduced, but no IPSPs ever appear in response to the inhibitory volley alone. It must thus be inferred that the inhibitory volley somehow acts directly upon the afferent fibers or the presynaptic terminals to reduce their capacity to generate EPSPs. The axoaxonic endings mentioned above are presumably the anatomical substrate for this presynaptic effect.

It had long been known electrophysiologically that certain inhibitory effects were accompanied by positive potentials at the surface of the spinal cord and in the dorsal roots. These potentials had a latency of about 5 milliseconds following the entry of an inhibitory volley into the cord, reached their maximum at

about 20 milliseconds, and usually took more than 200 milliseconds to subside. The temporal course of these potentials has now been found to coincide precisely with that of presynaptic inhibition. The relatively long latency arises apparently from multisynaptic relays in interneurons of the dorsal horn whose action is necessary for presynaptic inhibition. During the course of presynaptic inhibition the threshold for the stimulation of the inhibited afferent fibers is diminished, thus suggesting that they are partially depolarized. Direct proof of this state of depolarization has been obtained by intracellular recording from primary afferent fibers. Presynaptic inhibition is thus produced by a multineuronal circuit which partially depolarizes afferent terminals, thereby diminishing their action potentials and the consequent release of synaptic transmitter.

The pharmacology of presynaptic inhibition is distinctly different from that of postsynaptic inhibition. Whereas IPSPs in motoneurons are diminished or abolished by injections of strychnine, this drug has no effect upon presynaptic inhibition. Picrotoxin, on

the other hand, abolishes presynaptic inhibition without affecting postsynaptic inhibition. Strangely, barbiturates enhance presynaptic inhibition.

By using the criteria of latency and time course, depolarization of afferent terminals, and pharmacological analysis, it has been possible to demonstrate the existence of presynaptic inhibition at many places in the central nervous system. In the spinal cord, presynaptic inhibition is produced predominantly by cutaneous fibers, by fibers from spindles in flexor muscles, and by fibers from the corticospinal tract. These effects are exerted upon afferent input to motoneurons and to ascending sensory pathways. Similar effects are obtained at the main sensory nucleus of the trigeminal nerve. Figure 9 summarizes electron microscopic findings which are consonant with physiological experiments showing that the pyramidal tract can control synaptic transmission in the dorsal column nuclei by means of presynaptic inhibition. Note that some terminals form synaptic relation both with the dendrites and with the large presynaptic terminals which, as degeneration experiments show, originate from the

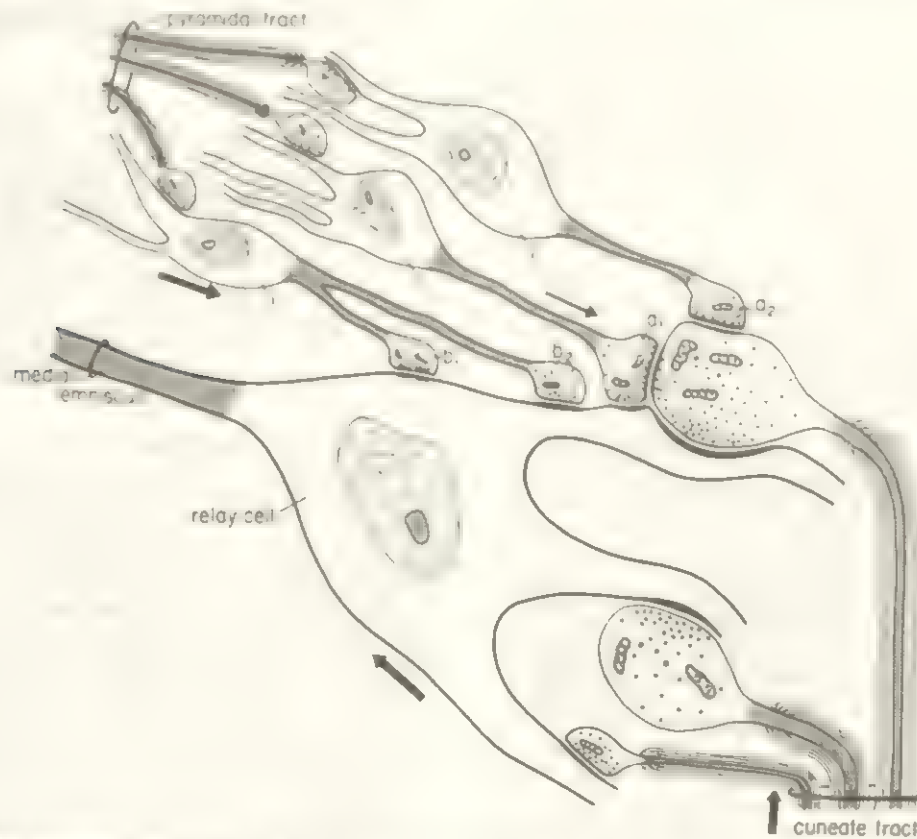


FIGURE 9. Diagram of certain connections in the cuneate nucleus based on electron microscopic findings correlated with degeneration experiments and electrophysiological findings. Myelinated somesthetic afferent fibers (cuneate tract) ascending in the dorsal columns of the spinal cord terminate on relay cell, which projects into ventrobasal thalamus via the medial lemniscus. The relay cells and terminals of the cuneate tract are both controlled by the pyramidal tract via interneurons. Pyramidal tract fibers diagrammed here originate in pericruciate cortex of cat or pre- and postcentral gyri in macaques. The axoaxonic synapses, a_1 and a_2 , presumably mediate the presynaptic inhibition observed to follow pyramidal tract or cortical stimulation, and b_1 and b_2 produce IPSPs or EPSPs in the relay cell. Possible connections for pre- and postsynaptic inhibition from collaterals from cuneate tract or axoaxonic contacts in the cuneate nucleus, probable basis for presynaptic depolarization. (*Exp. Neurol.*, 13: 218, 1965.)

cuneate tract. Similar anatomical arrangements have been observed in the lateral geniculate nucleus of cats and monkeys, and electrophysiological experiments demonstrate that the cerebral cortex and mesencephalic reticular formation control synaptic transmission through this nucleus partly by means of presynaptic inhibition.

Other Synapses and Phenomena

The anatomical arrangement of recurrent collaterals from the motor axons projecting onto Renshaw interneurons at the base of the ventral horn has been described above. Upon stimulation of the ventral roots these interneurons discharge at extremely high rates, up to 1,500 per second in the initial burst, for as long as 50 milliseconds. The time course of their discharge is correlated with IPSPs and inhibition of motoneurons. A similar arrangement, where axon collaterals play upon interneurons which in turn send inhibition back upon neighbors of the cell originally excited, has been found physiologically for the cells giving rise to the pyramidal tract (Betz cells), in the cuneate nucleus and ventrobasal complex of the thalamus, in the pyramidal cell system of the hippocampus, and in the olfactory bulb.

Functions. An obvious function for such an inhibitory system is the confinement of excitation to a discrete neural pathway. Once excitation is sufficient upon a given set of neurons, their discharge suppresses, by means of this "surround inhibition," any marginal tendency for neighboring cells to discharge, thus focusing and sharpening the center of activity. When such inhibitory feedback is widespread within an active system, it is also likely to engender rhythmic activity by locking inhibitory periods in phase for a large group of cells and thus synchronizing the probabilities of their discharge.

Specific neurons which serve as inhibitory interneurons have been identified in the hippocampus and cerebellum. In both these structures a very dense network of synapses envelops the soma of the hippocampal pyramidal cells or the cerebellar Purkinje cells. These axosomatic endings originate from "basket cells." The evidence that these basket cells give rise to inhibition is as follows. When intracellular records demonstrate prolonged and powerful IPSPs, extracellular records show that the focus of the inhibitory action is at the cell body and not in the dendrites. Such records are meaningful in the cerebellum and hippocampus because in these structures cell bodies are aligned in precise laminae. Since the axosomatic endings and only these endings are powerfully activated during IPSPs and since these endings arise predominantly from the basket cells, the latter must be inhibitory interneurons. On the rising phase of these IPSPs a ripple of high frequency activity can sometimes be observed which corresponds well with the frequency of cell discharge concurrently occurring

in regions where the basket cell bodies are known to be located.

For the hippocampus it can be shown that the basket cells are activated by antidromic stimulation of hippocampal pyramidal cell axons. The cerebellar basket cell system, on the other hand, is probably not activated by axons of the Purkinje cells since the latter are inhibitory in their effect.

It bears emphasis that axon collaterals from hippocampal pyramidal cells, Betz cells, or motoneurons are not likely to be the only input to the basket cells, Renshaw cells, or other interneurons responsible for recurrent inhibition. In other words, these inhibitory systems can probably be activated from several sources.

Synaptic transmitters

Acetylcholine. Since acetylcholine is released by motor axons at their presynaptic terminals on muscle fibers, it is reasonable to suppose that the axon collaterals of these same neurons would release acetylcholine upon Renshaw cells. The correctness of this expectation has been repeatedly confirmed in pharmacological experiments on spinal cord systems. One of the more striking is the demonstration that Renshaw cells are readily excited by the electrophoretic application of minute quantities of acetylcholine in their immediate vicinity by means of microelectrodes, whereas similar applications to other interneurons or to motoneurons is essentially without effect.

Similar electrophoretic application elsewhere in the brain demonstrates that about 10 to 25 per cent of the isolated neurons can be excited by acetylcholine, and roughly 5 per cent are inhibited by it. These effects have been particularly well studied in the neocortex. In the visual cortex of the cat cells responding at "on" "off" or at both "on" and "off" of light are affected or not affected by electrophoretic application of acetylcholine in the same proportion as other cortical neurons, i.e., about 20 per cent excited, 5 per cent inhibited. On the other hand, over 90 per cent of the Betz cells in the precruciate motor cortex of the cat are excited by acetylcholine whereas in the posteruciate area only 64 per cent of the pyramidal tract cells are cholinceptive, and only about 20 per cent of the nonpyramidal tract cells in these areas can be activated by acetylcholine. Throughout the cortex the cholinceptive cells do seem to lie in the deeper cortical layers, suggesting that they may be pyramidal cells in most instances.

The onset of the effect of acetylcholine is characteristically slower for cortical neurons than for Renshaw cells, and the effect outlasts the cessation of application by many seconds. Furthermore, the response of Renshaw cells to acetylcholine is "nicotinic" since it is blocked by curariform agents, whereas at the cortex, responses, particularly inhibitory responses, tend to be "muscarinic" in that they can be blocked by application of atropine or hyoscine but not by curariform agents. Cells in the mesencephalon and dienceph-

alone seem to give both muscarinic and nicotinic responses. While neurons of the lateral geniculate nucleus and the ventrobasal complex are cholinceptive, neither atropine nor curariform drugs block their response to stimulation of optic tract or medial lemniscus. This suggests that the cholinergic input to these nuclei arises from the centrencephalic system rather than from the specific optic or somesthetic afferents.

Stimulation of the mesencephalic reticular formation can activate cholinceptive units in neocortex, but the latency is rather long. While some such units have transcallosal afferents or afferents from nonspecific thalamic nuclei, most are activated best by stimulation of specific thalamic nuclei, although again the latencies are usually long. Thus it is still not possible to specify precisely the organization of corticopetal cholinergic systems. Electron microscopic evidence indicates that cholinesterase is located exclusively in the

type I axodendritic synapses, but, of course, no claim can be made that all such synapses are cholinergic. Differential staining techniques also indicate that neocortical pyramidal cells, the caudate nucleus, putamen, and septal nuclei have high concentrations of acetylcholinesterase.

Two other lines of evidence suggest that the foregoing experimental findings are actually related to functional cholinergic systems in the brain. First, acetylcholine is continuously released from the surface of the cerebral cortex and from the caudate nucleus. This release is increased several fold by direct electrical stimulation of these structures or, in the case of the somatosensory cortex, by stimulation of peripheral nerves but not by transcallosal stimulation. Second, acetylcholine is found in large amounts only in that fraction of brain homogenates which contains the synaptic vesicles.

It can thus be concluded with considerable confidence that acetylcholine functions as a transmitter at many synapses in the brain. However, there are still many difficulties involved in appraising these facts. For instance, acetylcholine excites some neurons and inhibits others. This perhaps should not be surprising since it produces hyperpolarizing potentials in the heart and in certain central synapses of snails and sea slugs but elicits depolarizing potentials at other central synapses in sea slugs, at vertebrate myoneural junctions, etc. The nature of the action of the transmitter may thus be determined by the subsynaptic membrane. There are several instances of neurons being excited or inhibited by more than one type of transmitter. For instance, while the nicotinic type of response is characteristic of Renshaw cells, there is some evidence that they possess still another type of acetylcholine receptor. Furthermore, when cholinergic transmission is blocked at Renshaw cells, they continue to respond vigorously to electrophoretic application of glutamic acid. Similarly, cells in the pons and medulla respond to electrophoretic application of acetylcholine, norepinephrine, and 5-hydroxytryptamine, giving various combinations of excitation and inhibition to these substances specific to any one cell. Finally, there is the complication (Figure 10) that two types of synaptic vesicles can be found in the same synaptic ending.

Amino acids. Much evidence is accumulating to indicate that γ -aminobutyric acid (GABA) is an inhibitory transmitter in the mammalian central nervous system. The evidence begins with the discovery that a factor, now identified as GABA, isolated from mammalian brain can cause inhibition of the stretch receptor neuron in the crayfish. The inhibitory axon which normally inhibits this cell in the crayfish contains very high concentrations of GABA, whereas adjacent axons which have an excitatory effect do not. The relevance of these facts to the mammalian central nervous system is that glutamic acid metabolism is uniquely important in brain as compared to

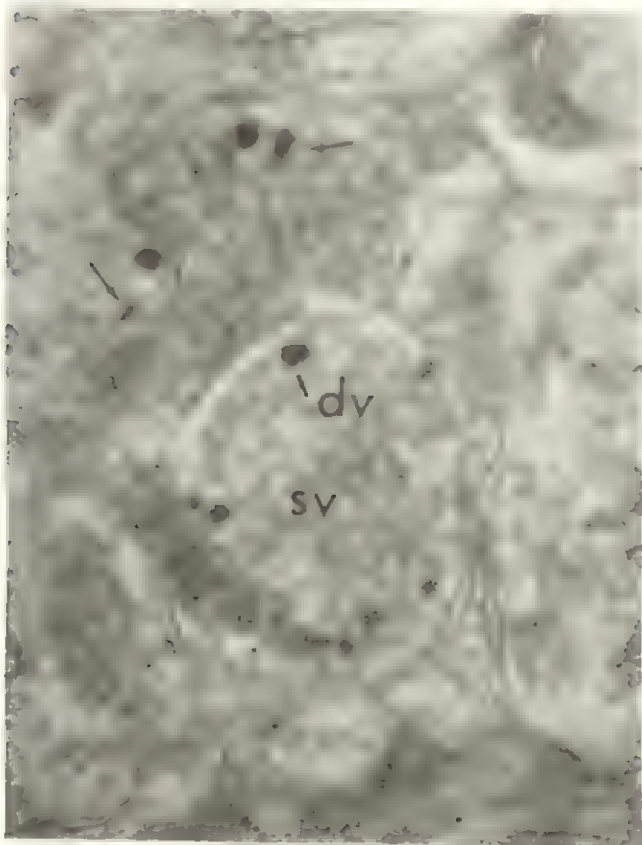


FIGURE 10. Two types of vesicles in single synaptic terminals in the anterior hypothalamus of the rat. SV, the common type of vesicle, with an average diameter of 400 to 500 Å, constituting about 80 per cent of the vesicles found in these hypothalamic terminals; dv, dense vesicle, identical in appearance with vesicles in proven adrenergic terminals. The dense vesicles have a mean diameter of about 1,300 Å and account for about 20 per cent of the vesicles present. Similar terminals with two types of vesicles have also been found in the thalamus. (From Pellegrino de Iraldi, A., Farini Duggan, H., and de Robertis, E. Adrenergic synaptic vesicles in the anterior hypothalamus of the rat. *Anat. Rec.*, 145: 521, 1963.)

other tissues (Section 2.5, Table I), and that brain but no other mammalian organ contains GABA in large amounts. GABA is found in highest concentration in the fractions of homogenized brain which contain the synaptic vesicles. It is released continuously from the surface of the neocortex in the resting state. During the slow wave phase of sleep this release increases 3-fold and is abolished during states of arousal maintained by occasional stimulation of the mesencephalic reticular system.

The Purkinje cells of the cerebellum produce IPSPs in the cells of Deiter's nucleus. Similar hyperpolarization is produced in Deiter's cells by electrophoretic application of GABA, and the Purkinje cells contain unusually high concentrations of GABA. Thus, several lines of evidence suggest a role for GABA as an inhibitory transmitter.

However, its electrophoretic application to most cells in the mammalian central nervous system, while inhibiting their discharge, does not produce in them the hyperpolarization that would be expected were GABA the transmitter producing IPSPs. Instead, the effect of GABA is more one of stabilizing the membrane potential so that both EPSPs and IPSPs are diminished. This is suggestively similar to the effect upon presynaptic terminals required to produce presynaptic inhibition. It is thus of interest that picrotoxin, which blocks presynaptic inhibition in the mammalian central nervous system, prevents the action of GABA in invertebrate systems. The case with Purkinje cells, however, is contrary to this supposition that GABA might be particularly related to presynaptic inhibition.

Many other neutral amino acids have effects similar to those of GABA, while acidic amino acids are uniformly excitatory. Certain amino acids can thus be grouped in pairs. Glutamic, aspartic, and cysteic acids have powerful excitatory effects upon all neurons to which they are electrophoretically applied, whereas their decarboxylated congeners, the neutral amino acids β -alanine, GABA, and taurine, respectively, depress the activity of all neurons. The uniformity of these effects upon all varieties of neurons and the failure of these compounds to imitate the actions of EPSPs and IPSPs make it difficult to conceive of these substances as being involved in the more usual forms of synaptic transmission.

Norepinephrine and serotonin. There is strong suggestive evidence that norepinephrine and possibly 5-hydroxytryptamine (serotonin) are active as synaptic transmitters in the central nervous system. These monoamines and their metabolites are of extraordinary interest because they are influenced by psychotropic drugs and appear to be abnormal in psychotic individuals (see Section 2.3). Norepinephrine (noradrenaline) is the transmitter at peripheral junctions of the sympathetic nervous system. Its immediate precursor is dopamine, which is ultimately derived from the amino acid phenylalanine. The amino

acid tryptophan, with its indole ring, yields 5-hydroxytryptamine through 5-hydroxytryptophan as an intermediate. Of the monoamines only the catecholamines norepinephrine and dopamine, and the indoleamine 5-hydroxytryptamine occur in brain in significant amounts.

When frozen tissues are dehydrated and then subjected to formaldehyde vapor at 80° C., a highly specific reaction occurs which converts monoamines into fluorescent compounds. With the use of this technique of fluorescence microscopy with careful controls, it is now possible to trace various monoamine systems in the brain with great accuracy. Such data confirm previous chemical analyses showing high concentrations of norepinephrine in the hypothalamus and of dopamine in the caudate nucleus and putamen. Monoamines are essentially absent in neocortex and cerebellum. Terminals containing norepinephrine or 5-hydroxytryptamine are found in the intermediolateral cell column of the spinal cord, and also upon motoneurons and in the substantia gelatinosa of Rolando in the dorsal horn. Cells containing monoamines occur in the raphe and ventrolateral nuclei of the reticular formation of the medulla, and intense stimulation for 1 to 2 hours at these loci halves the norepinephrine content of the spinal cord and diminishes the monoamine fluorescent reaction in the dorsal and ventral horns. Other monoamine-containing cells are found in the ventral tegmental area, substantia nigra, and mesencephalic reticular formation. By means of lesions it can be demonstrated that these neurons control the monoamine content of the forebrain, probably as contained in their axons and presynaptic terminals. Cutting the median forebrain bundle, subthalamic area, and cerebral peduncle produces a 75 per cent decrease in norepinephrine and 5-hydroxytryptamine levels and total loss of dopamine in the forebrain ipsilateral to the lesion. By fluorescence microscopy terminals containing dopamine are normally found in caudate and accumbens nuclei, the putamen, and the olfactory tubercle; norepinephrine in cingulate gyrus, pyriform cortex, amygdala, septum, hippocampus, preoptic area, and hypothalamus; and 5-hydroxytryptamine in the globus pallidus, septal area, amygdala, and hypothalamus. Almost all of these terminals are dependent upon the mesencephalic systems.

Electrophoretic application of these compounds through multibarrelled microelectrodes depresses the activity of cells in the neocortex and lateral geniculate nucleus. Since monoamines are not prominent at these loci (although they are found at a few bipolar-ganglion cell junctions in the retina), the significance of this is problematical. In the medulla, pons, and mesencephalon about half the neurons are inhibited, but 40 per cent are excited by 5-hydroxytryptamine, while with norepinephrine about 20 per cent are inhibited and 30 per cent excited. The time course of these effects, however, is rather slow.

Since cell bodies, axons, and terminals all show

fluorescence, the monoamines are probably manufactured in the cell body and passed down the axon. When the sciatic nerve is compressed, an accumulation of fluorescing material, probably norepinephrine, begins within 12 hours in the central portion of the compressed axons. It is not known whether, in addition to receiving norepinephrine via the axoplasm, the presynaptic terminals are themselves capable of synthesizing it. They do, however, absorb norepinephrine when it is present in their environment. This characteristic is of value in further identifying adrenergic terminals by their absorption of tritiated norepinephrine. In adrenergic terminals of the peripheral nervous system, and in association with tritiated norepinephrine, large synaptic vesicles are consistently found with dense osmiophilic cores (Figure 10). As with acetylcholine and GABA, the monoamines and their relevant enzymes are found predominantly in those fractions of homogenized brain which contain synaptic vesicles.

Conclusions. In summary, acetylcholine, GABA, norepinephrine, and 5-hydroxytryptamine are all likely to be central synaptic transmitters. The analysis is complicated by the probability that the type of response which each produces may be determined predominantly by the nature of the postsynaptic membrane. There may also be many transmitter substances still undiscovered since those at hand are not very successful in imitating the phenomena of central synaptic excitation and inhibition.

Postsynaptic inhibition in the spinal cord may differ from that in the brain stem and cortex since in the cord IPSPs endure only about 12 milliseconds and are blocked by strychnine whereas above the obex 200-millisecond IPSPs are the rule and strychnine has no effect on them. The morphology of synapses and synaptic vesicles has to date posed far more difficult problems than it has solved. First among these is the occurrence of two types of vesicles in one synapse (Figure 10). While this might be merely an outcome of the specificity of subsynaptic membranes (i.e., the presynaptic terminal serves a cafeteria selection of transmitters and the subsynaptic membrane takes its choice), the significance is likely to be more subtle and reflect a greater efficiency than this. It seems likely, however, that the smaller vesicles with osmophobic cores may contain any of several transmitters. Thus there is no apparent difference in vesicles at axosomatic endings which electrophysiological evidence indicates are inhibitory from those in the presumably excitatory endings on the dendrites. Nor does the difference in type I versus type II endings specify excitation versus inhibition since inhibitory action also seems to impinge upon dendrites whereas type II synapses do not. Finally, there are instances where vesicles occur on each side of what seem to be junctions between dendrites!

Enduring Consequences of Synaptic Action

Rapid, repetitive activation of synapses produces changes in their effectiveness both during the course of activation and for a considerable period thereafter. For continuous stimulation of afferents from muscle spindles, EPSPs evoked in motoneurons remain relatively constant until stimuli occur at 0.5 per second. The amplitude of the EPSPs then falls with increasing frequency until at 10 per second it is only about 85 per cent of control levels. With further increase of frequency, however, the amplitude recovers until at about 50 per second

it is restored to control levels and then falls off again to reach 90 per cent at 100 per second. The size of the EPSP probably reflects the amount of transmitter released. These synapses thus operate with greater efficiency at 50 per second than at 20 per second, but optimally and minimally effective frequencies vary with different synaptic systems. The total amount of transmitter released per unit of time will, of course, be much greater at 100 than at 50 per second even though the amplitude of each EPSP is smaller, and indeed the maximum rate of release is reached only at 300 per second.

Some synaptic systems become and remain inoperative during rapid stimulation, a phenomenon known as "Vedensky inhibition." Such suspension of function could arise in several different ways: (1) by refractoriness in presynaptic terminals rendering them inexcitable, (2) by depletion of immediately available transmitter, (3) by a saturation of the postsynaptic membrane with the transmitter, thus desensitizing the EPSP or IPSP mechanism, or (4) by keeping the postsynaptic cell continuously depolarized beyond its threshold level and thus inactivating it.

With onset of a burst of stimuli there is a brief period of depression and adjustment before the EPSPs attain a stable level. Presumably a mobilization of transmitter from presynaptic sources is required to accommodate the greatly augmented rate of its release. Once such mobilization is achieved, it remains accessible for several minutes following a few seconds of high frequency stimulation. In systems where MEPPs are observed, their rate increases greatly during this postactivation period. The amplitude of EPSPs to single stimuli actually increases only 1.5 to 2 times following intense activity (e.g., tetanization at 200 per second for 15 seconds), but this moderate increase often is enough to discharge 4 to 10 times as many cells in a motoneuronal pool as did the same stimulus prior to tetanization. Naturally, if the stimulus initially discharges all the cells, it can do no more and therefore no potentiation of reflex discharge can be obtained even by doubling the amplitude of EPSPs. The magnitude of possible potentiation is thus a function of the number of cells subliminally excited by the original stimulus; i.e., it is dependent upon the existence of a "subliminal fringe."

In work with monosynaptic reflexes in the spinal cord it can be shown that the locus of the augmented responsiveness is in the presynaptic terminals which are subjected to the tetanization. During the period of potentiation the excitability of the tetanized afferent fibers is unchanged, as is the antidromic response of the motoneurons or their responsiveness concurrently tested via nontetanized synaptic systems. The effect is thus limited to the activated synapses. The presynaptic terminals of the potentiated system are hyperpolarized, a common finding in fibers of small diameter following intense activity. As discussed above for the myoneural junction, such hyperpolarization could account for an increase in the release of transmitter for each impulse that succeeds in invading the terminal. Attractive as such an explanation of postactivation potentiation may be, it probably is not altogether true since a 3- to 8-fold postactivation increase in EPSPs is obtained in the ciliary ganglion of the chick while both direct and indirect measurements show no change in amplitude of presynaptic spikes.

The existence of synaptic changes that endure for minutes rather than milliseconds is of obvious interest in behavioral contexts. The interest is further enhanced by certain cases where these effects last for hours. If a dorsal root is severed distal to the ganglion, the central projections survive but are wholly inactive because of lack of peripheral stimulation. After a few weeks the reflexes evoked by electrical stimulation of such "unused" dorsal roots are greatly diminished in comparison to similarly evoked reflexes on the intact side. Tetanization of the "unused" paths, however, restores their efficacy to near normal levels, and the restoration survives for several hours. Potentiation and depression of synaptic transmission in the lateral geniculate nucleus of cats under barbiturate anesthesia also can endure for hours, depending upon conditions of stimulation.

If synaptic systems A and B are both able to discharge the same interneuron and if the interneuron follows high frequency stimuli, then potentiation established by activity in system A (and the interneuron) will also be accessible via system B. Examples of such "transferable" potentiation have been studied in the mammalian spinal cord. At first glance this seems relevant to phenomena of learning. More careful consideration, however, reveals in this paradigm the present shortcomings of "synaptology" in explaining learning or, perhaps more important, reveals a peculiarity of the temporal organization of learning. Following activity in A the effectiveness of B (and of A) will be changed for a relatively long time. In other words, antecedent action in one system produces a protracted change in the consequences of subsequent action in another system. This makes neurophysiological sense but is exactly the opposite of what happens in learning. In learning, the consequences change not for the subsequent stimulus but for the antecedent! This temporal paradox is easiest to illustrate with conditioned reflexes, although it applies to many other situations. In behavioral conditioning the antecedent stimulus, A, is the conditional stimulus and the subsequent stimulus, B, is the unconditional stimulus. During the course of conditioning a change occurs so that the consequences of "A" are altered, whereas the response to the subsequent stimulus, "B," remains relatively constant. Until very recently there was no known neurophysiological parallel to such retrospective alterations.

They have now, however, been observed in certain small cells in the abdominal ganglion of the sea slug, *Aplysia depilans*. In about 15 per cent of these cells the following phenomenon could be observed. Repeated stimulation of a powerful afferent system which evokes large EPSPs and discharges the cell has no effect upon the EPSPs subsequently evoked by stimulation of a different, less effective afferent system. Thus the postactivation paradigm above is not fulfilled. If, however, the stimuli are paired, so that the less effective stimulus is repeatedly given 0.3 to 0.5 second prior to the highly effective stimulus, the EPSP evoked by the first stimulus gradually increases, often to the point where it too can discharge the cell!

While the increase in effectiveness of the antecedent stimulus gradually subsides after pairing ceases, some augmentation endures for 4 to 20 minutes.

The experiment with *A. depilans* thus duplicates exactly the temporal paradox of learning. Further, it provides the basis for a general hypothesis concerning synaptic alterations underlying conditioned reflexes. It is proposed that for a brief period following its excitation and only at such times a synaptic terminal is permeable to material from neighboring terminals, from other axons ending upon it, or from the subsynaptic membrane. If, during this period of heightened permeability, discharge also occurs in a more effective synaptic system, material (i.e., synaptic vesicles) from the second system will be incorporated into the first and alter its characteristics. There are many ramifications to such a proposal, but only two need be mentioned here. First, such alteration of synaptic effectiveness will depend not only upon timing and relative potency of the synaptic actions but upon the contiguity of the synapses. In *A. depilans* relatively few cells seem to have the appropriate arrangements for this effect. It is thus possible that certain cell types are specialized to support this phenomenon. Second, if such enhancement is effected via chemical exchange, the role of the synaptic vesicle is extended in scope. It becomes then not merely a packet of transmitter, but "a set of instructions" for contiguous cells, available only in the circumstance of precisely time-locked action.

While such speculations obviously are far afield from the sea slug, they perhaps illustrate why an understanding of synapses may yet be important for students of behavior—if only to deal with such speculations.

Suggested Cross References

Further information regarding the nature and functions of neural transmitters and their relationship to psychoactive drugs may be found in Section 2.3. The EEG is discussed in numerous contexts throughout the book, especially in Chapter 10, on neurology; in Chapters 18, 19, 20, and 21, on organic brain disorders in adults; and in Section 42.3, on brain disorders in children.

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2.7 ELECTRICAL ACTIVITY OF THE BRAIN

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Dendrites

Problem. The cerebral cortex and other masses of uniformly oriented neurons cannot be understood until it is known how dendrites function in neural processes. One of the first questions to be asked is whether the alignment and packing of dendrites (Figure 1) serves to promote some interchange of information among them, or whether this arrangement is but a convenience of developmental organization, lacking major functional import. The dendrites comprise 30 per cent or more of the cortical volume but make up 90 per cent of the surface area of cortical neurons. About 2,000 to 4,000 other neural cell bodies, to say nothing of other dendrites, lie within the dendritic field of each stellate cell or among the basal dendrites of each pyramidal cell. The opportunities for intercommunication are thus enormous for each cell, and it is difficult to conceive how any precision of integration could be obtained were each cortical neuron diffusely influenced by the activity of its neighbors. Indeed, such little knowledge as is available points to the likelihood that cortical neurons perform their integrative functions despite rather than by means of electrochemical gradients produced by their orientation en masse (see below and Figure 2, Part II). The chemical step in synaptic transmission, the intricate morphology of synapses and the synaptic spine apparatus (Figures 1, 2, and 3 in Section 2.5, and Figure 4 in Section 2.6) all seem admirably adapted for assuring highly specific influences between cells, and for excluding interference from possibly irrelevant action merely by reason of cellular adjacency.

Modality-specific cell columns. Under light barbiturate anesthesia the cells in somesthetic and visual cortical areas of cats and somesthetic areas in macaques (Figure 3) are found to be organized into modality-specific columns. This is evidenced by the fact (e.g., Figure 3) that a microelectrode passing through the cortex perpendicular to its surface encounters cells of similar function throughout the entire course of the track. Similar observations have been made for auditory cortical projection areas and the

"motor" cortex of the cat. The "modalities" in these columns are not the usual ones of touch, temperature, or color, but rather are related to location of the receptors and/or a particular pattern of stimulation such as, in the case of the visual system, direction of movement. The diameter of such a column is difficult to estimate but probably does not average much more than 500 μ .

The strong organization of vertically directed systems is readily apparent in the histological structure throughout the cortex (Figure 1). The columnar arrangement thus probably forms a basic unit of cortical function. Dividing the cortex vertically into a grid of small islands effects no great change in its ability to integrate complex behavior. Nor does circumsecting a cortical region in which electrical stimulation serves as a signal for performing a learned act alter the performance, whereas limiting the spread of excitation to transcortical pathways at first abolishes the response. These meagre behavioral data are at least concordant with the concept that cortical function has a strong vertical organization which is effective despite limitation of tangential, intracortical elaboration. It is thus possible at this stage to picture the cortex as a mosaic of functionally specific columns. The great interdigitation of dendrites between neighboring columns (Figure 1A) would defeat the specificity of such an arrangement were there to be significant "cross talk" between these intertwined elements.

Recent electron microscopic observations in the olfactory bulb and retina have suggested the existence of reciprocal "dendrodendritic" synapses, i.e., contacts between apparent dendrites in which synaptic vesicles are seen on both sides. Specific dendrodendritic interactions might thus occur. However, the contacts so far have not been seen in other areas, and the two locations where they have been found are noted for "amacrine" cells which, in the classical description, lack axons. The reciprocal dendrodendritic synapse may reflect merely a peculiarity of this type of neuron.

Properties of dendrites. The problem remains as to the role of dendrites. The high internal resistance of terminal dendrites, arising from their small diameter, presents a serious impediment for the spread of electrotonic potentials or the propagation of action potentials. Yet without propagation it is apparent that the great numbers of synapses on distal dendrites (Figures 2 and 3 in Section 2.5 and Figure 1 herein) must lack significant influence on the electrical behavior of the neuron and its generation of spike discharges. While much still remains to be learned about the operation of this seemingly paradoxical arrangement, data from the hippocampus and dorsal horn of the spinal cord suggest an explanation along the following lines. Postsynaptic potentials in the dendrites, when sufficiently numerous or when occurring in proximal portions, exert an electrotonic influence on the soma and the trigger zone in the initial segment of the axon, thus influencing the threshold for "all or none" discharge. Since the spike potential usually does not propagate very far into the dendrites, this electrotonic influence survives essentially unaltered by soma-axon behavior. Under certain conditions of spatial or temporal synchronization of afferent bombardment the dendrites may become sufficiently depolarized to conduct an action potential, at about 200 to 400 μ per millisecond, towards the soma and thus provide an additional trigger zone in the

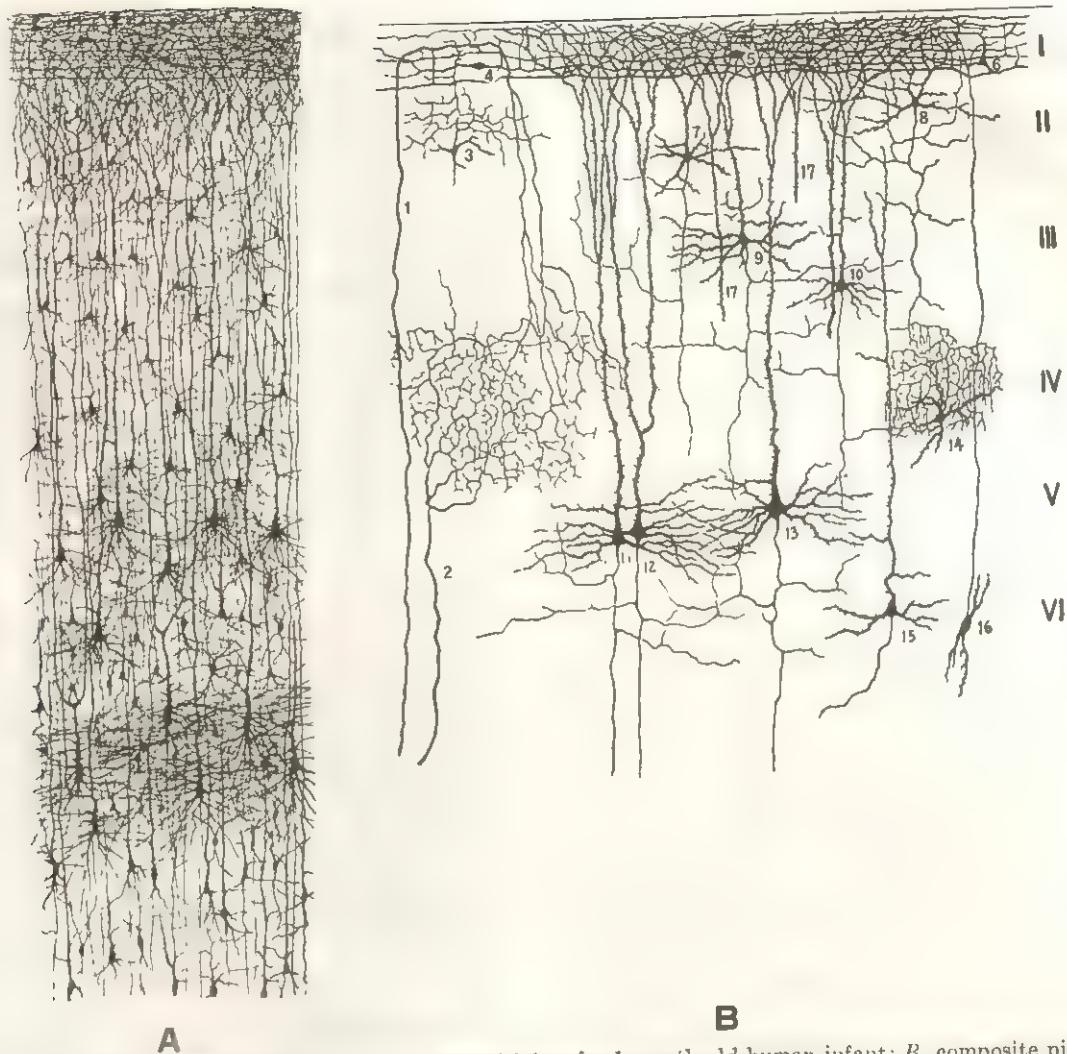


FIGURE 1. *A*, drawing of Golgi-stained neurons in parietal lobe of a 1-month-old human infant; *B*, composite picture made of camera lucida drawings from Golgi and Golgi-Cox preparations of brains of mouse and rat, showing general arrangement of various neurons in cerebral cortex. 1, recurrent afferent fiber from thalamus, which ascends to molecular layer, runs for a short distance horizontally and then descends and terminates in fourth layer with repeated branchings; 2, special afferent from thalamus terminating in fourth layer with profuse arborizations; 3, short axon cell in second layer; 4, 5, and 6, three Cajal cells with their horizontal fibers in molecular layer; 9 and 10, medium pyramidal cells in third layer; 11, 12 and 13, large pyramidal cells in fifth layer; 14, typical Golgi type II or stellate cell in fourth layer; 15, medium sized pyramidal cell in sixth layer, with apical dendrites which usually do not reach molecular layer; 16, Martinotti cell; 17, shaft and apical dendrites of pyramidal cells the cell body and axon of which were left undrawn. Customary designation of cortical layers shown by Roman numerals at right. (*Part A* is from Ramon y Cajal, S. *Histologie du Système Nerveux de l'Homme et des Vertébrés*. II, p. 638. Consejo Superior de Investigaciones Científicas, Madrid, 1955. *Part B* is from Chang, H-T. Dendritic potential of cortical neurons produced by direct electrical stimulation of the cerebral cortex. *J. Neurophysiol.*, 14: 1, 1951.)

proximal dendrites for eliciting spike potentials in the soma and axon. A proximo-distal gradient in synaptic effectiveness seems an inevitable consequence of dendritic structure and performance. Influenced by subtle intracellular chemical changes associated with correlated discharge, as discussed at the end of the preceding chapter, synaptic endings might gradually migrate from distal dendrites to a proximal and more effective position for controlling the behavior of the cell upon which they terminate and thus provide a basis for some of the phenomena of learning. While such migration, of course, is pure speculation, it is of considerable interest that the various synaptic systems terminating upon the dendrites of hippocampal pyramidal cells do so in an orderly fashion so that each system has a strong predilection for ending at a particular proximo-distal level along the dendritic system.

Evoked Potentials

Location of activity. Within the 2-mm. thickness of the neocortex about 50,000 neurons would lie directly under an electrode having a 1-mm.² contact with the surface. Roughly 75,000 fibers would be leaving and 25,000 entering the cortex in the subtended area. The great majority of fibers are about 1 μ in diameter and roughly 80 per cent are less than 2 μ . The discrepancy between number of cortical cells and efferent fibers indicates both the possibility of branching and the inadequacy of available data.

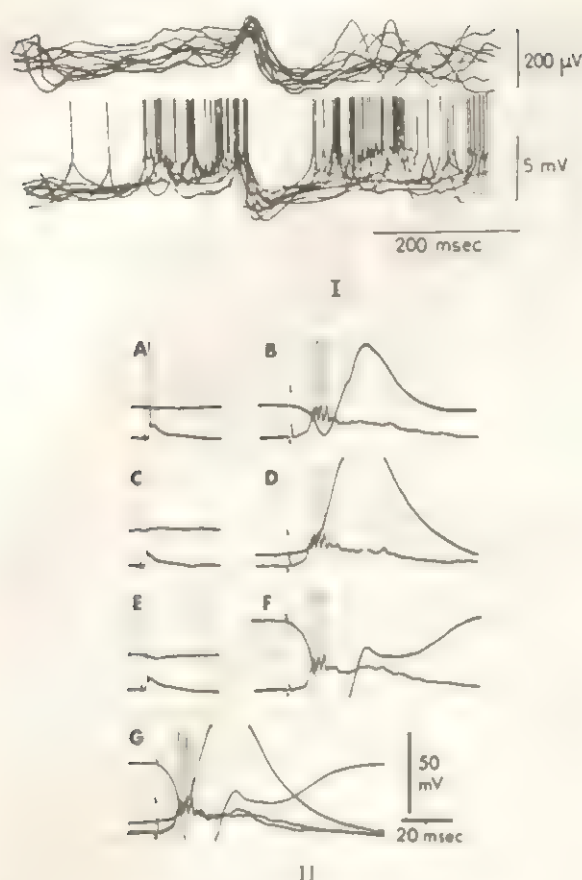


FIGURE 2. Correlation (I) and lack of correlation (II) between electrical activity recorded from the surface of the cerebral cortex and activity of immediately subjacent neurons. Upper channel is EEG of pericruciate cortex in the cat, negative deflection upwards; lower channel, intracellular record from Betz cell. I, Superposition of nine traces phased at peak of a spontaneously recurring negative wave reveals that the cell invariably discharges during an EPSP occurring during the rising negativity and then undergoes a hyperpolarization for about 100 milliseconds during the surface-positive phase of the wave. II, A, C, and E, intracellular response to antidromic stimulation of medullary pyramid showing shock artifact and spike, and delayed depolarization which remains unchanged during surface polarization. B, fully developed augmenting response from stimulation of ventrolateral nucleus. A prolonged EPSP begins about 6 milliseconds after the stimulus, and three spikes are discharged during the surface positivity. In C and D, anodal, in E and F, cathodal polarizing currents, 50 μ amp. per mm.² are applied to the cortex just above the impaled Betz cell. The polarity of the augmenting response is dramatically reversed by the polarization, but the Betz cell's response is unaltered, as shown in G by superposition of traces taken under the two conditions. (Part I is from Creutzfeldt, O. D., Watanabe, S., and Lux, H. D. Relations between EEG phenomena and potentials of single cortical cells. II. Spontaneous and convulsoid activity. *EEG Clin. Neurophysiol.*, 20: 19, 1966. Part II is from Purpura, D. P., and McMurty, J. G. Intracellular activities and evoked potential changes during polarization of motor cortex. *J. Neurophysiol.*, 28: 166, 1965.)

The surface electrode will record the action of subjacent and neighboring elements in proportion to their degree of synchronous phasing and inverse proportion to their distance from the electrode. A 100- μ V. potential might thus represent very strong, synchronous action at a considerable distance

from the electrode, or a rather weak action in its immediate vicinity. The true nature of a response thus cannot be determined with a single, stationary electrode. The same is true for the polarity of the response. A depolarizing action (i.e., excitatory postsynaptic potentials (EPSPs)) will appear negative to an electrode at the site of action. However, since the depolarization is occurring in a conducting medium, currents will flow from the surround, which acts as a "source" for the current flowing to the negative or "sink" area. Thus an electrode remote from the site of depolarizing action will record positivity. The reverse holds true for hyperpolarizing (inhibitory postsynaptic potential (IPSP)) activity. It follows that an electrode may become positive because of remote EPSPs or spike activity, or because of IPSPs in its immediate vicinity. Analysis of cortical potentials thus requires tracking the electrode through the cortical mass to determine the origin (by amplitude) and true polarity of the responses obtained. Since the cells of any one type are not very precisely aligned in depth and several types, which may have widely differing characteristics, may be concurrently active in any particular layer, interpretation of intracortical electrical events is difficult; but there are certain consistent features about which some certainty exists.

Response to thalamic afferents. When an electrical stimulus is applied to a thalamic relay nucleus, such as the lateral or medial geniculate nuclei or the ventrobasal complex, a highly synchronous volley ascends the afferent fibers to the corresponding cortical projection areas. There the afferent terminals effect predominantly excitatory connections with the stellate cells centered around layer IV. These in turn immediately relay the excitation into a second set of cells, and probably then to a third set, each relay ascending closer towards the surface. All these events are registered as positive deflections at the surface lasting roughly 1 millisecond each, corresponding to spike potentials. A much slower negative-positive sequence, undoubtedly the result of postsynaptic potentials then ensues.

This sequence is characteristic of "sensory" cortex activated by highly synchronous volleys from specific afferents. Much different sequences are seen in other cortical areas or with other types of stimuli. With natural stimuli having abrupt onset, e.g., flashes, clicks, or tapping the skin, positive-negative sequences reminiscent of these electrically evoked responses can be obtained in the appropriate sensory areas (e.g., Figure 4, Part I). Abruptness of onset is necessary to synchronize the action that it may be detected as different from the background, spontaneous activity. Since the response is relatively constant in amplitude and latency, and the background action usually random with respect to it, repetition of the stimulus and summing of the activity in the immediate poststimulus period will enhance the response and cancel the background. By this technique of "averaging" it is even possible to record such evoked potentials through the human scalp 2 cm. or so from the brain. The intervening tissue seriously distorts and diminishes the potentials, and scalp electrodes inevitably record from a very large area in comparison with those in direct contact with the brain. The response recorded will obviously depend upon the complex spatial relations between the electrodes and the responding area, and it may also very well be that individual brains even in animals have highly individual types of response could the technical problems only be resolved to reveal it. In any event, under standardized conditions the evoked response in man is exceedingly stable and can be as characteristic of the individual as his fingerprints (Figure 5).

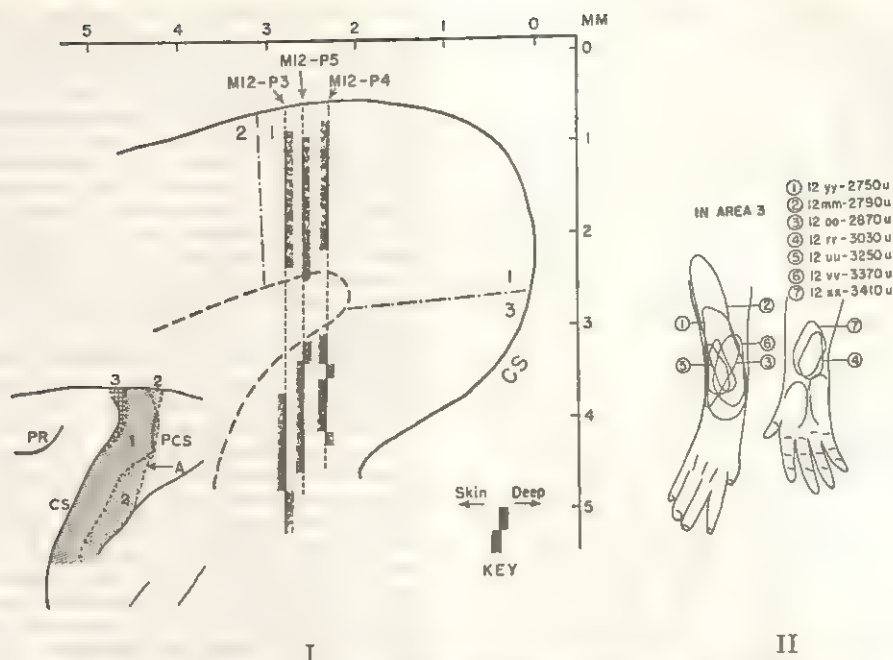


FIGURE 3. Modality-specific columns of cells in somatosensory cortex of postcentral gyrus of lightly anesthetized macaque. *Inset in Part I* indicates (A) level of penetration of microelectrode in relation to cytoarchitectonic pattern (Brodmann areas 1, 2, and 3; CS, central sulcus, PCS, postcentral sulcus). Three penetrations are reconstructed at upper right showing passage of electrode first through area 1, then into area 3. Grayed portion of track, multiunit recording; dark bars, single units. Excitation by light touch of the skin represented to left of line of penetration, to right for excitation by rotation of joints or pressure on fascia or periosteum. When penetration is perpendicular to surface, only one of these forms of excitation is effective along the entire track, but when the penetration passes tangentially through the cortex (as in area 3), the effective modality often changes with progression of the electrode. Part II shows receptive fields determined for 7 of the 23 units encountered at the indicated depths along the right-hand track in Part I. Note that fields have similar location along any particular portion of the penetration. (From Powell, T. P. S., and Mountcastle, V. B. Some aspects of the functional organization of the cortex of the postcentral gyrus of the monkey: a correlation of findings obtained in a single unit analysis with cytoarchitecture. *Bull. Johns Hopkins Hosp.*, 105: 133, 1959.)

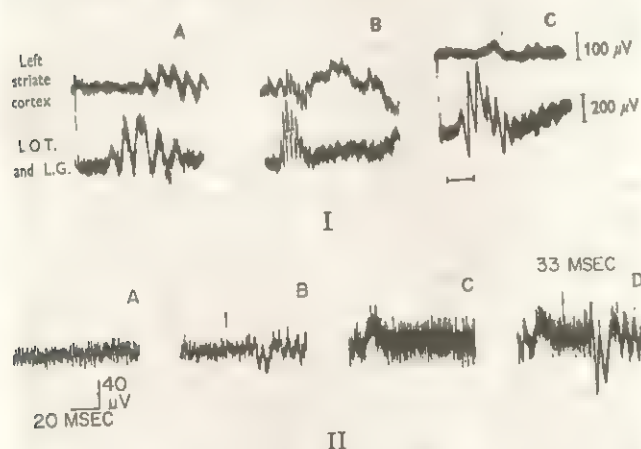


FIGURE 4. Photically evoked potentials and their alterations under various conditions in the primate visual system. I. and II, response in squirrel monkeys to brilliant, 10-microsecond strobotron flash. I, A and B, alert monkey with chronically implanted electrodes, oscillations at 160 per second in tract, 200 per second appearing about 15 milliseconds later in area striata. I, C, same animal under Nembutal anesthesia which almost abolishes cortical response while leaving substantial activity in the optic tract. Time calibrations: A, 10 milliseconds; B, 40 milliseconds; C, 20 milliseconds. II, another monkey under Dial anesthesia. II, A, background activity in optic radiation; B, response to flash delivered at moment of artifact; C, slight evoked potential and greatly augmented background activity following single pulse applied to mesen-

Direct cortical response. Electrical stimulation of the cortex evokes a direct cortical response (DCR) which reveals a number of important properties of cortical organization. A weak stimulus applied to the surface evokes a simple, almost monophasic surface-negative wave, lasting 10 to 20 milliseconds and propagating for about 5 mm. from the point of stimulation at a velocity of 0.7 to 2 m. per second. Stimulating with a penetrating electrode, this simple surface-negative response is no longer obtained after penetrating more than 0.1 mm. into the cortex. Its lateral propagation is abolished by cuts limited to the molecular layer (*layer I*, Figure 1B), while propagation is undisturbed if all the remaining cortex is cut through save the molecular layer. It thus appears that this must be the response of the apical dendrites and horizontal cells of Cajal. The latter are reputed to be rare in adult cortex, but the conduction velocity of the surface-negative DCR is faster than that found in the dendrites of hippocampal pyramidal cells, the distances of propagation are greater than the lateral extent of all but a very few apical dendrites, and the duration of the response indicates that it is postsynaptic. It is perhaps significant that there is no sign of IPSPs in this response of the molecular layer, again suggesting the association of hyperpolarizing responses with the soma rather than dendrites.

cephalic reticular formation at beginning of trace; D, response to flash delivered 33 milliseconds after pulse applied to reticular system, i.e., about 50 milliseconds prior to appearance of photically elicited response in the central nervous system. Note great augmentation of response when preceded by mesencephalic stimulation. (Part I is from Doty, R. W., and Kimura, D. S. Oscillatory potentials in the visual system of cats and monkeys. *J. Physiol.*, 168: 205, 1963. Part II, Doty, unpublished.)

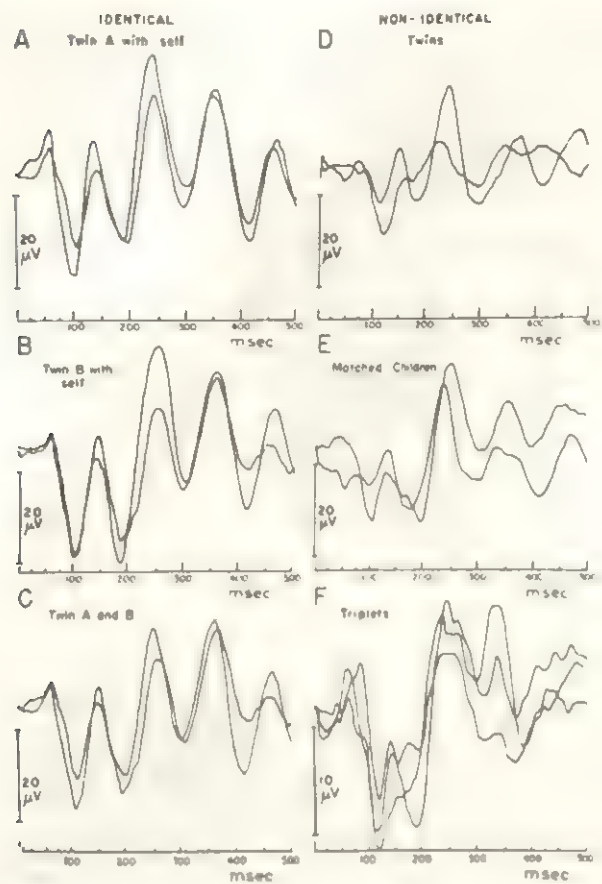


FIGURE 5. High degree of reproducibility and genetic determination of wave forms of potentials evoked in human occipital lobes by flashes of light under carefully standardized conditions. Averages of responses to 100 flashes delivered 1 per 3 seconds. *A* and *B*, records from identical twins taken 6 months apart and superimposed for comparison; *C*, one record from each twin; *D*, records from nonidentical twins; *E*, two unrelated children of same age as the twins and triplets; *F*, triplets. Correlation coefficients for curves from identical twins (*A*, *B*, *C*) were 0.90, for *D*, 0.53; for *E*, 0.64. (From Dustman, R. E., and Beck, E. C. The visually evoked potential in twins. *EEG Clin. Neurophysiol.*, 19: 570, 1965.)

With stronger stimulation a further negative component is added which appears 5 mm. from the point of stimulation, diminishes with further distance, but then is "reinforced," i.e., becomes larger again at a 10-mm. distance. This additional negative response is undoubtedly synaptically propagated, apparently through "U" fibers just beneath the cortex, but its conduction time is only slightly longer than that for the primary negative wave and hence must be propagated in faster fibers.

Intracortical stimulation at various depths evokes more complex types of response. In "sensory" but not other types of cortex stimulation at or below layer IV evokes the same type of response as does stimulation of the thalamic relay nucleus.

Surface stimulation at an intensity double that for the threshold of the primary negative wave and eliciting about 20 per cent of the maximal response of the latter also produces a surface-positive wave if applied to unanesthetized cortex. The strength required is approximately the same as that for eliciting discharge in Betz cells. This positivity can propagate without attenuation through many millimeters of cortex at a velocity of 0.1 to 0.2 m. per second. The positive response has a duration of more than a second and is characterized by an overlying ripple of very fast activity, indicating that it arises

from a burst discharge of neurons deep within the cortex (where concurrently intense negativity and spike discharges can be recorded). Most interestingly, this burst discharge continues to recur aperiodically for up to an hour after 5 to 10 stimuli and requires no extracortical interchange since it proceeds best in neuronally isolated slabs of cortex.

Antidromic effects. With antidromic stimulation of the pyramidal tract it can be shown that Betz cells give off recurrent collaterals intracortically, producing an inhibitory effect for 100 to 200 milliseconds. Such analysis is not possible for other cortical areas since purely antidromic responses cannot be obtained. However, it is likely that recurrent inhibition plays an important role in cortical function just as it does in the spinal cord and elsewhere.

Cells sending axons to pyramidal tract. The opportunity to analyze the behavior of a specifiable type of cortical neuron, as offered by the pyramidal tract systems (Figure 2, Part II), provides much fascinating information. The pyramidal tract (PT) cells can be influenced and discharged by a great variety of inputs. Some of them respond to flashes and clicks as well as to somatosensory stimuli to either side of the body. The PT cells have a wider and much more flexible responsiveness than do other, non-PT neurons encountered in the same microelectrode penetration. The recurrent inhibition, set up by antidromic stimulation of the pyramidal tract, is particularly effective in curtailing their response to marginally excitatory stimuli. The contrast with responses of non-PT cells in the somatosensory cortical projection area immediately posterior to the "motor" area is striking. Cells of the latter type respond only to a single modality of stimulation applied to a restricted, relatively fixed area of the body, topographically related to areas giving responses in neighboring cells (Figure 3). Non-PT cells in the somesthetic area do not respond to proprioceptive stimuli, e.g., from muscle spindles, whereas such stimulation is effective on PT cells. In summary, the cells of the cortical somatosensory system respond predictably as expected from anatomically fixed paths, whereas the response of PT cells is labile and available over functionally fluctuating pathways.

The latter arrangement has obvious importance. When a monkey is trained to make a highly specific movement upon command, e.g., to a flash, it is found in the precentral gyrus that the PT cells controlling the learned movement begin to fire within 70 milliseconds after the onset of the response which the flash evokes in area striata. The pathways involved in exciting PT cells optionally by flashes are still unknown, but the techniques do seem to be available for determining the location and nature of the events occurring in this critical 70 millisecond period of "voluntary decision." Much of it may be via cortico-cortical connections since recent findings in cats show that responses to flashes can be obtained in several cortical areas, including precruciate "motor" areas and the orbital gyrus, even though the entire diencephalon has been removed with the exception of the lateral geniculate nucleus.

Direct Current Potentials and Polarization

Characteristics. A nonpolarizable electrode placed on neocortex records a positive D.C. potential, usually of several millivolts, in reference to other points such as the lateral ventricle, sciatic nerve, or frontal sinus.

Typical values are: 0.5 to 5 mv. for unanesthetized rabbits; 1 mv. for neonate rats, increasing with age to as much as 20 mv. in adults; 0.3 to 7 mv. in man. So long as conditions remain

constant and there is no stimulation or change in alertness of the individual, the potential remains steady.

The sources of this potential are undoubtedly various. Of greatest interest is the probable contribution of gradients in potential between neuron soma and dendrites. While the staggering of cell bodies in neocortex makes it impossible to obtain meaningful measurement there, analysis of the uniformly oriented hippocampal pyramidal cells shows the soma to be negative with respect both to apical dendrites and to basilar dendrites plus axon. Some of the surface positivity of neocortex thus undoubtedly arises because of the polarization of apical dendrites with respect to soma. Measurements of intracortical potential gradients are at least consistent with this idea, as are the rapid changes produced by sensory or centrencephalic stimulation. A slight decrease in the D.C. potential of the cortical visual area may be the first detectable response to stimulation of the optic tract too weak to elicit the usual evoked potential sequence. With more intense sensory stimulation a negative shift of a few hundred microvolts lasting several hundred milliseconds and followed by an equivalent enhancement of positivity is the unending accompaniment of evoked potentials, although not commonly recorded because of technical difficulties. These short latency, brief shifts in D.C. potential can be assigned with certainty to neural action in the vicinity of the cortical electrode. The source of more protracted changes is not so clear. For instance, in passing from stages of sleep with high voltage, slow electroencephalogram (EEG) to either wakefulness or paradoxical sleep, a 50 to 500 μ v. negative shift occurs in the D.C. potential and is accompanied by an increase in brain temperature of up to 0.6° C. The opposite changes occur when the EEG passes from low voltage, fast activity to high voltage, slow activity. However, since the D.C. potential of the entire brain, i.e., white matter as well as cortex, changes to about the same degree, it probably originates in metabolic effects or alterations of the blood-brain barrier.

Voluntary movement in man is preceded for about 1 second by a gradually increasing negative shift of the cortical D.C. potential. This "contingent negative variation," or "Bereitschaft," (readiness) potential occurs over wide areas of the scalp, although it is most fully developed over the precentral area contralateral to the moved limb. It appears in preparation for a movement even though the movement may then be withheld, and in this respect it is the response to a contingency. Within 30 to 90 milliseconds after the beginning of muscle contraction a complex, surface-positive evoked potential begins, representing the afferent discharge initiated by the movement itself. The latter, but not the former, occurs almost equally well if the limb is moved passively in the same manner by external manipulation. An apparently similar negative shift accompanies movement in rats and is of the same genre as the negative shifts occurring with arousal reactions in the EEG. A 6 to 9 per second rhythm in midline thalamic structures and dorsal hippocampus also precedes the initiation of movement by rats. The possible relation of these subcortical events to human volition remains unstudied.

Infra-slow oscillations. Semirhythmic, "infra-slow" oscillations in the D.C. potential, 0.3 to 1.5 mv., 0.5 to 8 per minute have been recorded from neocortex and hypothalamus in rabbits. Such oscillations are absent from thalamus, periaqueductal gray, and the mesencephalic reticular formation and indeed seem to be relatively independent of influence from these sys-

tems since mesencephalic stimulation, for instance, which produces an arousal reaction in the EEG does not alter the infra-slow oscillations. On the other hand, repeated stimulation of the ventromedial nucleus of the hypothalamus or other stressful procedures favor their development. The rhythm is not necessarily the same in various areas of the cortex, but cortical excitability is to some degree modulated by these oscillations. Their source seems to be in metabolic and hormonal factors, but their significance remains to be evaluated.

Spreading depression. Another form of D.C. shift is definitely pathological. This is the phenomenon of "spreading depression" which is a complex of electrical, metabolic, and circulatory changes elicited most readily by strong electrical or mechanical stimulation, or certain agents such as KCl, applied to neocortex. It can also be elicited in other regions of the brain but is most readily obtainable from cortex that has been maltreated by cooling or drying. It is probably the immediate cause in man of the phenomenon of scintillating scotoma. Upon application of the abnormally strong stimulus a wave of depression of all background and evoked electrical activity begins and spreads from the initiating area in all directions with a velocity of about 5×10^{-3} m. per second, i.e., 2 to 3 mm. per minute. With this very slow progression of the wave, the depression endures from 2 to 6 minutes at a given point, and recovery requires 10 to 15 minutes. The advancing wave is heralded by an intense surface negativity of 3 to 15 mv. which persists throughout the depression and is accompanied by a fall of pO_2 , cortical volume, and a visible vasoconstriction. The wave can propagate via any cortical layer save the first and is resistant to deep anesthesia. The apparent cause of this remarkable phenomenon is a convulsive outburst of activity which is so intense that the stimulated neurons lose sufficient K^+ to change the ionic environment of their neighbors, thereby depolarizing them and causing their intense discharge, etc. The evidence in support of this explanation, besides its inherent plausibility, is the recording of a prolonged burst of single cell activity at the advancing edge of the wave, the leakage of K^+ accompanying the phenomenon, its ready production by KCl, and the migration of Cl^- into the apical dendrites (probably in association with Na^+) during spreading depression.

Failure to recognize this phenomenon in certain earlier electrophysiological experiments led to some serious misconceptions. Among these was the scheme of "suppressor strips," still having its 20-year run in certain texts. In this case unrecognized spreading depression was elicited by electrical or chemical stimulation just rostral to the "motor" area in the macaque's precentral gyrus. After a matter of minutes movement elicited by stimulation of the "motor" cortex was abolished for 10 minutes or so, while reflexly elicited movement was unaffected. The idea was subsequently developed that a special strip, "area 4-S," functioned to suppress hyperkinetic tendencies, and the concept was furthered by the discovery of monosynaptic connections between this area and brain stem regions known to inhibit reflex action. The diagrams then showed "4-S" as suppressing hyperreflexia via the brain stem, neglecting the latency of minutes required for operation of this supposedly monosynaptic connection and its initially observed lack of effect on reflex action! Such nonsense illustrates the dangers of schematizing confirmatory evidence only, while neglecting contradictory or puzzling data.

Applied gradients. Efforts to assay the significance of the electrically polarized condition of the cortex have involved altering the transcortical potential artificially. Rather low intensity currents have pronounced effects on the polarity of evoked potentials, but not necessarily on the response of many of the subjacent neurons (Figure 2, Part II). Surface anodal polarization has the effect of increasing the negative component of evoked potentials and diminishing the positive component. This may be explained by assuming that the current hyperpolarizes apical dendrites and to some extent concurrently depolarizes the deeper lying cell bodies. EPSPs near the surface would thus be large because of the augmented membrane

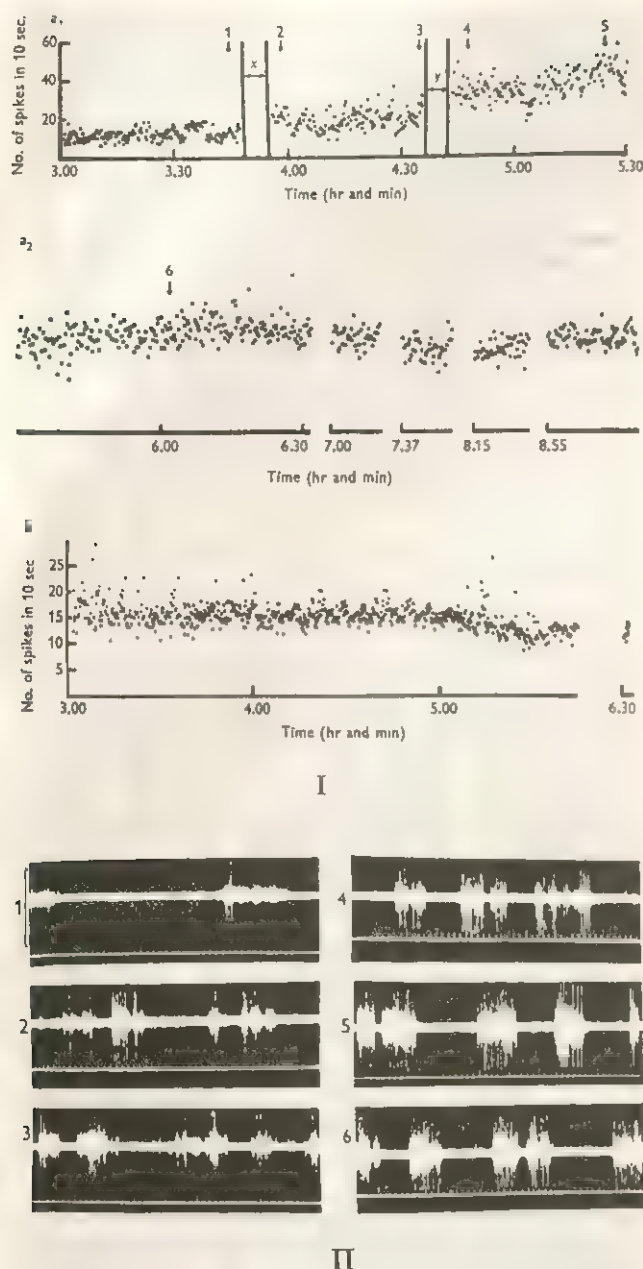


FIGURE 6. *I*, enduring effect of local polarization through a micropipette upon background activity of single neurons. Recorded 0.5 mm. beneath surface of somatosensory cortical representation of forepaw in rat under urethane anesthesia. At *X* and again at *Y* 0.25- μ amp. anodal current was passed for 10 minutes. Elevation in number of spikes per 10-second period was maintained for several hours (*a*₁ and *a*₂ continuous). *b*, another preparation, in which no polarizing current was passed and activity remained constant for several hours, even as judged on an expanded ordinate scale. *II*, actual records (1-second samples) taken from experiment in *a*₁ and *a*₂ at times indicated by numbers. Note that both the bursts per second and the number of spikes per burst increases. Vertical calibration, 0.5 mv. (From Bindmann, L. J., Lippold, O. C. J., and Redfearn, J. W. T. The action of brief polarizing currents on the cerebral cortex of the rat (1) during current flow and (2) in the production of long-lasting after-effects. *J. Physiol.*, 172: 369, 1964.)

potential and produce a greater negativity as recorded at the surface, and their depolarizing action in the deeper layers, which produces surface positivity, would be concurrently diminished; correspondingly IPSPs in the depths, which produce surface negativity, would be augmented, etc. The converse argument holds for the augmentation of positive components by surface cathodal polarization.

With stronger currents the excitability of PT cells can be altered, surface anodal polarization producing depolarization and excitation. The effects on non-PT cells are more variable, some responding to much lower currents than do PT cells, some being hyperpolarized by surface anodal polarization, and 40 per cent remaining uninfluenced.

It is difficult to say whether the normally existing D.C. potential gradient across the cortex has significant influence on the function of the cortical elements. It is likely, however, that the potential is only a reflection of the functional conditions of the subjacent cortical cells rather than a mechanism for their control or integration, the same considerations applying here as in the discussion above concerning the role of dendrites. In some instances local changes of metabolism or perhaps intercellular relations can apparently be altered by very minimal and discrete polarization (Figure 6). Such effects endure for extraordinary periods of time and are of great potential interest in their possible relations to mnemonic processes. The phenomenon (Figure 6) remains unexplained, however, and so far no known natural occurrences of this sort have been encountered.

Spontaneous Activity

Correlation with spike discharge and behavior. Except under conditions of the very deepest narcosis or asphyxia, continued electrical oscillations can be recorded from all cellular regions of the nervous system. The amplitude and frequency of these oscillations vary greatly depending upon the functional state and region of the brain. Each region has a characteristic pattern so that, for instance, the cerebral cortex can be divided into sectors having a particular variety of background rhythm and wave form, and the sectors correspond closely with cytoarchitecturally differentiable areas.

As a general rule, low voltage, fast (LVF) patterns correspond with a state of alertness and increased neural activity, while high voltage, slow (HVS) patterns are correlated with relaxation or reduced awareness and, in some respects, with a diminished level of neural activity. It is difficult, however, to press such general formulations since important and often puzzling exceptions are common. Among the most interesting is that during the rapid eye movement, LVF stage of sleep the electrical patterns of spontaneous activity in the neocortex are essentially indistinguishable from those of a fully alert individual even though, in cats at least, the state of sleep is demonstrably deeper than during stages with HVS activity. The converse of this paradox is seen with human patients having generalized background EEG pat-

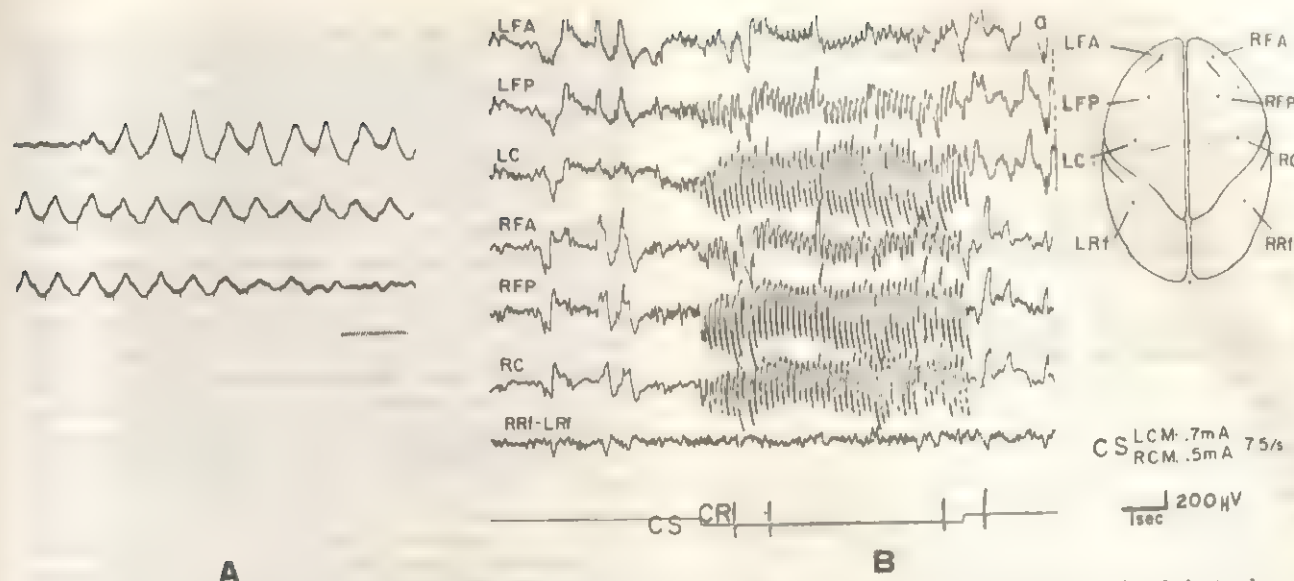


FIGURE 7. Recruiting responses and their lack of behavioral effect. **A**, recruiting response recorded from subdural electrode over inferior premotor area in alert human patient during stimulation in the region of nucleus centrum medianum at 8 per second. Note typical quick increment in the response and slow decrement with continuing stimulation. Other subjective or objective changes were not apparent. Calibration, 100 per second, 100 μ V. **B**, squirrel monkey making learned movement of lever pressing (deflections labeled "CR" in bottom line) to avoid shock the imminence of which is signalled by intense, bilateral stimulation of n. centrum medianum. Movement made with right hand for which the cortical representation lies close to electrode LC (inset) in the center of area ansum. Movement made with left hand for which the cortical representation lies close to electrode LFA. Note symmetry and lack of it between the two hemispheres for various loci, indicating that while recruiting is a "diffuse" response, it is by no means global. Large, slow deflections occurring simultaneously are artifacts caused by animal's movements. Monkey could also respond when stimulation was one third the intensity shown and recruiting responses were not produced. (Part A is from Houseman, E. M., and Purpura, D. P. Electrophysiological studies of subcortical-cortical relations in man. *EEG Clin. Neurophysiol.*, 15: 20, 1963. Part B is from Peci Saavedra, J., Doty, R. W., and Hunt, H. B. Conditioned reflexes elicited in squirrel monkeys by stimuli producing recruiting responses. *EEG Clin. Neurophysiol.*, 19: 492, 1965.)

terms of 3 per second for many years without apparent impairment of alertness or mental functioning. Such dissociations between the expected EEG pattern and behavior can be produced by lesions in cats. For instance, following loss of the posterior hypothalamus a fully developed alerting reaction in the EEG (transformation from HVS to LVF patterns) can still be produced by electrical stimulation of the mesencephalic reticular formation, but despite this the animal shows no behavioral alteration in its comatose state. Conversely, with small lesions in the mesencephalic reticular system attentive behavior may be recovered despite the persistence of HVS, patterns. Absence of behavioral correlates is also common for evoked potentials. Thus the exceedingly high amplitude, slow potentials of the recruiting response (Figure 7) produce no subjective changes in man nor any *prima facie* disturbance in a monkey's performance of simple, learned acts the control of which is importantly influenced by the cortical areas engaged in the recruiting response. A similar case arises in cats that are wholly unable to detect stimulation limited to the largest afferents from muscle spindles even though the stimuli evoke prominent potentials in sensorimotor cortex. It is apparent, then, that in certain instances the gross electrical activity of the brain is an astonishingly poor indicator of its functional state or capacity.

The explanation is to be sought in the relation between the oscillations recordable from the surface and the spike discharge of neurons within the cortex (Figure 2). It is only the all or none discharge of the neuron, propagated down the axon, which is the *sine qua non* of neural integration or which can be expressed in behavior. Because of their brevity and usual lack of synchrony the spike discharges produce only the most minimal or no detectable change in the surface record. The latter must thus originate primarily from longer duration action, mostly in dendrites, which all evidence equates with postsynaptic potentials. The correlation between the EEG or evoked potentials and the functional output of the cortex will thus depend upon the degree to which EPSPs and IPSPs, variously synchronized among the multitudes of cortical neurons, reflect significant control of the spike discharges relevant to the system being studied (Figure 2). That the significant neural action may be impossible to infer from the surface record is readily illustrated with findings on the behavior of PT neurons in macaques during sleep with HVS patterns, sleep with LVF activity, and wakefulness. The EEGs in the latter two conditions are scarcely distinguishable, and the over-all frequencies of discharge in PT neurons are roughly similar, about 12 per second, compared to 6 per second for HVS sleep. The pattern of discharge for wakefulness, however, is entirely different from that in LVF sleep. In the latter, interspike intervals less than 10 milliseconds are 3 times more frequent than in the former, and the discharge is clustered into bursts, in striking contrast with the smoother temporal distribution during wakefulness. Non-PT cells, encountered adjacent to the PT cells, have still different characteristics in their pattern of discharge in the three conditions.

Origin. Intracellular records from neocortical neurons display constant fluctuations ranging up to sev-

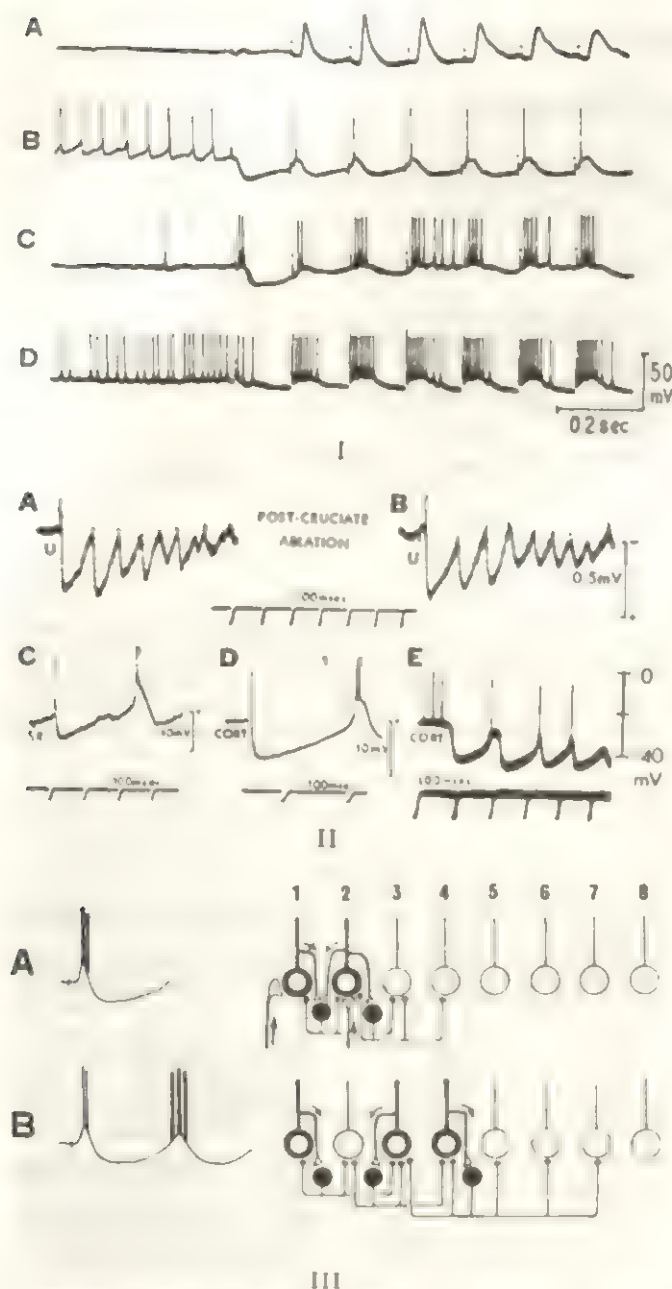


FIGURE 8. Role of IPSPs in generation of rhythmic activity. *I, A*, surface-negative recruiting responses (see Figure 7) recorded from "motor" cortex in cat during stimulation of n. centrum medianum at 7 per second; *B* to *D*, intracellular records from various thalamic cells recorded in this same animal during such stimulation. *B*, ventral anterior thalamus; *C*, ventrolateral; *D*, intralaminar region. It is apparent that the stimulus evokes a moderate, early EPSP in all these cells, followed by a pronounced IPSP which limits further excitation until its termination, thus locking all the affected cells in phase. *II, A* and *B*, rhythmic response of n. ventralis posterolateralis (VPL) (somatosensory "relay" nucleus) to single shock applied to ulnar nerve in cat under Nembutal anesthesia. Removal of all responding somatosensory cortex leaves thalamic response unchanged (*B*), thus demonstrating its thalamic origin. (The cuneate nucleus sends only a single volley up the medial lemniscus under these conditions.) *II, C* and *D*, prolonged IPSP and subsequent depolarizing overshoot or EPSP leading to second discharge of cell in VPL following a single shock to radial nerve (*C*) or to somatosensory cortex (*D*). *II, E*, same

eral millivolts and having all the characteristics of postsynaptic potentials. Analysis of their frequencies shows them to be identical with those of the EEG. Recorded extracellularly with two microelectrodes 30 to 50 μ apart the fluctuations are seen to be very local events, as expected of postsynaptic potentials (PSPs). The amplitude of these fluctuations seen in extracellular records, or intracellularly in glia, is only about one tenth that recorded intracellularly in neurons, and the recorded activity must therefore be generated in the neurons. The correlation between the EEG recorded from the cortical surface and the intracellularly recorded PSPs is understandably very poor. If each of the 50,000 neurons beneath the recording electrode had only 100 synapses which fired only once per second, 5,000,000 PSPs per second would be generated.

Since at rest or during HVS sleep rhythms of moderately high amplitude, rhythmic potentials can be recorded from the surface, considerable synchrony in the PSPs must be inferred on such occasions. The mechanisms which control the degree of synchrony are not entirely clear. As discussed in Section 2.6 and illustrated in Figure 8, recurrent inhibition has an important role in this connection. The protracted and widely ramified inhibition from the recurrent collateral system serves to modulate the activity of a large number of neurons and bring their excitability cycles into step. If these neurons are subjected to excitation just as the IPSP is subsiding, they will all fire in phase and further ramify the recurrent inhibition. Thus stimuli in the range of 6 to 10 per second, having intervals which correspond to the duration of the IPSPs, are uniquely effective in synchronizing cellular discharge and EEG rhythms at this frequency.

Since the first few such stimuli will bring more and more neurons into the system of synchronized discharge, the responses increase in amplitude and are called "recruiting responses" for the case of surface-negative waves produced by stimulation of the thalamic components of the centrencephalic system (Figure 8, *Part I*, Figure 7), and "augmenting responses" for the surface-positive waves produced by stimulation of the thalamic relay nuclei (Figure 8, *Part II*). The recruiting responses are of particular interest because of their similarity to the spindling activity which occurs during sleep or light barbiturate anesthesia. Higher frequency stimulation within the pertinent nucleus or imposed upon it from artificial or natural engagement

in another cat, on slower time scale showing IPSPs and rhythmic thalamic action following single cortical stimulus. Thus, antidromic stimulation (seen intracellularly in *D*) generates rhythmic effects suggesting the schema in *III*. In *A*, afferent volley discharges cells 1 and 2, with recurrent collaterals which excite inhibitory interneurons (solid black); electrical record of this stage being shown at left. In *B*, cells 3 and 4, recovering from inhibition also discharge, in addition to repeat discharge by 1, further elaborating the process and yielding further portion of electrical record at left. (*Part I* is from Purpura, D. P., and Shofer, R. J. Intracellular recording from thalamic neurons during reticulocortical activation. *J. Neurophysiol.*, 26: 494, 1963. *Part II* and *Part III* are from Andersen, P. Rhythmic 10 sec activity in the thalamus. In *The Thalamus*, D. P. Purpura, and M. D. Yahr, editors, p. 143. Columbia University Press, New York, 1966.)

of systems afferent to it tends to disrupt the synchrony and return the cortex to LVF activity. While the cortex probably has recurrent inhibitory processes which participate in the development of its various rhythms, the control of these patterns appears to be exerted predominantly by, and certainly requires the presence of, subcortical systems.

Hippocampal theta rhythm. The theta rhythm of the hippocampus is somewhat instructive in the understanding of certain aspects in the generation of EEG activity. This sinusoidal, high amplitude pattern, 4 to 7 per second, is particularly well developed in rabbits and also occurs in cats, but is essentially absent in primates. The same stimuli which produce LVF activity in the neocortex concurrently induce the theta rhythm in the hippocampus. In other words, stimulation of the mesencephalic reticular formation is highly effective in producing theta activity, and to some degree the frequency of the theta rhythm is proportional to the intensity of the reticular stimulation. With very intense stimulation, however, a second, faster rhythm, 20 to 40 per second, is superimposed upon the theta rhythm. The brain stem origins of these two patterns appear to be separable to some degree so that stimulation of the central gray, medial hypothalamus, or preoptic area induces theta activity whereas the hippocampal fast activity arises from stimulation of the lateral hypothalamus or medial septal area. The phase relations (see below) of the fast versus theta activity appear to be the same across the layer of pyramidal cell bodies, but the two follow different pathways. Lesions of the medial septal area (Figure 4 in Section 2.8) irreversibly abolish all theta activity without affecting the fast patterns. Lesions of the entorhinal area, on the other hand, have no effect on the theta rhythm, while observations are apparently lacking for their effect on the faster rhythms.

The importance of the medial septal area in the generation of theta activity is seen in two other facts. First, stimulation here with high frequencies abolishes the theta rhythm, while frequencies of 4 to 30 per second evoke potentials in the hippocampus somewhat resembling the theta rhythm which they disrupt. Second, large cells in the medial septal area and nucleus of the diagonal band of Broca (Figure 7 in Section 2.8) discharge bursts precisely correlated with the theta waves. The origin of the burst activity in these cells is unknown, but it seems certain to provide the essential component for generating the theta rhythm in the hippocampus, being projected via the fornix onto the dendrites of the pyramidal cells.

The theta activity arises as an oscillating dipole across the somata of the hippocampal pyramidal cells. One pole arises from EPSPs in the apical dendritic layers (Figure 3 in Section 2.8), but the origin of the activity in the axonal-basilar dendritic layers is not clear. A null point exists and apparently lies at the level of the cell bodies, thus indicating that the somata probably do not participate actively in generation of the rhythm. The existence of the null point proves that the oscillation and phase shift does not involve propagation of activity up or down the dendrites. The null point at the level of the somata is puzzling, however, as most hippocampal pyramidal cells fire in bursts phase-locked with the theta rhythm. Since their discharge produces recurrent inhibition (Section 2.6), positivity should appear in the region of the cell bodies. Obviously the evidence is insufficient to demonstrate precisely how the theta rhythm is produced, but it is certain that it requires afferent input from the medial septal area and that it involves nonpropagating PSPs in dendrites.

The hippocampal pyramidal cells are peculiar among central neurons in having a very prominent depolarizing after-potential with no hyperpolarizing after-potential. This might arise because of the tight glial investiture of these cells which leaves such a

small extracellular space that the K^+ leakage during a spike potential could significantly change its extracellular concentration, thus producing depolarization. In any event with this depolarizing after-potential the hippocampal pyramidal cells tend to fire in bursts of two or three spikes and are particularly prone to abnormal, seizure discharge (a fact not without clinical significance; see Section 2.8). The possible relation between this predilection toward burst discharge and the existence of the theta rhythm remains to be investigated.

One last problem is the phase lag in the theta rhythm between one part of the hippocampus and another. The lag is systematic, suggesting a propagation through the hippocampus at a rate of 0.03 to 0.04 m. per second. This is much too slow to be explained in terms of conduction velocities in afferents from the septum, and there is no evidence to support other possible explanations. In cats the wave is initiated usually from the dorsal hippocampus and progresses towards the entorhinal area (Figure 4 in Section 2.8), but during the period of a learned approach decision the direction of this propagation is reversed.

Control of Neocortical Activity: The Centrencephalic System

Isolated cortex. Just as generation of the theta rhythm of the hippocampus is dependent upon afferents from the septum, all normal EEG rhythms of neocortex require afferent support from subcortical areas. To what degree the normal patterns are merely imposed upon the cortical system and to what degree they arise from cortical modulations of afferent input is by no means clear. It is thus of interest to know what capabilities are possessed by the cortex alone.

As mentioned above, the propagation of direct cortical responses or spreading depression is essentially the same in undercut as in intact cortex. Photically evoked potentials also can propagate at 1 to 2 m. per second throughout a slab of "visual" cortex isolated for about 10 mm. by destruction of the white matter except at one end. Since such propagation can occur into partially isolated cortex, total isolation is required to study cortical capabilities per se. Even total isolation will have varying effects depending upon the size of the isolated slab, whether "U" fibers remain, and the degree to which success is achieved in preserving the vascular supply (which enters only through the pia mater). Obviously the cortical denervation will be much more severe when the "U" fibers are cut, and in such instances as many as one third of the cortical neurons degenerate. This type of preparation has not been adequately examined for spontaneous activity over long periods without interference from anesthesia and circulatory disturbances. In slabs 10×5 mm. or larger in which "U" fibers are preserved there is only a minor loss of cells, and considerable electrical activity returns. The rhythm is never normal, but many components of normal activity occur briefly. The records are characterized by sporadic activity, bursts of slow waves or spikes alternating with periods of silence.

In human patients such sporadic activity remained relatively constant at 15 to 30 bursts per minute for at least 15 months from the moment of isolation of large areas of frontal cortex. Isolated cortex can produce the major forms of pathological electrical

activity such as 3 per second spike and wave patterns, seizure discharge, and after-discharges. Indeed a supersensitivity of denervation occurs within 2 weeks so that seizure discharge is much easier to induce with electrical or chemical stimulation in chronically isolated than in intact cortex.

Centrencephalic system. Normally the most important contribution to the character of the background activity of the EEG arises in the centrencephalic system. This system is more a functional concept than an anatomical entity. It was originally conceived primarily as a diencephalic system regulating and accounting for the bilateral symmetry in the electrical activity of corresponding cortical areas of the two hemispheres and effecting the general coordination of background activity of the cortex. Since these regulatory mechanisms also involve medullary, pontine, and mesencephalic levels, the term "centrencephalic" has been enlarged to include these components. The functions of such a system obviously are not to regulate electrical patterns per se but to support some aspect of the total neural process. These functions are still being defined, but they are related to the control and processing of sensorial input; to attention, awareness, sleep; and perhaps to the transmutation of neural activity into the unity of consciousness. The centrencephalic system can thus be loosely defined as a functionally related system of neurons, for the most part found near the midline and coursing from obex to septum, controlling sensorial input and thereby controlling attention, alertness, and their electrophysiological manifestations. How exact the correspondence may be between the centrencephalic system and neurons of the "reticular" type (Figure 2 in Section 2.5) remains to be investigated.

Mesencephalic reticular formation: Isolated forebrain. In many respects the hub of this system is the mesencephalic reticular formation since it is here that lesions or stimulation produce the most global effects. Cells here are commonly activated from a variety of sources, and their background rhythm is steady in contrast to cells in thalamic relay nuclei with background which consists usually of grouped discharges. Electrical stimulation of relatively high frequency, but low intensity, produces in resting animals both behavioral arousal and a transition from HVS to LVF patterns in all cortical areas. It is presumed that a natural stimulus which produces such alerting does so largely through collateral systems which account for the multimodal excitability of the reticular neurons. However, the cerebral cortex also possesses the capability of influencing this arousal system, and it is not at all unlikely that a part of the arousal process normally involves a loop through cortex and then to the mesencephalon to effect a widespread reaction. In man the telencephalon may actually have primacy in the phenomenon of consciousness. In hemispherectomized patients intracarotid injection of Amytal on the side of the remaining

hemisphere produces an immediate loss of consciousness, and angiography indicates that the Amytal should not reach the mesencephalon in significant quantities. Moreover, injection of Amytal into the vertebral circulation in other patients, while producing vertigo, oculomotor, facial and lingual paralysis, and loss of pupillary light reflex, has no influence on consciousness. This is definitely paradoxical since midbrain lesions produce coma in man as well as animals. It probably means that the mesencephalic reticular system is not so sensitive to barbiturates as is believed and that it simply remains unaffected by the brief exposure to intravertebral Amytal, as is also the case with the auditory, respiratory, and cardiovascular systems.

Bulbar and pontine systems also exert important influences, predominantly inhibitory, upon the mesencephalic component. If the medullary influence, probably arising near portions of nucleus solitarius, is removed by a section at the caudal border of the pons, stimulation of the mesencephalic reticular system yields a more protracted arousal than previously. Cats with brain stem transected at midpontine levels maintain an almost constant LVF activity in neocortex for days. The latter result is somewhat unexpected since the caudal pons seems to be the site controlling the appearance of LVF activity during the rapid eye movement phase of sleep, but evidently a tonically active system promoting HVS activity must also lie caudal to the midpontine transection. The LVF activity of the midpontine preparation is associated with seeming alertness rather than deep sleep since a "midpontine" cat tracks objects visually and can learn and perform conditioned reflexes, e.g., pupillary dilatation to photic stimulation using electrical stimulation of the posterior hypothalamus as unconditional stimulus.

Medial lesions of the rostral pons or mesencephalic reticular formation produce coma and continuous HVS activity, neither of which within the first few postoperative days can be interrupted. This certainly dramatizes the cardinal importance of this area of the brain and the diffuse paths traversing it. The meaningful operation of the nervous system is brought to a halt despite the fact that all the major afferent and efferent systems are intact and sensory stimuli readily evoke potentials in neocortex. The condition is not permanent, however, and within a few weeks after such a bilateral lesion a cat can again acquire simple conditioned reflexes and display many aspects of normal behavior. Even with total transection and elimination of any connection between fore- and midbrain, normal LVF activity gradually returns in the isolated forebrain. Such recovered preparations have LVF activity for hours at a time as well as periodic episodes of HVS activity lasting about 1 hour, showing no correlation either with electrical activity of the brain stem or usually with the behavior controlled by the brain stem. In some instances of intense arousal by painful stimuli, sneezing, or defecation, however, the forebrain HVS patterns are interrupted, suggesting a humoral effect. Apparently no such interruptions occur during episodes in brain stem activity which are normally associated with the rapid eye movement phase of sleep. HVS episodes in the forebrain can be interrupted by olfactory stimuli, but not by visual stimuli, suggesting that the mesencephalic reticular system may be es-

sential for arousal via the visual system. Otherwise the electrical activity of the forebrain remains the same following coagulation of both optic disks and aspiration of the olfactory bulbs. The sustained LVF activity in the isolated forebrain requires the presence of the diencephalon.

The gradual assumption by the diencephalon of the ability to engender LVF activity in neocortex proceeds unilaterally, as can be shown by serial hemisections (Figure 9). The nature of this compensatory reaction is unknown. It seems that normally arousal to electrical stimulation of the thalamus proceeds via posteriorly projecting paths through the posterior commissure and pretectal area, for with acutely produced lesions the arousal reaction does not survive isolated transection of this path posterior to the point of thalamic stimulation.

Diffuse thalamocortical projection system. The thalamic component of the centrencephalic system inevitably emerges as existing primarily to originate sleep spindles and recruiting responses in neocortex since it is the intensive study of these phenomena that has generated most of the knowledge about it. Unfortunately, even this knowledge is frustratingly inadequate since the anatomical paths by which centrencephalic influences reach the cortex from either thalamus or midbrain cannot yet be specified precisely.

Study of these systems began with the finding that in cats under very deep barbiturate anesthesia stimulation of the sciatic nerve produced, in addition to the primary response of 8- to 10-millisecond latency localized in contralateral somatosensory cortical areas, a secondary response with a latency of 30 to 80 milliseconds engaging the entire cortex bilaterally. A hemisection of the brain stem at the intercollicular level ipsilateral to the primary response abolished the latter but did not change the distribution of the secondary response. The secondary response in such an instance must represent a double crossing, once below the level of the hemisection and again above it from the intact to the deafferented hemisphere, and is obviously distinct from direct sensory pathways. This second crossing was demonstrated to be via the corpus callosum. On the other hand, electrical stimulation of medial thalamic structures can produce recruiting responses with a rather wide bilateral distribution. That the bilaterality does not arise simply from physical spread of stimulating current across the midline is shown by the fact that latencies of the contralateral recruiting responses are about double those of the ipsilateral response, e.g., 40 versus 20 milliseconds. Such findings gave rise to the concept of a diffuse thalamocortical projection system, but its very diffuseness together with its lability makes it very difficult to study. Several points bear emphasis. First, this system exerts its influence on the cortex independently of the thalamic relay nuclei of the specific sensory systems. Its diffuseness and nonspecificity are apparent only in certain circumstances. The location of thalamic regions from which recruiting responses can be obtained are very restricted since movement of an electrode by 0.5 mm. makes the difference between presence and absence of recruiting responses. Furthermore, slight movements of the stimulating electrode often make great changes in the distribution of the response (Figure 7B). In more lateral thalamic areas from which recruiting responses can be induced, the responses are almost entirely unilateral.

Bilateral symmetry: corpus callosum. Thus, while the thalamic component of the centrencephalic system can operate to achieve a bilateral symmetry in neocortical electrical pat-

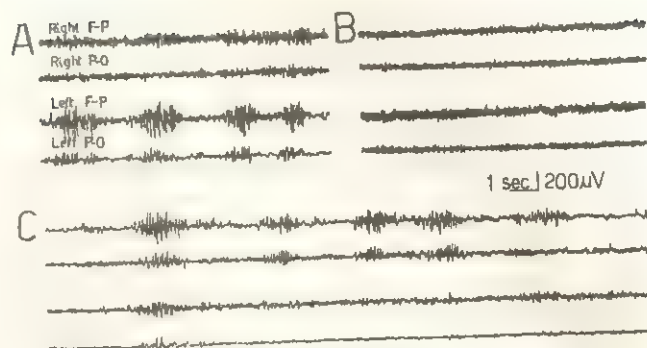


FIGURE 9. Unilateral reorganization of tonic, background EEG activity following hemisection of the mesencephalon. *A*, The left mesencephalon was transected under ether anesthesia a few hours earlier, and bursts of high voltage, slow EEG activity predominate in records from the left hemisphere. At such times intense noise can produce arousal reactions (not shown) in the affected hemisphere, but they are much shorter in duration than in the "intact" hemisphere. *B*, Seven days later, symmetry was restored in the EEG, and low voltage, fast activity persisted equally in both hemispheres. The right mesencephalon was then transected (producing a *cerveau isolé*) and it was found (*C*) that the low voltage, fast pattern of the previously transected side was maintained by some reorganization intrinsic to that hemisphere rather than from augmented control by the originally "intact" hemisphere, since the low voltage, fast pattern was now maintained on the left in the face of high voltage, slow patterns on the right. Electrode loci: *F*, frontal; *P*, parietal; *O*, occipital. (From Cordeau, J. P., and Mancia, M. Effect of unilateral chronic lesions of the midbrain on the electrocortical activity of the cat. *Arch. Ital. Biol.*, 96: 374, 1958.)

terns, there are indications that its contributions in this regard are not particularly strong. Besides the absence of thalamic transfer of the secondary response, of compensation to chronic hemisection, and of recruiting responses from lateral loci, it is also seen that section of the corpus callosum and anterior commissure greatly reduces the degree of bilateral symmetry in the EEG. Thus, these latter structures also function in correlating the electrical activity of the two hemispheres. Since the corpus callosum in man has about 200 million fibers, roughly 2 per cent of the cortical neurons send fibers through it. The density of this projection varies greatly from one cortical area to another. The primary visual projection area, for instance, has no direct interhemispheric connections and, in primates at least, can communicate with its corresponding contralateral half to achieve unity in an otherwise split visual field only via callosal connections passing between prestriate areas. Similarly, in cats it has been demonstrated that transfer of somatosensory information from one hemisphere to another proceeds only through specialized cortical areas. In at least some instances the same cortical points which intercommunicate via the corpus callosum also do so via a much slower pathway traversing the mesencephalic reticular system. Thus, an electrical pulse applied to such a cortical point elicits an initial response, which is a mixture of orthodromic and antidromic effects, beginning in the homotopic cortical area within 1 to 2 milliseconds; and a second more widely distributed potential, the interhemispheric delayed response (IDR), with a latency of 40 to 65 milliseconds. The IDR is very labile, is sensitive to anesthesia, and can also be produced by midbrain stimuli. It is unaffected by sectioning the corpus callosum, psalterium, anterior and posterior commissures, and the entire diencephalon. Some degree of bilateral symmetry in cortical activity can still be observed in such "split brain" preparations.

In summary, it can be concluded that the symmetry

in the electrical activity of the two hemispheres is maintained by three systems: the commissural, the medial thalamic, and the mesencephalic reticular, the contributions of which undoubtedly fluctuate according to a variety of circumstances.

Cortical influence on the centrencephalic system. The neocortex exerts continuous control over the thalamic and mesencephalic systems. For instance, extirpation of neocortex greatly augments the background activity in nucleus centrum medianum and doubles the amplitude of responses seen there to somatic stimulation. Similarly, decortication enhances and widens the distribution of photic responses seen in the thalamus outside the lateral geniculate body. It has also been reported that the brain stem structures no longer display HVS background activity following total decortication.

Stimuli applied to certain restricted areas of neocortex in macaques, excluding area striata, middle temporal gyrus, and frontal pole, evoke potentials and alter conduction in the mesencephalic reticular formation. The presence of potentials in the mesencephalic reticular formation following somatosensory stimuli seems to be specifically under control of the second somatosensory area (SII) since local cooling here abolishes the response in the mesencephalon while leaving that at "primary" somatosensory cortex (SI) unaffected. Cooling of SI has no effect until the responses in SII are reduced.

Control of Sensory Systems

By recording from a single fiber in the human radial nerve it can be shown that a brief, 5° displacement of a hair on the hand produces a single nerve impulse; yet such displacement can be detected subjectively. It is obvious, however, that not all such displacements yield a subjective reaction and, indeed, the nervous system must be bombarded with tens of thousands of impulses each second which remain without effect unless "attention is focused" upon them. Within the past decade or so it has become possible to specify a number of mechanisms available to the nervous system to perform this selective focusing.

The first of these is the control exerted at the peripheral end organ or the early synaptic stations in the central nervous system. The gamma-efferent system provides a striking example since in this instance the nervous system can actually initiate its own input over the muscle spindle afferents in the absence of any peripherally imposed change. This is a bad example, however, for subjective sensation *per se*, since neither cat nor man can perceive stimulation limited to these afferents. For perceptually effective somatic afferents the control is exerted at the first synaptic relay either in the dorsal horn of the spinal cord, in the trigeminal complex, or in nucleus gracilis or cuneatus (Figure 9 in Section 2.6). Presynaptic inhibition of discharge to afferent input can be obtained in all these regions via the pyramidal tract following stimulation of sensorimotor cortex. Stimulation in the medullary or mesencephalic reticular systems can also depress transmission of somatosensory information at these first central stations. These centrencephalic connections may be responsible for the ability of clicks or flashes to affect the excitability of cells in the chief sensory trigeminal nucleus.

Activity in the olfactory bulb is controlled by systems in the prepiriform cortex, olfactory tubercle, and the other ol-

factory bulb which sends fibers through the anterior commissure. Stimulation of these centrifugal fibers depresses background and evoked activity in the bulb, and isolation of the bulb enhances its background and responsivity.

Centrifugal fibers arising in the superior olive form the olivocochlear bundle, three fourths of which decussate near the floor of the fourth ventricle. It passes into the cochlea to form large endings upon the hair cells where they contact the afferent fibers. The olivocochlear bundle constitutes about 1 to 2 per cent of the fibers of the auditory nerve. A similar system, probably arising in the lateral vestibular nucleus and not decussating, passes into the labyrinth, where the efferent fibers seem to contact the afferent fibers. Stimulation of the olivocochlear bundle depresses the cochlear microphonic and thus reduces auditory input. The response in the cochlear nuclei is in turn affected by a system running from the ventral temporal cortex through the medial aspect of the medial geniculate nucleus, the ventral part of the inferior colliculus, and along the medial edge of the nucleus of the lateral lemniscus.

The retina is also supplied with efferent fibers which end in the layer of bipolar cells and can alter or initiate responses in retinal ganglion cells. The function and even the origin of these fibers are unknown, although stimulation in the mesencephalic reticular system can evoke the efferent effects. In the pigeon the retinal efferent fibers arise from the isthmo-optic nucleus in the caudal midbrain. They constitute about 1 per cent of the optic tract and seem to form axosomatic endings on amacrine cells.

A most important point of control in the visual system is the lateral geniculate nucleus. In primates the mesencephalic reticular system has such powerful influence here that it sometimes appears almost literally to turn the visual system on or off (Figure 4, Part II)—"gating," as it is called in engineering parlance. Such control, in fact, may be the *raison d'être* for thalamic "relay" nuclei; for there is nothing to be gained from a 1:1 relay, and the pyramidal system demonstrates that interruption of long central pathways is at least not a necessity. Be that as it may, a single pulse applied to the mesencephalic reticular formation in monkeys produces presynaptic inhibition lasting about 30 milliseconds for both parvo- and magnocellular elements, followed by facilitation for 100 milliseconds or more. Such stimulation also has the behavioral effect of improving the performance of monkeys in perceiving tachistoscopically presented stimuli. Lesions in this mesencephalic area have such catastrophic effects that it is difficult to study the resultant visual deficiencies, but there are a number of indications that they are severe. The multimodal inputs of the mesencephalic reticular system allow influences to be brought to bear upon the visual system from many other sources and no doubt accounts for such findings as those in the cat where, under conditions of heightened excitability, potentials can be evoked in the lateral geniculate nucleus and its neurons discharged by touching the paws.

It might be suspected that one of the major purposes of this midbrain control of the visual system would be to supply a "blanking" of vision while the eyes are in motion, or to adjust the visual input relevant to the position of the eyes. If so, these effects do not seem to be supplied by collaterals of oculomotor neurons, since their stimulation is without effect, but they may instead possibly be supplied by the systems which control eye position. During the rapid eye movement stage of sleep presynaptic inhibition is applied to the lateral geniculate nucleus at the same time that the eyes are moved, and there is a close correlation between spikes appearing in the pontine nuclei, lateral geniculate nucleus, and visual cortex. Thus, centrencephalic control of the visual system can originate even at pontine levels, a fact possibly to be anticipated from the connections between the vestibular and oculomotor systems. In cats the vestibular effects are very well developed since all neurons which can be isolated by microelectrodes in the "visual" cortex can be influenced or discharged by moderate vestibular stimulation. The latencies for the effect range from

25 to 200 milliseconds compared with 8 to 20 milliseconds for responses in the vestibular projection area for these same stimuli. The effects at visual cortex may pass via the diffuse cortico-thalamic projection system since the vestibular stimuli do not affect neurons in the lateral geniculate nucleus. Stimulation of this thalamic system itself can discharge or inhibit 70 per cent of neurons isolated in the contralateral visual cortex of cats, mostly after latencies exceeding 25 milliseconds. During the various stages of sleep and wakefulness the excitability of the lateral geniculate nucleus and visual cortex in cats can vary independently, even in opposite directions. The visual cortical system is by no means passive in this regard since it in turn influences the excitability of neurons in the lateral geniculate nucleus and, probably via the superior colliculus, the mesencephalic reticular system as well. Corresponding experiments have not yet been done in primates, but preliminary information suggests that centrencephalic control is exerted predominantly on the lateral geniculate nucleus with only minimal influence on striate cortex.

The auditory system has been little studied in this regard, but arousal greatly increases potentials recorded in auditory cortex following electrical stimulation of the medial geniculate nucleus. For the somatosensory system there appears to be much less direct convergence of centrencephalic influences onto cortical neurons responding to somatic stimuli than is the corresponding case for neurons in the "visual" cortex responding to photic and thalamic stimuli. The same is true in comparing somatosensory areas with "motor" or "association" cortex; i.e., cortical neurons driven by stimulation of the ventrobasal complex are not usually discharged by stimulation of the diffuse thalamic projection system even though their response to the former may be altered (usually increased) by the latter. This relative ineffectiveness of centrencephalic control probably accounts for the stability of response in the non-PT cells of the cortical somatosensory system, as described above. The association areas, on the other hand, have a high degree of multimodal convergence and receive a powerful centrencephalic input. The middle suprasylvian gyrus of the cat is the best studied in this respect. Of the neurons isolated here 80 per cent respond to flashes, 50 per cent to clicks, 30 per cent to electrical stimulation of the paw, 50 per cent to stimulation of the lateral posterior nucleus (the thalamic projection nucleus for this area), 50 per cent to stimulation of nucleus centrum medianum, and 85 per cent directly to transcallosal stimulation; 40 per cent participate in the interhemispheric delayed response. Obviously each neuron tends to respond (with EPSPs or IPSPs) to input from many sources. In another series of experiments comparison could be made directly for the convergence of influences from the midline thalamus and specific thalamic projection nuclei. Convergence was found for 75 per cent of the neurons isolated in the suprasylvian association cortex, 41 per cent in motor cortex, and only 8 per cent for somatosensory cortex.

It seems reasonable to suppose that neurons receiving multimodal input are uniquely important in forming learned associations between stimuli. The prominence of multimodal representation in the centrencephalic system and this system's exceptionally powerful influence upon the multimodal systems of the neocortex seem likely to have some intimate relation to mnemonic processes.

Suggested Cross References

Perception and sleep are discussed in this section from a neurophysiological point of view; for further information on these phenomena from a psychological perspective, see Sections 3.1 and 2.4, respectively. Some of the clinical applications of the EEG and

discussions of the convulsive disorders are presented in Chapters 10, 18, 19, 20, and 21 and in Section 42.3.

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2.8 LIMBIC SYSTEM

ROBERT W. DOTY, Ph.D.

Most of the great systems of the neocortex are concerned with the external world, its spatial properties and directionality. In striking contrast, the limbic system is concerned with the self. It controls exchange between the body and the external world and, through its command over the autonomic and endocrine systems, regulates the internal world. To these functions of preserving the individual, Nature has cunningly linked as well those of preserving the species. In achieving these ends, the limbic system serves as a repository for phylogenetically significant, instinctual behaviors. From its organization come such species-specific activities as feeding, drinking, defense-flight reactions, aggression, sexual and probably maternal responses, grooming, and temperature regulation. The stimuli associated with these behaviors are "motivational" in that the organism seeks or avoids them, and there is every reason to believe that it is the limbic system which assigns the motivational value to particular stimuli.

The effects of stimulating or ablating most neocortical areas are motivationally insignificant. Stimulation of the limbic system, on the other hand, often produces motivational effects (either avoidance or approach) of overpowering intensity, and lesions in the limbic system commonly effect a profound derangement of basic behavior. These principles can be illustrated with laboratory experiments, although they sometimes appear with almost equal clarity in clinical cases. The "elementary personality" of cats is unchanged by removal of all neocortex. So long as the subcortical limbic system (including hippocampus and basal ganglia) remains intact, decorticate cats

that preoperatively show aggressive resistance to handling of any kind continue to do so, whereas gentle animals still purr and stretch when petted after decortication. Gentle cats can be made permanently ferocious by lesions in the ventromedial nuclei of the hypothalamus while conversely, savageness disappears from intractable cats following bilateral amygdalectomy unless they are strongly provoked by painful stimuli. Amygdalectomy has similar effects even in such feral animals as the lynx, gray rat, or macaque; and following lesions in the homologue of the amygdaloid system of mammals, mallard ducks, normally extremely fearful, can be captured by hand.

With section of the optic chiasm and corpus callosum in macaques unilateral excision of the tip of the temporal lobe (including the amygdala) produces a fascinating situation. When the animal views the world with both eyes or with the eye connected to the hemisphere in which the amygdala is present, it displays the macaque's usual fearful-aggressive behavior towards man. However, when it sees only through the eye ipsilateral to the amygdalectomy, the monkey is without fear. It accepts man's presence calmly and only when handled does it show savage behavior. The monkey's attitude toward the external world is thus dependent upon the state of the limbic system in the brain with which he views it.

Such facts obviously have direct relevance to psychiatry and indeed to medicine in general. In man it can be verified that strong emotion accompanies the manifestations of activity in the limbic system, and disturbance of emotional balance is a frequent correlate of pathology in this system. In turn, the play of emotions or, what is probably the other side of the same coin, certain activity within the limbic system can alter the entire body economy. Psychosomatic medicine originates in this fact. The limbic system regulates digestion, renal activity, sexual cycles, basal metabolism, and the pressure, distribution, and composition of the blood. It thus provides or is the channel by which the mental self interacts with the body self; and its derangement may be expressed in body, mind, or both. A patient with abnormal functioning of the central visual system might fail to see certain colors, or in certain directions, or see nonexistent objects; with disease affecting the motor system he may be paralyzed, experience convulsions or incessant, purposeless movement; but one afflicted with pathology within the limbic system may suffer rage, unbridled fear, or some equally overwhelming, ineffable, and mysteriously distorted appraisal of the world and its relation to himself. In the latter circumstance he is psychotic. The pathological neural substrates of psychosis cannot yet be identified, but the evidence grows consistently stronger that they are to be sought primarily in the limbic system. Only 25 years ago a prominent text in neuroanatomy could with some truth comfort the medical student, perplexed with the in-

tricacies of the hippocampus or amygdala, that study of the limbic system had but limited application to the practice of medicine. With the appearance of neuroendocrinology such assurance has quietly subsided; and in its place may well be substituted the prediction that the psychiatrist of the future will be a neurologist specializing in disorders of the limbic system.

Anatomy

Limbic cortex. The term "limbic" is taken from *limbus* (border) and signifies the structures bordering the medial aspect of the hemisphere. These include temporal-insular, orbitofrontal, cingulate, and retrosplenial cortex (Figure 1). This limbic neocortex plus the hippocampal gyrus forms the hub of the system through and with which many other components of the system are connected.

The limbic cortex can be divided into four systems on the basis of thalamic projection nuclei and the afferent connections of these nuclei. (1) The hippocampal gyrus is allocortex rather than neocortex and has no known direct thalamic connection. It serves as the primary afferent channel into the hippocampus. (2) The orbitofrontal cortex is innervated by the magnocellular division of nucleus medialis dorsalis. The latter receives afferents from the piriform tract. Thus the orbitofrontal cortex has a rather direct relation to olfactory input. The magnocellular component of nucleus medialis dorsalis in primates also receives fibers from the fornix system. (3) Insular cortex receives fibers from n. ventralis anterior which in turn is innervated predominantly from the globus pallidus. (4) The cingulate gyrus receives fibers from the anterior thalamic nuclei. This is the most extensive of the limbic cortical systems, and the various anterior thalamic nuclei project to the entire expanse of the cingulate gyrus. The anterior thalamic nuclei are richly innervated by the mammillothalamic tract from the medial mammillary nucleus.

The posterior portion of the cingulate gyrus receives afferents from n. lateralis dorsalis, a nucleus that also has a rather heavy innervation from the fornix system. Thalamic input to the retrosplenial area in primates is not well known. This area adjoins directly upon the primary visual cortex (area striata) so it is perhaps not surprising that it receives afferent fibers from striate cortex and that neurons in the retrosplenial area can be discharged by photic stimuli. Other portions of the limbic cortex also receive fibers from and send them into "supralimbic" cortex. The cingulate cortices of the two hemispheres are interconnected via the corpus callosum; while the insular-temporal cortices are interconnected via the anterior commissure (Figure 2). Temporal cortex also projects upon the amygdala and, by fibers joining the fornix after penetrating the corpus callosum, probably upon the lateral septal nucleus. Efferent connections from limbic cortex to the corresponding thalamic projection nuclei have been described, as well as to the basal ganglia.

While not part of the limbic system in the sense of location, in terms of connectivity much of the rostradorsal convexity of the frontal lobe must be included. This is the cortex receiving

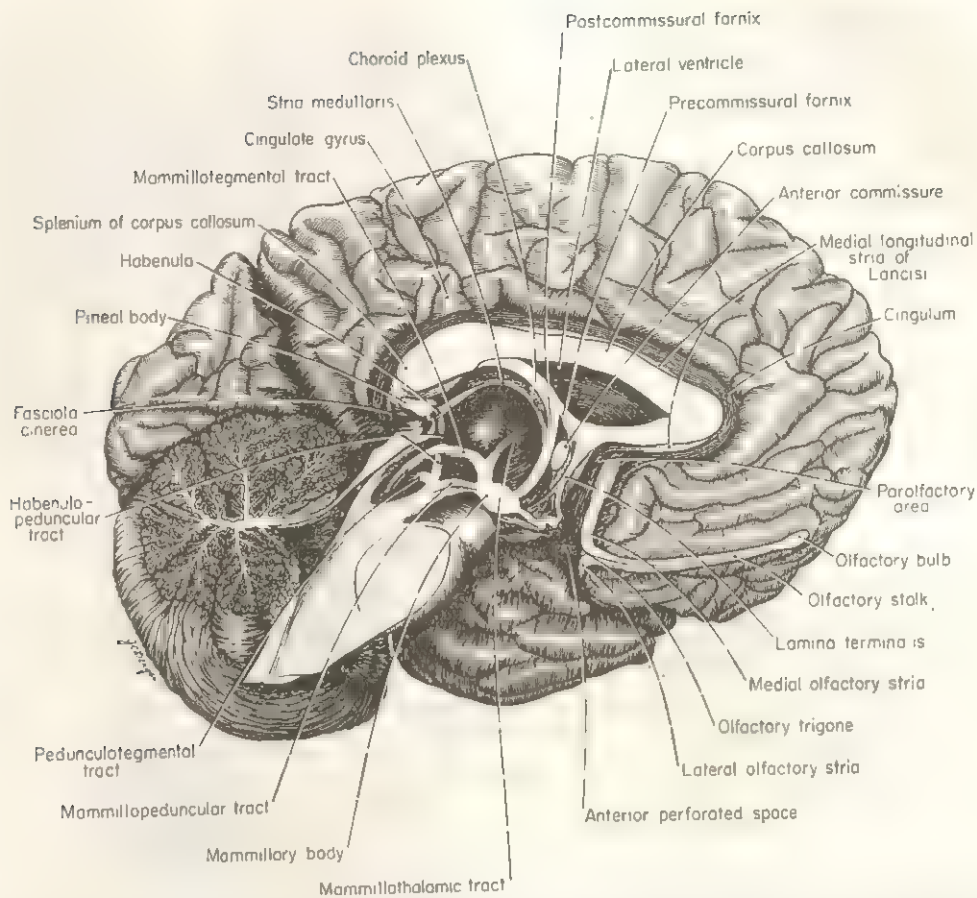


FIGURE 1. Medial view of hemisphere diagrammatically dissected to illustrate certain structures of the limbic system. *Parolfactory area* is roughly equivalent to the septal area. The *fasciola cinerea* is a small extension of the hippocampal system. (Reprinted with permission of The Macmillan Company, from Crosby, E. C., Humphrey, T., and Lauer, E. W. *Correlative Anatomy of the Nervous System*, p. 316. © The Macmillan Company, New York, 1962.)

projections from the extensive parvocellular portions of the medial dorsal nucleus. The parvocellular components have two major inputs: (1) large fibers which ascend from the ventromedial midbrain and ventral tegmental area of Tsai passing along the anterior border of the habenulo-peduncular tract; (2) large fibers arising in the medial septal nucleus of the diagonal band of Broca. Thus the primary input to the prefrontal cortex via the medial dorsal nucleus arises from areas which are part of the limbic system. These areas of the prefrontal cortex also join the limbic system in sending efferent fibers into putamen, claustrum, head of the caudate nucleus, the cingulum, and the periaqueductal gray.

A large band of fibers completely encircles the limbic cortex and serves as its major efferent and association pathway. Ventrally this fiber system is the uncinate fasciculus, forming a two-way connection between orbitofrontal and insular-temporal cortex. The predominant system, however, is the cingulum which runs a looping course above the corpus callosum medially within the white matter of the cingulate gyrus (Figure 1). It arises diffusely in the prefrontal cortex, exclusive of the orbital area, and, while fibers course in both directions within it, the greatest projection is from the rostral to caudal portions. Axons of pyramidal cells from cingulate cortex frequently branch, sending one collateral rostrally into septum or striatum and the other caudally. Great numbers of the fibers from the cingulum reach the entorhinal and subicular areas, which in turn project into the hippocampus.

Hippocampal system. The focal point of the hippocampal system is a curving strip of precisely aligned pyramidal cells

with dense apical dendrites projecting within the central core of the cornu Ammonis (Figure 3). Differences in size and other characteristics have prompted the division of the pyramidal cells into four fields designated, CA₁, CA₂, etc. The cells in CA₁ and CA₄ are the largest and send branches, the Schaffer collaterals, from their axons to end principally upon the apical dendrites of CA₁ and CA₂ pyramids (Figure 3). Other collaterals are given off by the pyramidal cells to end upon basket cells which produce recurrent inhibition of neighboring pyramidal cells, as discussed in Section 2.6.

There are three major efferent paths from cornu Ammonis: (1) a diffuse and poorly understood pathway into adjacent neocortex; (2) the hippocampal commissure or psalterium which connects the two hippocampi; (3) the fornix. The efferent hippocampal component of the fornix is formed by axons which gather on the hippocampal surface to form the alveus and then pass laterally and rostrally in the fimbria. The fimbrial fibers, augmented by contributions from the hippocampal gyrus, consolidate medially to form the fornix, which then descends into the septal area. The alveus, fimbria, and fornix are all in direct contact with cerebrospinal fluid since these structures form the ventromedial wall of the lateral ventricle. The projection into the septal area splits around the anterior commissure, forming the precommissural fornix, which terminates in the septal and preoptic areas, and the postcommissural fornix, which continues back through the hypothalamus to reach the mammillary bodies.

In man 2,700,000 fibers constitute the main body of the fornix and 900,000 fibers go into the hypothalamic portion. The corresponding figures for macaques are 500,000 and 100,000. The

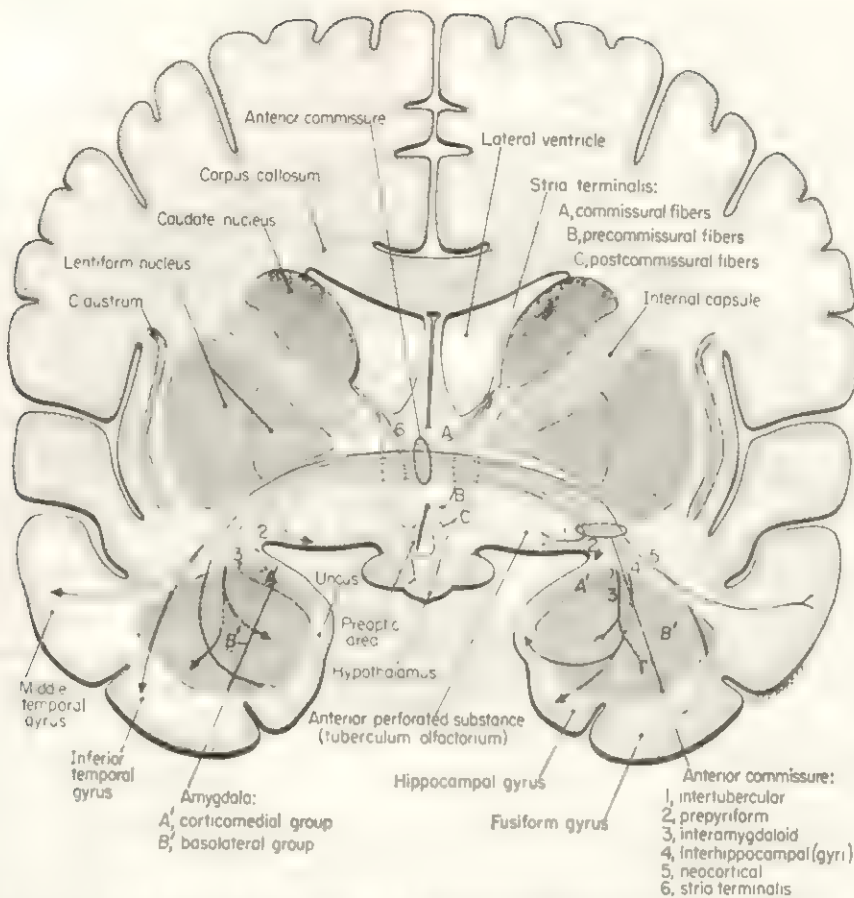


FIGURE 2. Diagram of human brain showing components of the anterior commissure and stria terminalis. (Reprinted with permission of The Macmillan Company from Crosby, E. C., Humphrey, T., and Lauer, E. W. *Correlative Anatomy of the Nervous System*, p. 401. © The Macmillan Company, New York, 1962.)

fornix thus shows an over-all 5-fold increase in man and a 9-fold increase in its projection to the hypothalamus and medial mammillary nucleus. That these figures indicate an increase in the relative importance of the hippocampal system in man can be seen in other comparisons. The optic nerve, for instance, has about 1 million fibers in both man and macaque; and despite the much greater body and brain size in man there is only about a 2-fold increase (to about 1 million fibers) of the pyramidal tract in man versus macaque. The size of the neurons in man is smaller, yet the volume of the medial mammillary nucleus is about 6 times greater than in macaques, and it constitutes about 6 per cent of the total hypothalamic volume in man versus 3.5 per cent in macaques, further indicating the increased importance of the fornix-mammillary system in man.

There are, however, several complications in evaluating the relations in the fornix system. The postcommissural fornix gives off fibers into the hypothalamus, and it also receives hypothalamic fibers. In the rabbit the postcommissural fornix starts out with about 200,000 fibers, but only half reach the mammillary body; whereas in the cat with 160,000 fibers, 100,000 also reach the mammillary body. Midway in the hypothalamic portion of the fornix in the cat there are considerably fewer than 100,000 fibers, so that fibers must either branch as they approach the mammillary nuclei or new fibers join the fornix from the hypothalamus. In all species examined so far (rat, rabbit, cat, macaque) fornix fibers also pass beyond the mammillary body into the central gray. The pyramidal cells in CA₁ give rise to fibers which project principally to the anterior thalamic nuclei and to the mammillary body while those in CA₂ and CA₃ project mostly into the precommissural fornix and distribute to the medial and lateral septal nuclei, nucleus of the diagonal band and nucleus accumbens. However, not all of the fornix arises in the

hippocampus. In man and other species large bundles of fibers from area striata and the cingulate area pass directly through the corpus callosum and form the dorsal fornix. The destination of these fibers in the dorsal fornix is not well known, but they appear to terminate mostly in the hippocampus and septal area. Fibers (the white stria of Lancisi) from the induseum griseum, an embryological remnant of hippocampal tissue lying on the dorsal surface of the corpus callosum, also cut through the corpus callosum to join the dorsal fornix. In the rat and guinea pig some of the dorsal fornix projects directly to the superior central tegmental nucleus of Bektarev in the caudal mesencephalon.

In addition to these neocortical efferent fibers the fornix contains a large contingent of afferent fibers arising principally from the medial septal nucleus and nucleus of the diagonal band of Broca. It is thus possible that some of the proportional increase found in the human fornix system involves these afferent or neocortical efferent components in addition to the probable increase in efferents from cornu Ammonis. The relative increase in the medial mammillary nucleus, however, is definitive. In both the cat and rabbit there is an approximately one-to-one relation between the number of premammillary fornix fibers, number of cells in the medial mammillary nucleus, and number of fibers in the mammillothalamic tract. Many of the efferent fibers from the medial mammillary nucleus branch and project posteriorly into the deep tegmental nucleus of Gudden as well as into the mammillothalamic tract. The deep tegmental nucleus in turn projects upon the medial mammillary nucleus. The great majority of the fibers in the mammillothalamic tract are less than 1.5 μ . They form a dense plexus in the anterior thalamic nuclei, developing knotlike excrescences along their terminal filaments which are highly similar to the mossy fiber endings in the cerebellum.

The anterior thalamic nuclei, as mentioned above, project into the cingulate cortex. The latter projects into the hippocampal gyrus via the cingulum, and the path then returns upon the cornu Ammonis completing a potential loop of activity, the "Papez circuit": cornu Ammonis-fornix-mammillary body-anterior thalamic nuclei-cingulate gyrus-cingulum-entorhinal area-cornu Ammonis (Figure 4). Of course, several of the links in this "circuit" might be inhibitory rather than excitatory so that this arrangement is unlikely to be one for producing self-sustaining or avalanching activity. Furthermore, the topographic projections of the pathways are sufficiently complex that the resulting elaboration of impulses through the system would far exceed anything understandable in terms of a simple reentrant circuit.

The afferent pathways into cornu Ammonis are complex and still not fully defined. The afferents of the fornix terminate on the basilar dendrites and proximal portions of the apical dendrites of pyramidal cells in CA₂ and CA₄, and on granule cells in the dentate gyrus. The major afferent pathway arises in the entorhinal cortex (area 28), an area particularly well developed in man and higher primates. The principal afferent path into the entorhinal cortex in turn comes from the cingulum. A second well established system comes into the entorhinal area more diffusely from the olfactory tubercle and periamygdaloid cortex (uncus). This system undoubtedly serves as a relay for olfactory input but also conveys influences arising from many other sources. The inputs to cornu Ammonis thus filter through a continuous sheet of cortex the cytoarchitecture of which varies considerably as it approaches the hippocampal fissure and the dentate gyrus. Following this cortex from its rostral environs, all medial to the rhinal fissure and looping up the surface of the hippocampal gyrus, there can be identified: olfactory tubercle (anterior perforated space in man), prepiriform cortex, periamygdaloid cortex (piriform cortex, uncus in primates), entorhinal cortex, parasubiculum, presubiculum, subiculum, and prosubiculum. An interesting feature in several of these areas is the gathering of similar sized cells into clusters or islands. Most highly developed are the islands of Calleja in the olfactory tubercle (Figure 5). The giant cells in the islands of Calleja in man resemble motoneurons in appearance, but other larger islands are formed by granule cells only 5 μ in diameter. The afferent fibers to the islands of granule cells come from the direction of the caudate nucleus and form an extremely dense plexus within the island. Smaller clusterings of large or small cells are found in periamygdaloid and entorhinal cortex and in the subiculum. The periamygdaloid cortex of man also contains many cells with spectacularly developed basal dendrites. All these cortical areas have a pattern of organization which differs distinctly from that of the neocortex, and are classified as "allocortex."

The entorhinal area gives rise to groups of fibers which cut directly through the subiculum to end in complex ramifications among the dendrites of the granule cells of the dentate gyrus (Figure 3). This perforant or temporoammonic path also sends fibers among the apical dendrites of CA₁ and CA₂ pyramidal cells (Figure 3). The granule cells of the dentate gyrus send out very fine axons which, however, have large bulbous endings (Figure 5 in Section 2.6). These enclose the dendritic spines of the apical dendrites of CA₁ and CA₂ neurons. With the Golgi stain these bulbous endings give the axons a characteristic appearance so that they are called "mossy fibers" (Figure 3). The mossy fiber endings and/or the dendritic spines are peculiar in containing relatively large amounts of zinc.

Amygdaloid system. The amygdala is a group of a dozen or more nuclei covered by the periamygdaloid cortex of the uncus and forming part of the hippocampal gyrus (Figure 2). The nuclei can be divided into two groups: the corticomedial, which can be traced phylogenetically back to cyclostomes; and a



FIGURE 3. Schematic drawing of the structure and connections of cornu Ammonis. A, entorhinal area; B, subiculum; C, cornu Ammonis; D, dentate gyrus; E, fimbria; F, cingulum; G, hippocampal commissure; H, corpus callosum; J, alveus; CA₁, CA₂, CA₄, sectors of cornu Ammonis; b, termination of cingulum in entorhinal area; c, perforant fibers of temporoammonic tract; h, apical dendrites of pyramidal cells; M, basal dendrites of pyramidal cells; N, axons of pyramidal cells (note recurrent collaterals in CA₁, perhaps contacting basket cells which are not shown); K, Schaffer collaterals; O, granule cells; J, mossy fibers; a, b, d, fibers from cingulum; g, cell of subiculum. (From Ramon y Cajal, *S. Histologie du Système Nerveux de l'Homme et des Vertébrés*. Consejo Superior de Investigaciones Cient., Madrid, 1955.)

basolateral group which first appears in reptiles and in man forms the major component of the system.

Like those for the hippocampus, the connections of the amygdala follow two principal pathways: a diffuse one, which constitutes the predominant pathway in man; and a compact fiber bundle, the stria terminalis (Figures 1 and 2), which like the fornix follows a long, looping path into the septal-preoptic region and contains both afferent and efferent fibers. The description of these pathways is still garbled by the inability to separate the contribution of periamygdaloid cortex from that of the amygdala per se.

The stria terminalis arises mostly from the caudal portion of the corticomedial complex. It passes first caudally and then follows the upward and rostrally curving course of the tail of the caudate nucleus. As it plunges toward the anterior commissure, it divides into several components (Figure 2), a small part going rostral to the commissure, some fibers crossing through the commissure, but most descending into the medial preoptic area and anterior hypothalamus. In man and other mammals the stria terminalis is accompanied throughout its course by a bed nucleus, forming a strip of neurons which are

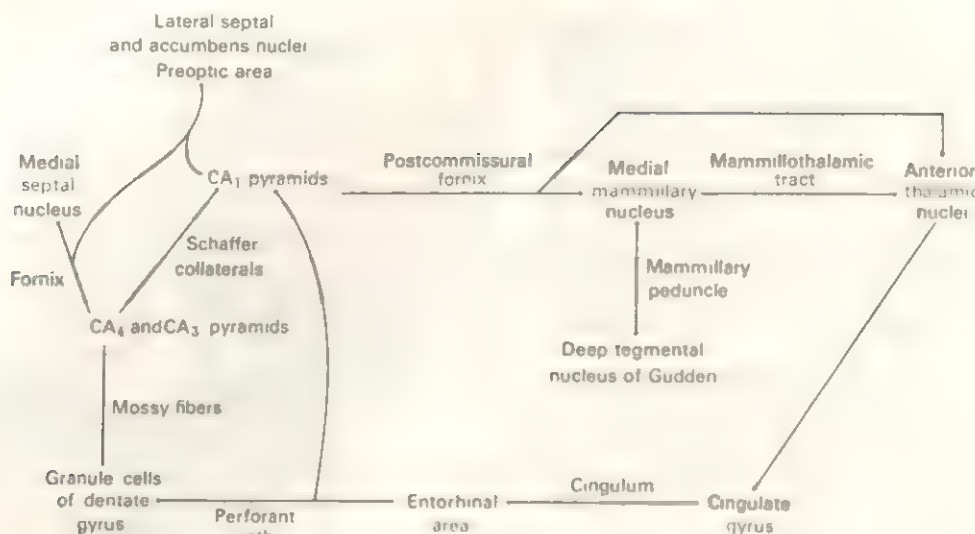


FIGURE 4. Summary of major connections of the hippocampal system.

clustered like the islands of Calleja. Similar islands occur in the central nucleus of the amygdala where the stria forms, and in nucleus accumbens and the substantia innominata of Reichert (Figure 5) not far from where it ends. At commissural levels the bed nucleus of stria terminalis enlarges considerably and becomes continuous with the bed nucleus of the anterior commissure and of the medial forebrain bundle (Figure 2); it has been described as a continuation of the anteromedial nucleus of the thalamus. It seems likely that the cells of the bed nucleus give rise to afferent fibers which course through stria terminalis into the amygdala. At commissural levels the cells in the bed nucleus of stria terminalis are innervated by many fibers which appear to be of thalamic origin. Some of these fibers continue on into the stria.

In man the stria terminalis is relatively small, and most fibers leaving and entering the amygdala course ventromedially through a sublenticular path. This bundle of fibers is about the size of the anterior commissure, although not nearly so compact. Within the amygdala it arises principally from the basolateral complex as the longitudinal association bundle of Johnston. It passes into the lateral preoptic area and lateral hypothalamus. Rostrally this ventral amygdalofugal pathway forms the diagonal band of Broca conveying fibers to the olfactory tubercle, substantia innominata, and medial septal nucleus.

The periamygdaloid cortex projects strongly into the amygdala, in part relaying olfactory input. The cortical nucleus of the amygdala receives fibers from the lateral olfactory tract and thus forms part of the same system as the periamygdaloid cortex. Afferents to the amygdala from other sources are ill defined. Two-way connections between the amygdala and insular-temporal cortex, however, have often been described.

The many nuclear groups seen in the amygdala with Nissl stains do not differ from one another in any obvious way in Golgi preparations, and nuclear boundaries are then obscured. Cells in the corticomедial group do seem to have fewer dendrites than do cells in the basolateral group. The system of axon collaterals in the amygdala is very profuse, indicating the occurrence of extensive intranuclear elaboration of amygdaloid activity.

Habenular-interpeduncular system. This system seems to be relatively undeveloped in man and has not been thoroughly studied in any species. The habenulae are nuclear masses of the epithalamus divisible even in cyclostomes into two distinctly different nuclei. An early problem in cerebral domi-

nance is presented in these structures since for petromyzonts the right habenula is always larger than the left while the reverse is true for sharks; and among teleostean species either right or left dominance or a symmetrical arrangement can be found.

In mammals the medial habenular nucleus consists of small, pale staining cells, 10 to 15 μ in diameter, of the "sensory" type (Section 2.5) with short dendrites which, together with afferent fibers from the stria medullaris (Figures 1 and 6), form very complex glomerular structures. The axons of these small cells pass directly into the medial aspect of the habenulopeduncular tract without branching. Cells of the lateral habenular nucleus, on the other hand, are of the typical "reticular" type, 20 to 26 μ in diameter. Fibers from the stria medullaris ramify profusely within the lateral nucleus. This diffuseness of effect is enhanced by numerous intranuclear collateral fibers given off by axons of the cells of this nucleus as they pass towards the habenulopeduncular tract. The lateral habenular nuclei are also interconnected with each other via the habenular commissure.

Fibers from the posterior septal area pass to the medial habenular nucleus, and the lateral habenular nucleus receives a powerful input from the preoptic area and the anterior nuclei of the thalamus (Figure 6). These inputs course in the stria medullaris. Many other sources for the stria medullaris have been claimed, but the foregoing probably constitute the major direct pathways. Electrophysiologically the fornix can be shown to project via the stria medullaris into the habenula and interpeduncular nucleus, but a synapse apparently occurs prior to the stria medullaris portion of this projection.

The interpeduncular nucleus contains cells of several types. The afferent fibers from the habenulopeduncular tract (Figure 1) lose their myelin upon entering the nucleus, and the bare axon then follows a peculiar "figure eight" course, crossing the midline and then returning to give off collaterals and break up into terminal arborizations. Afferents are also derived from the mammillary nuclei (Figures 1 and 6). Efferents project diffusely into the posterior tegmental area, particularly to the dorsal tegmental nucleus of Bekterev. These efferents join fibers of similar destination from the lateral habenular nuclei, which course down the habenulopeduncular tract but bypass the interpeduncular nucleus. A few fibers from the substantia innominata of Reichert in the preoptic area even follow the peculiar course through stria medullaris, habenulopeduncular tract, peduncular-tegmental tract to reach locus coeruleus!

The tegmental areas project back upon the interpeduncular nucleus and to some degree even to the lateral habenular nu-

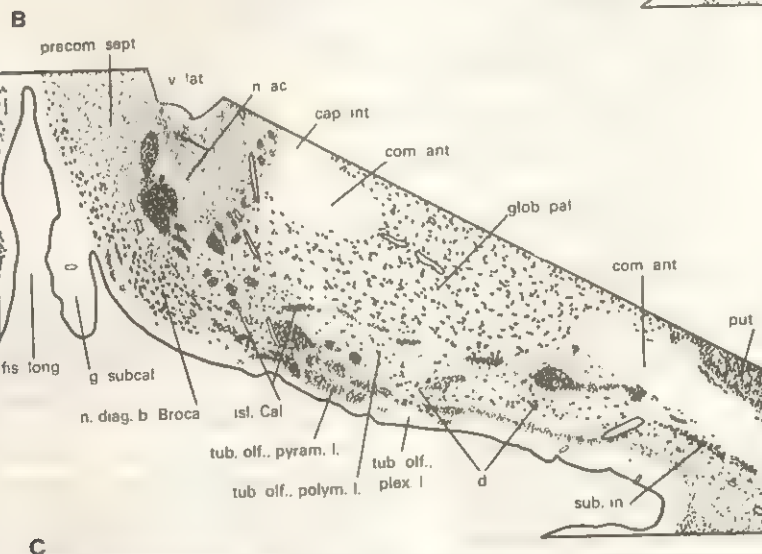
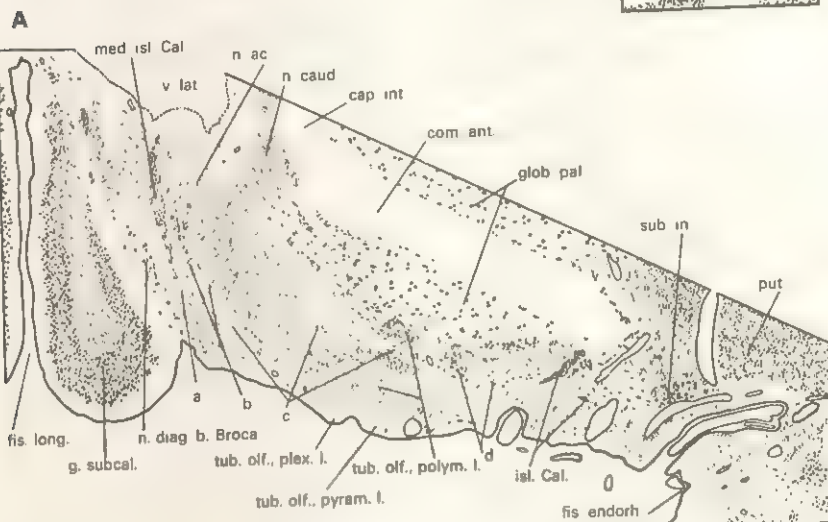
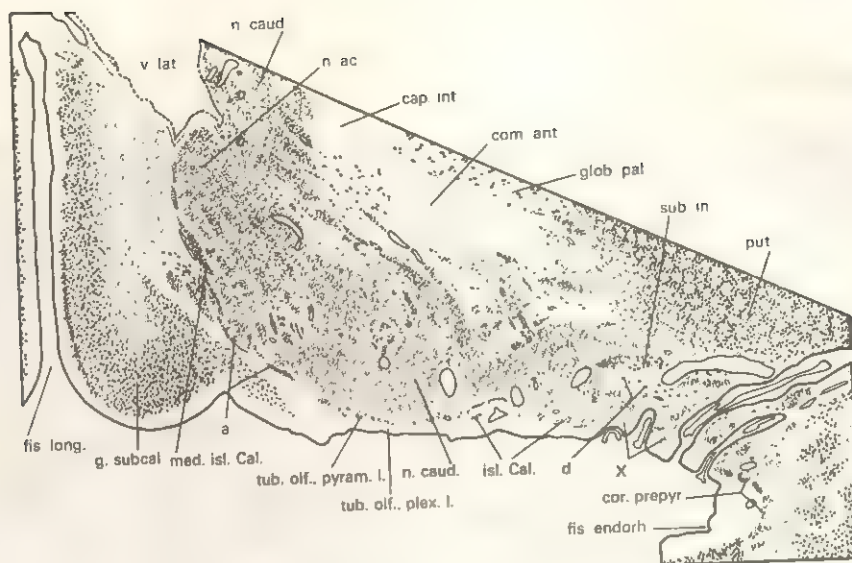


FIGURE 5. Transverse sections through rostral (A), middle (B), and posterior (C) levels of human olfactory tubercle, illustrating various cellular groupings. *a*, ventral extension from medial island of Calleja toward neocortex; *b*, further extension of the medial island of Calleja suggesting a boundary of the caudate nucleus; *c*, neurons intercalated between the olfactory tubercle and the caudate nucleus; *cap. int.*, internal capsule; *com. ant.*, anterior commissure; *cor. prepyr.*, prepiriform cortex; *d*, large neurons of olfactory tubercle; *fis. endorh.*, entorhinal fissure; *fis. long.*, longitudinal fissure, i.e., midline; *g. subcal.*, subcallosal gyrus or medial island of Calleja; *med. isl. Cal.*, medial island of Calleja; *n. ac.*, nucleus accumbens; *glob. pal.*, globus pallidus; *n. diag. b. Broca*, nucleus of the diagonal band of Broca; *precom. sept.*, lateral septal nucleus or nucleus of the diagonal band of Broca; *n. caud.*, caudate nucleus; *put.*, putamen; *sub. in.*, substantia innominata of Reichert; *X*, indication of folding in cortical layer of olfactory tubercle; *tub. olf. pyram. l.*, pyramidal cell layer; *tub. olf. plex. l.*, plexiform layer; *tub. olf. polym. l.*, polymorphous layer; *tub. olf.*, olfactory tubercle; *v. lat.*, lateral ventricle. (From Crosby, E. C., and Humphrey, T. Studies of the vertebrate telencephalon. II. The nuclear pattern of the anterior olfactory nucleus, tuberculum olfactorium and the amygdaloid complex in adult man. *J. Comp. Neurol.*, 74: 309, 1941.)

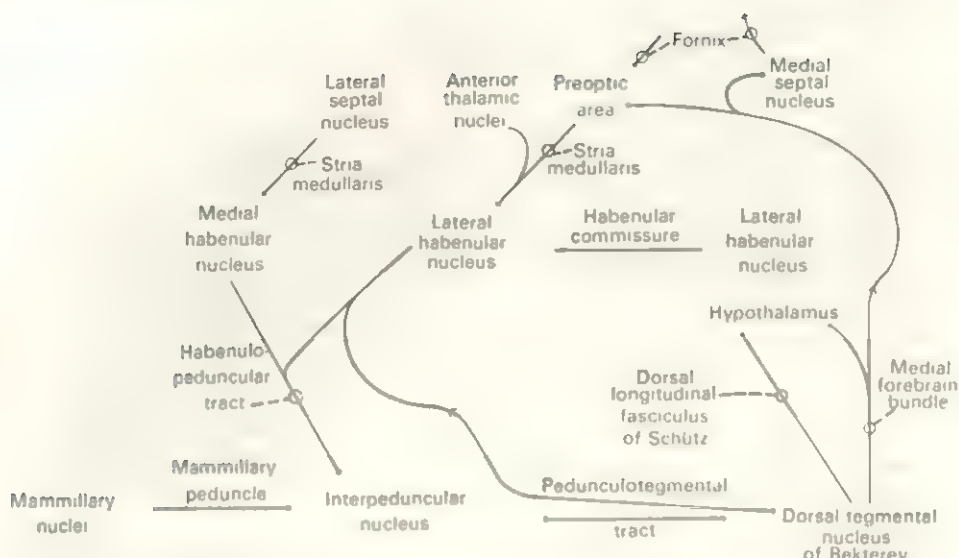


FIGURE 6. Summary of major connections of the habenular-interpeduncular system.

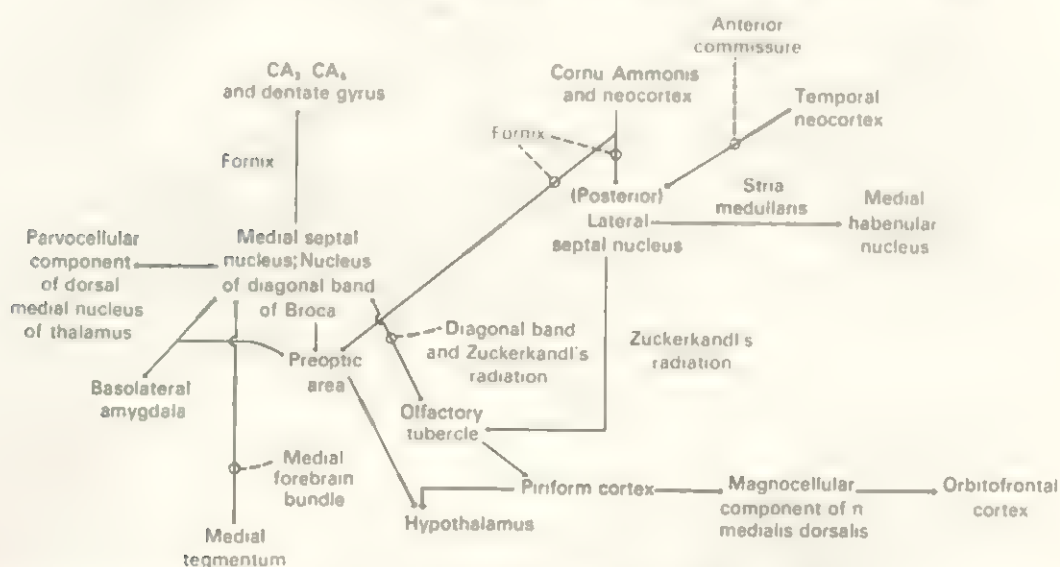


FIGURE 7. Summary of major connections of the septal area.

cleus. They also project into the hypothalamus via the dorsal longitudinal fasciculus of Schütz as well as along the medial forebrain bundle system into the preoptic area, medial septal nucleus, and nucleus of the diagonal band of Broca. The latter two groups project into the hippocampus via the fornix (Figures 4 and 7).

Basal forebrain: Rhinencephalon. The entrance zone of the olfactory tracts on the rostrobasal surface of the brain is marked by extreme anatomical complexity. The system associated with the olfactory input is termed the "rhinencephalon" and, except for omission of neocortical components, the term rhinencephalon is essentially synonymous with limbic system. The realization that most rhinencephalic or limbic structures (with the possible exception of the dentate gyrus and the corticomedial components of the amygdala) are equally well developed in birds or cetaceans that lack olfactory input has prompted a

reappraisal of the role of the limbic system in olfaction. Nevertheless, it is clear phylogenetically that the limbic system has developed in association with the olfactory system. Furthermore, it is easy to understand how emotional reactivity and species-specific, stereotyped behaviors have been organized primarily under olfactory control. Every night for at least 100 million years the early vertebrates appraised their future solely with the olfactory sense as they swam forward in the dark and silent seas to eat or be eaten. The same nocturnal appraisal with all its associated reactions for mammalian prey and predator alike continues to provide a prime link to survival. Sexual contact and behavior have similarly come to be dominated by olfactory cues, and a well supported perfume industry bears familiar testimony to the lingering relevance of olfaction even in the sexual activity of man.

The primary olfactory input is processed first within the intricate systems of the olfactory bulb where a reduction of about 300:1 occurs between the number of incoming and outgoing fibers. Axons of the large mitral cells of the bulb pass centrally in the olfactory tract. They are joined by axons of cells from the anterior olfactory nucleus which are scattered within the tract. As the olfactory tract spreads into the brain, so too does the anterior olfactory nucleus, merging posteriorly with the prepiriform cortex and laterally into neocortex. The olfactory tract divides into lateral and medial components. The former spreads diffusely into prepiriform and piriform cortex, in the corticomедial nuclei of the amygdala, and, to some degree, into the lateral boundary of the anterior perforated substance. The smaller, medial olfactory tract of fine fibers, arising largely from tufted rather than mitral cells of the olfactory bulb, passes mostly across the anterior limb of the anterior commissure to the contralateral olfactory bulb. It probably also sends fibers into the medial septal nucleus, nucleus of the diagonal band, and the medial portion of the anterior perforated substance.

The latter area (Figures 1 and 5) is marked by a dense infiltration of small blood vessels and by the islands of Calleja. Its major afferent supply comes not from the olfactory tracts but from the septal area via the diagonal band. Its efferents form one of the major components of the median forebrain bundle and also project into the piriform and entorhinal cortex, medial septal nucleus, and olfactory bulb.

At its caudal border the anterior perforated substance joins part of the olfactory radiations of Zuckerkandl, which in turn merge with the diagonal band of Broca. The nucleus of the diagonal band is continuous with the medial septal nucleus and laterally with the globus pallidus, all being characterized by rather large cells of the reticular type. Further relation of the limbic system with a basal ganglia is found in this region with the continuation of the caudate nucleus as nucleus accumbens septi (Figure 5), and with the large cells of the substantia innominata of Reichert which are the rostral elements in a system known as the nucleus basalis of Meynert. The latter is associated with the globus pallidus and is particularly well developed in primates, forming clusters of cells between the optic tract and anterior commissure and the medioventral border of globus pallidus. The nucleus basalis degenerates following lesions of the temporal lobe.

As seen in several instances above and in phylogenetic development, the basal ganglia have an intimate relation with the limbic system. Furthermore, much stereotyped behavior depends upon the basal ganglia for its organization, and stimulation of the basal ganglia not uncommonly produces motivating effects. Thus there is some inclination to look upon the basal ganglia as important ancillary structures of the limbic system. However, since the basal ganglia are also intimately related with the neocortex, their equal association with the limbic system cannot be unduly emphasized.

The lateral septal nucleus is distinguished from the medial in having neurons of the "sensory" rather than the "reticular" type. Its afferents come predominantly from the fornix, and it is probable, because of its cell type, that it rather than the medial septal nucleus gives rise to the fibers that project to the sensory-type cells of the medial habenular nucleus (Figure 7). Stimulation of the septal area also evokes potentials in the dorsomedial nucleus of the thalamus.

The septal nuclei, nucleus of the diagonal band, the anterior perforated substance, and substantia innominata posteriorly shade over into the preoptic area, which in turn becomes the anterior hypothala-

mus (Figure 2). The preoptic area consists mostly of cells with short axons; receives input from the fornix, septum, and amygdala; and is traversed by and contributes to the medial forebrain bundle as well as fiber systems passing from piriform cortex to the dorsal medial nucleus of the thalamus. It also sends many fibers to the lateral habenular nucleus.

In summary (Figure 7), the basal forebrain is a point of focus and/or transit for about eight systems: (1) olfactory input to piriform cortex; (2) connections to and from the hippocampal system and the septal and preoptic areas; (3) connections to and from the amygdala and the preoptic-septal region; (4) connections to and from the tegmentum and septal area; (5) afferents to the habenular-interpeduncular system; (6) relations to the temporal lobes via the anterior commissure and the nucleus basalis; (7) afferents from piriform cortex to the magnocellular component of n. medialis dorsalis and the projection of the latter upon orbitofrontal cortex; and (8) efferents into the hypothalamus via the median forebrain bundle. In addition, recent electrophysiological evidence indicates that this basal forebrain region distributes centrencephalic influences onto the dorsal convexity of the frontal lobe.

Neuroendocrinology and the Hypothalamus

Anatomy. The connections to and from the hypothalamus place it definitively within the limbic system, and the physiological and behavioral correlates of its activity affirm this classification. In Golgi stain the cells of the hypothalamus are all of the reticular type, and in the lateral hypothalamus particularly, the reticular organization is also apparent in the arrangement of fibers and cells. Of course there are many varieties of "reticular" neurons, and in man Nissl stains demonstrate about nine principal cell types in the 17 nuclei into which the hypothalamus can be divided. For the present discussion, however, only the anterior, lateral, and ventromedial hypothalamic areas need be considered plus the nuclei specifically giving rise to neurosecretory tracts.

The ventromedial nucleus seems to be organized to serve as a distribution center. Fibers from this nucleus first ramify extensively within it, then pass to all parts of the hypothalamus, especially to anterior and lateral areas, some attaining the lateral area of the other side via Meynert's commissure associated with the optic chiasm. The afferents to the ventromedial nucleus are mostly of small calibre and branch profusely, thus producing a diffuse and random appearing network. The terminals are small but filled with the usual type of synaptic vesicles. The afferent and efferent exchange of the lateral hypothalamus is with distant areas, i.e., outside the lateral hypothalamus. It probably receives more nonhypothalamic afferents than any of the other hypothalamic areas. Collaterals of efferent fibers from the lateral hypothalamus do not ramify within this area but instead project into the medial nuclei.

The most powerful afferent system playing upon the hypothalamus arises in the rostral mesencephalon, i.e., in the reticular formation and central gray. There are essentially no direct connections of neocortex with the hypothalamus, but since the dorsal prefrontal cortex projects into the foregoing

mesencephalic areas, a potentially strong link exists. The amygdala and especially the septal-preoptic area also contribute numerous afferents to the hypothalamus.

Descending efferents from the hypothalamus pass through the dorsal longitudinal fasciculus of Schütz, but they are rather meagre from the medial nuclear groups. This suggests that most of the longer efferents arise in the lateral hypothalamus, although this possibility is difficult to study independently of the medial forebrain bundle. It does indicate that the dorsal longitudinal fasciculus is predominantly afferent to the hypothalamus. None of the hypothalamic efferents reach the spinal cord, and most terminate in the midbrain rather than medulla. The rostromedial groups project anterodorsally and contribute fibers to the stria medullaris and possibly stria terminalis.

Two efferent paths supply neurosecretory material to the hypophysis. The first is the well known hypothalamohypophyseal tract, in man about 100,000 fibers, arising from large cells in the supraoptic and paraventricular nuclei and terminating upon blood vessels (Figure 8) in the neurohypophysis (posterior lobe of the pituitary gland). The supraoptic and paraventricular nuclei have a particularly rich blood supply. Within the cell bodies and all along the nerve fibers aggregations of specially staining material are readily discernible. The fibers often have a beaded appearance from the presence of organized masses (Herring bodies) of this material ranging in size up to that of the cell body itself. For many years it was thought that the pituicytes within the neurohypophysis stored the hormonal material. Electron microscopic evidence (Figure 8), however, indicates that the 750- to 2000-Å neurosecretory granules of the nerve endings only rarely get into the pituicytes (seemingly by phagocytosis). The pituicytes are similar in appearance to fibrous astrocytes. In the newborn monkey they form a glia-like barrier which disappears from around the blood vessels as the animal matures. Their role, if any, in the hormonal activity of the posterior lobe is thus unknown. Perhaps equally puzzling in the neurosecretory process is the presence of typical synaptic vesicles along with the secretory granules and small Herring bodies in the endings which the hypothalamohypophyseal tract forms upon the capillary network within the posterior lobe (Figure 8). In macaques the hormonal release appears to be accomplished primarily by the passage of intact small Herring bodies into the vascular system. Nerve endings are also sometimes pinched off and pass into the blood stream. In addition, the secretory granules of the nerve endings are depleted individually of their osmophilic core, as in the opossum (Figure 8), and/or release the entire neurosecretory granule.

The other secretory efferent path is the tuberoinfundibular tract. This is a fine-fibered system arising from small cells of the periventricular, tuberal, and possibly other nuclei. The beads of secretory material found in these fibers have entirely different staining characteristics from those in the hypothalamohypophyseal tract. The fibers terminate upon capillaries and as palisades overlying the "Mantelplexus," a dense capillary plexus on the surface of the pars tuberalis.

The neurosecretory material could be carried thence to the adenohypophysis by way of the portal circulation. However, beyond the fact that the hypothalamus definitely controls the adenohypophysis and that the portal circulation moves from the tuberal region to the pars distalis (anterior lobe), morphological knowledge concerning the transport, storage, and release of the hormonal materials is almost nonexistent.

Neurohypophyseal system. Two types of response are produced by neurohypophyseal hormones: (1) alteration of the permeability of certain membranes to water; and (2) contraction of smooth muscle. Two different hormones are secreted, but each can to some

degree produce both types of responses. The hormones are peptides that are species-specific and display a fascinating phyletic constancy (Figure 9). Oxytocin is present from amphibia on through mammals. In the latter it is particularly effective in producing uterine contractions and milk ejection. Arginine vasopressin is found in monotremes, marsupials, and most mammals. It causes contraction of arteriolar smooth muscle and thus increases blood pressure. Its major role, however, is the control of the osmolality of the blood by its action upon water reabsorption in the distal tubules of the kidney. In this latter role it is called the "antidiuretic hormone" (ADH). Its absence following hypothalamic lesions has long been recognized as the cause of diabetes insipidus.

Conditions which change the osmolality of the blood quickly affect the release of ADH and alter the amount of neurosecretory material which can be demonstrated in the hypothalamohypophyseal system. Thus, drinking hypertonic solutions or injecting them intravenously causes a great outpouring of ADH to conserve water, and the neurosecretory material then becomes sparse. On the other hand, overloading the organism with water induces a spectacular increase in the amount of neurosecretory material. The stainable material seen with the light microscope is not the hormone *per se* but is likely to be a lipoprotein to which the hormone is attached. The role of this protein material or even whether the hormone is indeed attached to it in the nerve fibers remains uncertain.

ADH secretion is also altered by many seemingly nonspecific factors such as pain, cold, or electrical stimulation of certain limbic areas. The neural control is thus rather complex, and the question arises whether or not it is integrated primarily within the supraoptic nuclei and whether secretory cells have the electrophysiological behavior of other neurons. The latter question received an unequivocal answer in the goldfish where intracellular recordings can be made from secretory neurons in the preoptic nucleus (which in reptiles, birds, and mammals differentiates into the supraoptic and paraventricular nuclei). Spike potentials, excitatory and inhibitory postsynaptic potentials, etc. are all comparable to those of any large neuron. Antidromic stimulation of the preoptohypophyseal tract induces inhibitory postsynaptic potentials of such short latency as to suggest that recurrent collaterals of the secretory neurons have direct intranuclear inhibitory connections. Extracellular records from neurons in the mammalian supraoptic nucleus also demonstrate spike potentials, and their background frequency is determined by the osmolality of the blood. Since a hypothalamic island containing the supraoptic nuclei and intact hypophyseal system isolated from the rest of the brain can still respond to changes in blood electrolytes, it seems very likely that the secretory neurons are themselves the osmoreceptors. Their possession of normal electrophysiological activity also suggests that these neurons might integrate activity impinging upon them from several other neural sources, and that it is neural discharge which liberates the hormone from the nerve endings. Support for the latter concept comes from the fact that neurohypophyseal hormonal stores, though temporarily ample, cannot be released by hypertonic injections following section of the hypothalamohypophyseal tract.

Adenohypophyseal system. Six hormones are known to be secreted by the anterior lobe of the pituitary gland. These hormones are peptide or protein in nature and have varying degrees of specificity. They control the action of other endocrine glands. Adrenocorticotrophic hormone (ACTH) is the only one so far identified chemically. It is a straight pep-



FIGURE 8. Diagram of the electron microscopic features, at about 9000 \times , of the neurohypophysis of the opossum. *c*, lumen of blood vessel; *e*, endothelial lining of capillary with numerous "pores"; *s*, septal zone which consists of collagen bounded by basement membranes (*b*). The septal zone separates the axon terminals (*t*) from the blood vessel wall, and contains mast cells (*m*) and fibroblasts (*f*). Synaptic vesicles (*arrow*) are clustered almost exclusively at tips of terminals abutting on the septal zone. The axons themselves (*a*) are generally free of neurosecretory granules (the dark, small spherules with light ring about them). In some axon terminals (*X*) many of the granules have lost their osmiophilic core. The small Herring body (*H*) also contains neurosecretory granules. The pituicytes (*p*) are relatively clear, with a light nucleus (*n*) and occasional dense inclusions (*double arrow*). The arrangement in macaques is basically similar to this except for presence of greater numbers of small Herring bodies and a reduced pituicyte system. (From Bodian, D. Cytological aspects of neurosecretion in opossum neurohypophysis. *Bull. Johns Hopkins Hosp.*, 113: 57, 1963.)

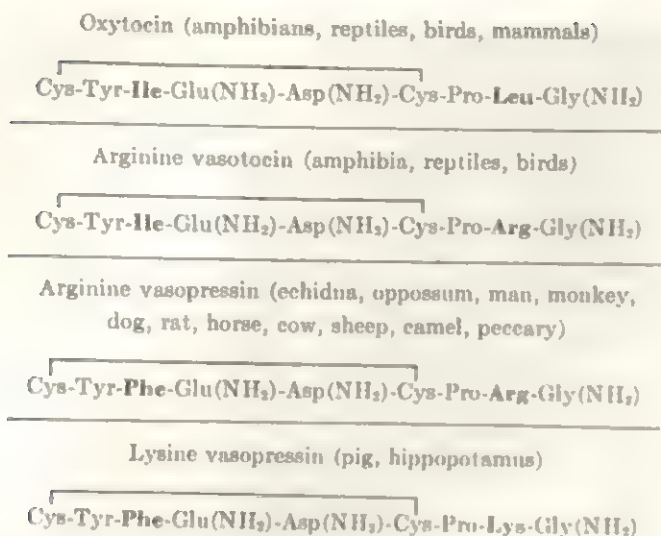


FIGURE 9. Chemical structure of neurohypophyseal hormones in various species.

tide of 39 amino acids having a molecular weight of about 4,500. The secretions of the adrenal cortex, which regulate salt and sugar metabolism, leukocyte behavior, and general body responses to inflammation or "stress," are controlled almost completely by ACTH. The other hormones are: follicle-stimulating hormone (FSH) and luteinizing hormone (LH), necessary for maintenance of functioning gonads in either sex and paramount in the regulation of the female sexual cycle; prolactin, which produces secretion from the mammary glands and also has a luteotropic hormone (LTH) effect; thyroid-stimulating hormone (TSH), controlling general metabolic rate and thus a wide variety of body functions and neural maturation; somatotrophic hormone (STH), which also regulates body metabolism in a general and poorly understood manner and controls growth, particularly by its influence on bone epiphyses.

There are only two cell types, the acidophils and basophils, in the adenohypophysis which are likely to be the source of these six hormones. Which hormone comes from which cell is by no means certain. Furthermore, hormonal production is almost wholly dependent upon the hypothalamus. The one exception to this is prolactin, the production of which is inhibited by the hypothalamus, so that following hypothalamic lesions, transplantation of the gland beyond reach of the portal circulation, or explantation of the gland to artificial media, prolactin production is augmented while the other hormones essentially disappear. Adding hypothalamic but not other neural tissue to a culture of the adenohypophysis supports the production of ACTH. Similarly, if adenohypophyseal tissue is implanted into the hypothalamic area from which the tuberoinfundibular tract arises, normal basophils and sexual cycles in hypophysectomized female rats can be maintained, but if the tissue is implanted elsewhere in the brain the basophils atrophy and the females remain anestrus. The survival of acidophils in such transplants depends solely upon whether the thyroid gland is maintained in a good trophic condition.

The evidence thus points strongly to the likelihood that the tuberoinfundibular tract releases substances into the portal circulation which are necessary for the manufacture and release of the adenohypophyseal hormones. Whether these substances, which seem to be peptides, are incorporated into the hormones themselves or merely exert a control over the secretory cells remains unknown, and they are presently spoken of only as "releasing factors."

In a number of instances release of adenohypophyseal hormones has been obtained by electrical stimulation of the hypothalamus or other areas of the limbic system, whereas stimulation of the adenohypophysis itself is ineffective. More important, of course, is the fact that a great variety of natural stimuli processed via the nervous system are capable of profoundly influencing hormonally controlled processes. Most familiar perhaps is the production of menstrual irregularities in women by emotional disturbances. The influence may be more subtle, as the frequent failure of pregnancy to develop in mice under conditions of crowding or when exposed to the odor of male mice of another strain. In many species the sexual cycle is under control of photoperiodicity. Ovulation occurs in some species (e.g., cat and rabbit), only following vaginal stimulation, and such stimulation can be demonstrated to produce bizarre electrical patterns in the lateral hypothalamus. Pain or other "stress" causes great augmentation of ACTH release. The neural mediation of these effects was dramatically demonstrated in a dog maintained for months with its brain stem transected at the collicular level. ACTH was not released in this animal following a laparotomy, which is usually a powerful stimulus, whereas it was augmented when the animal was restrained in a strange environment—thus incidentally demonstrating some degree of "awareness" in the isolated forebrain.

The neurons from which the tuberoinfundibular tract originates also seem to be sensitive to the titer of hormones secreted by the target organs of the adenohypophysis. This chemoreceptor function of the hypothalamic neurons thus provides for feedback regulation of the hormonal system. A high hormone titer will cause the hypothalamic neurons to diminish production or release of the appropriate "releasing factor" and thus lower stimulation of the target organ by the adenohypophysis. If the receptive mechanism of the hypothalamus is "deceived" by the implantation of a pellet of hormone, such as estradiol, testosterone, or hydrocortisone, in the appropriate nucleus, the curtailment of "releasing factor" and consequent

failure of adeno-hypophyseal support of the target organ is so severe as to be equal to hypophysectomy in its effects.

Other possible neurohormonal systems. After thyroidectomy, cells in the medial habenular nucleus undergo a 10 to 20 per cent decrease in size. Habenular lesions, on the other hand, produce a slight obesity, detectable changes in the histology of the adeno-hypophysis and thyroid, and an impaired ability to increase thyroid activity upon exposure to cold. This somewhat tenuous connection of the habenula with the thyroid gland can be associated with an equally suggestive but tenuous relation to temperature regulation. The major source of habenular afferents is the preoptic area, which is directly and exquisitely sensitive to temperature changes. Local heating of the preoptic area inhibits shivering and produces panting without reference to general body temperature. The effect can be imitated by electrical stimulation either in the preoptic area, in the habenula, or in the interpeduncular nucleus. Section of the stria medullaris, however, does not abolish panting to raised body temperature (whereas preoptic lesions do), but it does forestall the pronounced "emotional" panting seen in rabbits upon restraint.

A role for the habenula in temperature regulation might have arisen phylogenetically from its association with the pineal organ. The latter has two distinct components, one for photoreception, the other for secretion.

In fish, amphibia, and reptiles both elements are present. In some the pineal eye is very well developed with a clear cornea, typical rods and cones, and ganglion cells from which spike potentials can be recorded in response to light. Behaviorally, the pineal eye seems to effect changes in pigment distribution and temperature regulation (basking in the sun) and have some influence over thyroid function. In primitive vertebrates the glandular portion of the pineal organ appears to be even more important than the hypophysis, and it is only this glandular element which survives in mammals. The pineal gland receives a rather rich innervation from fibers arising in the superior cervical ganglion. They end upon pineal parenchymal cells in terminals packed with the norepinephrine type of synaptic vesicles.

The nature of the undoubted secretion of the mammalian pineal organ remains elusive as does its relation with the subcommissural organ with which it is connected by a portal circulation reminiscent of that between the hypothalamus and hypophysis. The circulation passes from the subcommissural organ to the pineal body, but the analogy cannot be pressed far since the subcommissural organ is composed of secretory cells closely similar to those in the pineal body. The subcommissural organ lies just beneath the habenular commissure and covers the surface of the posterior commissure and the oral-dorsal surface of the aqueduct. It is richly vascular, with rosettes of secretory cells surrounded by capillaries. In addition to secretion into the blood stream, it also gives rise to a strange secretion into the cerebrospinal fluid. This is Reiser's fiber, a continuous strand of protein, 5 to 25 μ in diameter in man, which passes through the aqueduct into the fourth ventricle and often down the central canal of the spinal cord. In lower forms it reaches the end of the central canal, and the secretion leaves via a network of periepithelial lymphatic vessels. The subcommissural organ is particularly well developed in young individuals and regresses considerably in

most adults. The organ is apparently concerned with water and electrolyte metabolism and is related to the aldosterone secretion of the adrenal cortex. In this connection it is of interest that adrenalectomy also produces an increase in size of cells in the medial habenular nucleus.

The subformical organ, lying against the fornix at the rostral end of the third ventricle and adjoining the origin of the choroid plexus, is a nodule of tissue highly similar to that of the pineal-subcommissural system. Its function is completely unknown save for its serving as a receptor site for the production of hyperglycemia following the intraventricular injection of morphine!

Behavioral Aspects

Electrical stimulation of the limbic system in anesthetized animals readily reveals its links with the autonomic and endocrine systems. Cardiovascular and/or respiratory responses are common, as are changes in muscular tone; and a wide variety of other effects is obtained, among them ovulation, gastric or bladder motility, penile erection, chewing, licking, swallowing, salivation, piloerection, vocalization of attack, and changes in blood sugar or renal function. Lesions in the limbic system similarly affect various aspects of these functions. It is, however, in the behavior of waking, active animals that the most significant effects are obtained. Interest in the behavioral manifestations of limbic system disturbances received a great impetus in 1937 with the discovery, made on a monkey prophetically named "Aurora," of the constellation of effects now known as the Klüver-Bucy syndrome following bilateral removal of the tips of the temporal lobes. The four major effects are: (1) tameness and lack of fear; e.g., the wild animal no longer flees from man or snakes; (2) hypersexuality; (3) persistent oral exploration (objects repeatedly mouthed and grasped with lips in preference to hands; dietary changes also notable); and (4) visual agnosia (objects compulsively explored again and again, difficult visual discriminations require very extensive training even though learned preoperatively). It is conceivable that this peculiar visual deficit accounts in some measure for symptom (1) above.

The lesion producing this syndrome includes all of the uncus and amygdala, and most of the hippocampus. If the lesion is limited to neocortex, there is a permanent deficit in visual abilities (and the optic radiation is intact), and temporary tameness and oral exploratory behavior.

Fear-aggression. Electrical stimulation throughout an extensive subcortical area in freely moving cats produces growling, spitting, pupillary dilatation, piloerection, and arching of the back. Whether the animal flees or attacks under these circumstances is determined as much by its opportunities as by the location and intensity of the stimulation. Frequently it endeavors to escape from the locale where it found itself upon onset of the stimulation, but if escape is blocked, or there is a suitable object such as a rat, another cat, a stuffed animal, or an experimenter's

hand in the immediate vicinity, a directed attack is made upon this object. Cats so stimulated will learn to seek objects to attack, as though in such circumstances the performance of the attack was rewarding.

Stimulation in the amygdala, afferent fibers in stria terminalis, preoptic area, much of the dorsomedial hypothalamus and especially the central gray produces these effects. Lesions in the hypothalamus do not interfere with the effects obtained by stimulation of the central gray, whereas destruction of the central gray temporarily abolishes such responses to stimulation at other loci and subsequently predisposes the animal to flight rather than attack. Stimulation at slightly more lateral loci in the hypothalamus can produce attack which has more the aspects of hunting-predatory behavior, without such severe spitting, crying, and piloerection. Elements of this hunting behavior can be "released" by large lesions involving the central gray and dorsal tegmentum. Cats with these lesions may spend their entire waking life slinking upon nonexistent prey, carrying objects in their mouths as though they were prey, or fishing and pawing into holes, corners, or water. In other words, they constantly display portions of predatory behavior completely out of context.

Some rats immediately kill and eat mice placed in their cage while other rats will never harm the mice. This is a genetically determined trait. However, "non-killers" can be converted into savage killers by bilateral removal of the olfactory bulb, or prepiriform cortex, or section of the lateral olfactory tract. It might be inferred from this that killers merely have a deficiency in their olfactory system. This is disproven, however, by the fact that killers will start to attack a young rat the size of a mouse but abruptly stop upon smelling it. Although handicapped in sensing the presence of a mouse, rats without olfactory bulbs with their eyes closed, whiskers cut, and ears filled with wax will still kill immediately upon contacting a mouse, or in this instance a small rat as well. The killing is separable from eating since animals that are aphagic and adipsic following lesions of the lateral hypothalamus will still kill mice even though they don't eat them. Bilateral destruction of the central (not lateral nor basal) nucleus of the amygdala or complete interruption of the diffuse subpallidal amygdalohypothalamic path permanently abolishes the killing behavior. Section of stria terminalis has no effect. It is thus possible to specify with considerable precision the anatomical substrate organizing this aggressive behavior.

Feeding. Electrical stimulation of the lateral hypothalamus just within the debouchment of ansa lenticularis causes fully satiated animals to eat avidly. Bilateral lesions in this area produce aphagia and adipsia. With long and careful nursing some degree of natural feeding can be restored, but usually only for the most palatable foods, and adipsia is likely to be permanent. The deficit is one of appetite rather than

ability to feed. Adipsia together with impairment of temperature regulation but without aphagia is produced by preoptic lesions. Lesions in the ventromedial nucleus of the hypothalamus, on the other hand, produce animals that are savage and obese. Their obesity, however, is maintained only with palatable food, and they will starve more readily than normal animals if forced to feed exclusively on unpalatable material such as food with quinine in it.

As a first approximation it can be hypothesized that the lateral hypothalamic area is concerned with appetitive food intake and that the ventromedial nucleus acts as a "satiety center," inhibiting the lateral-lying "feeding center." The concept gains some support from the rather strange fact that adrenergic agents placed in the lateral hypothalamus induce feeding behavior whereas cholinergic agents at the same locus or in many other loci in the limbic system induce drinking of water. A number of facts, however, point to the possibility that the globus pallidus may participate in the organization of feeding behavior. The sites of electrical stimulation in the lateral hypothalamus from which feeding can be induced lie directly in the path of pallidofugal fibers, and stimulation along their course in the ventral tegmental area of Tsai and beneath the central gray is also able to elicit immediate feeding in satiated animals. Cholinergic drugs in the globus pallidus also elicit feeding, and lesions there produce aphagia. Finally, cats with cortex and basal ganglia removed do not feed spontaneously, even though the lateral hypothalamus has not been directly affected, whereas essentially normal feeding behavior is present in decorticate cats with most of the basal ganglia intact.

Sex. Since sexual activity in most laboratory animals except primates is under rather close hormonal control, efforts to elicit sexual behavior by electrical stimulation of the brain have not been numerous. Such stimulation in squirrel monkeys has revealed several areas in the limbic system from which penile or clitoral erection can be induced. In this species, however, penile erection serves as a display in social interchange within the colony so that the sexual significance of the systems studied is contaminated by other complex behaviors.

The hypersexuality of the Klüver-Bucy syndrome has been well studied in cats, and the relevant locus has been found to lie in the piriform cortex. Male cats with lesions in this area attempt copulation almost continuously in any territory and with any object they can grasp. Without testosterone such behavior gradually subsides. The complex sexual pattern of "calling," treading, and rolling seen in the female cat is also entirely under control of the estrogen titer of the blood. It can, however, be elicited in full by implantation of a small pellet of stilbestrol in the posterior hypothalamus, which does nothing to the peripheral genital system.

The situation has been observed in an even more

fascinating manner in rats. Implantation of testosterone in the medial preoptic area of either male or female rats can occasionally elicit strong maternal behavior of nest building and retrieval of pups. The demonstration that males possess the neural organization necessary for maternal behavior is of considerable import. On the other hand, when the testosterone is placed in the lateral, preoptic area, male sexual behavior of mounting and thrusting is sometimes displayed by female rats.

Rats seem to be born with a sexually undifferentiated nervous system of the female pattern, which then normally either becomes fixed by the presence of estrogens or changed into the male pattern by testosterone. The permanence of the fixation of these behavior patterns by the early hormonal environment is remarkable. A single injection of testosterone in a 4-day-old female produces an adult that has no cycles. The trouble is in the brain, not the ovary or adenohipophysis, for either of the latter appropriately transplanted into an ovariectomized or hypophysectomized female, previously normal, can then support normal sexual function, i.e., when controlled by a sexually competent hypothalamus. So far such effects have not been obtained in rabbits, a species that, unlike the rat, is normally acyclic.

Self-stimulation. By training an animal to press a lever to obtain food and then arranging things so that each lever press also delivers stimuli to particular loci in the brain it is possible to determine whether the animal seeks, avoids, or is indifferent to stimulation in various neural systems. From such studies it is immediately apparent that the overwhelming majority of points where stimulation is either sought or avoided lie within the limbic system. This is perhaps not surprising in view of the goal-directed activities organized by the limbic system, but it does stand in striking contrast to the fact that, except for occasional and short-lived curiosity, animals are almost wholly indifferent to neocortical or cerebellar stimuli, even those producing violent movements.

The motivational effects produced by central stimulation are often stronger than those produced by natural stimuli. For instance, rats given an opportunity to choose between stimulating the medial forebrain bundle in their lateral hypothalamus and eating will, even though starving, choose the hypothalamic stimulus. This becomes somewhat paradoxical when a point is selected in the lateral hypothalamus where stimulation induces the animal to eat. It might be supposed that the rat applies stimuli which make it hungry rather than eating the food to satisfy that hunger. However, the tests have not been that definitive since the stimulation which demonstrates that the rat will eat when stimulated endures for several seconds, whereas that stimulation which the animal chooses to apply to its brain lasts only 0.5 second. The choice of central stimulation over food nevertheless remains mysterious. Since the limbic system is particularly susceptible to seizure

activity, and seizures have an amnesic effect, it is possible that the self-stimulation arises from a confusional state; e.g., the animal initiates a lever press, but the resulting stimulation erases the record or feedback from the action and the animal is left where it was—about to press the lever, etc. This supposition gains support from the fact that much higher currents are required at many loci for the initiation and maintenance of self-stimulation than for the animal to perceive and utilize stimulation of the same neural point as a signal. In addition, self-stimulation often produces bizarre electrical activity in the limbic system.

However, while confusional states and seizure activity may be associated with self-stimulation in a number of instances, it is very unlikely that self-stimulation at most loci arises from such factors. Throughout the medial forebrain bundle system, which yields the highest rates of self-stimulation, the currents required for the effect are very low. It can also be shown that the animals are in contact with and perceiving events in their environment at all times during most self-stimulation. Finally, administration of anticonvulsant drugs has the paradoxical effect of increasing self-stimulation, to some extent by curtailing seizures which were an interfering side effect.

Exploratory experiments indicate various interactions between androgen level or hunger, avidity for self-stimulation, and location of stimulating electrodes. A further complication is found with variation of the duration of the burst of stimuli resulting from each lever press. The effects of train-duration are particularly dramatic for stimulation of the posterior hypothalamus in cats. For a 0.5-second train the animal presses every 2 to 3 seconds for 10 to 20 minutes at a time, each press giving pupillary dilation, a slight dart forward, and piloerection. The animal appears as though it is frightened, but presses avidly. If, however, the stimulus lasts for 1.0 rather than 0.5 second for each press, the stimulation becomes strongly aversive.

Experiments so far suggest that from any particular locus the excitation can be elaborated over several different pathways. Ventral tegmental lesions, however, may abolish self-stimulation in septal loci. This is of considerable interest since stimulation of these tegmental sites is extremely aversive. It is possible that one of the effects of self-stimulation is to dampen the activity of aversive systems. This rather hazy concept does receive some support from work with human subjects. A few patients have apparently found that stimulation in septal areas relieves "anger and frustration." There seems little question but that such stimulation might have important therapeutic value were only enough of its neurophysiology understood. On the other hand, the conscious concomitants of self-stimulation in man are often so vague or bizarre as to discourage much hope of being

able to comprehend the psychological effects on man or animals in any simple terms. Some of the effects are frankly sexual, but a "cool taste," a "high" feeling, or a feeling of being about to remember something interesting are the best verbal reports of these effects which some self-stimulating patients can give. Points presumed to be in the central gray or hippocampus yield reports of melancholy, terror, or "sick all over." Such adverse effects sometimes survive for considerable periods but can be promptly relieved by stimulation at loci which yield self-stimulation. Such drastic changes of mood affirm the import of activity of the limbic system. Reliably specific therapeutic control of these powerful effects by means of localized stimulation will require a great extension of present knowledge and techniques, but few areas of research hold greater promise than this for relief of human suffering.

Memory. The temporal lobe has some special relation to memory processes, particularly those concerned with the recording of recent events. Just which temporal lobe structures are associated with these phenomena is still uncertain, but most evidence points to the hippocampus. If more than the uncus and amygdala are included, bilateral loss of the inferior temporal area in man makes the learning or long term retention of new information almost impossible. Basic intelligence and skills and memories acquired earlier are essentially unimpaired in such individuals, yet they ask the same question again and again, remembering neither the answer nor the fact that they have previously asked. Old friends and names are recognized, but new are not. Such patients find their way about formerly familiar neighborhoods but are unable to acquire such orientation in new situations. They can describe in detail plays in baseball games attended in the remote past before their injury but can recall virtually nothing of a game witnessed just a few minutes prior to questioning.

Electrical stimulation within the depths of the temporal lobe in epileptic patients can produce an amnesia for recent events, without apparent disturbance for recall of events long past. The more prolonged the stimulation, the longer the duration of amnesia and the farther back in time the patient's memory may be disrupted. Thus in one patient stimulation for 2 seconds disturbed recall of a five-digit number given just before the stimulation, with recovery occurring within 1 to 2 minutes. Stimulation for 5 seconds produced amnesia for events of the current day, e.g., what had been eaten for breakfast, and recovery required 5 to 10 minutes. With stimulation for 10 seconds the patient usually could no longer remember coming to the hospital 3 weeks earlier, why he was there, who the doctor was, etc.; yet could describe boyhood friends and experiences. Such a state required 1 to 2 hours to clear. On the

other hand, stimulation of the more dorsal portions of the surface of the temporal lobe in other epileptic patients is able to evoke a vivid reliving of past events. Such experiences are sometimes reproducible upon repeated stimulation and often involve auditory, visual, and emotional components in a fully integrated hallucination of a previous experience.

Lack of understanding of the nature of the deficit apparent in short term memory, produced in man by temporal lobe lesions, together with the great complexity of these effects, makes it difficult to devise tests for demonstrating comparable defects in animals. Macaques with temporal lobe lesions and displaying the typical Klüver-Bucy syndrome are best characterized as having an inability to learn complex auditory and visual discriminations rather than as lacking short term memory. Some of the deficiencies in human patients can be similarly described, i.e., as a deficit in learning rather than retention per se.

Cats are unable to perform a simple leg flexion conditioned reflex during the course of bilateral seizures in the hippocampal complex. Yet if all the animal's training, i.e., pairing of conditional and unconditional stimuli, is given only during the presence of these seizures, it can be shown that learning still occurs. Following such training, flexion conditioned reflexes will be given immediately to the conditional stimulus if it is presented while the cat is in the normal state, i.e., without seizure activity in the limbic system. Thus, abnormalities of hippocampal activity would appear to interfere with performance but not with learning. A similar conclusion can perhaps be drawn from studies in which the electrical activity of the hippocampus of cats was monitored during the learning and performance of a visual discrimination. When correct discrimination was made, it was accompanied by a highly regularized theta rhythm at 6 per second. Subthalamic lesions produced a temporary disturbance in this rhythm, and, as long as it was disturbed, the animals failed to discriminate properly although the learned motor act of selection and approach was performed normally. Thus, in this instance, a less overwhelming interference with hippocampal activity is manifested in a more subtle loss in performance.

It is apparent from the foregoing and many facts not discussed here that in addition to its role in instinctual behavior, motivation, and the control of autonomic-endocrine effects the limbic system has an important, although ill defined, role in learned behavior and memory.

Clinical implications. It can readily be appreciated that abnormalities in the function of the limbic system can produce gastric ulcers, pulmonary edema, or menstrual irregularities. Not so easily perceived, perhaps, is the concept that pathological activity in the limbic system is capable of producing psychosis and may be responsible for many, if not all, psy-

chotic states. The major evidence for this comes from two sources, psychomotor epilepsy and the psychotropic drugs.

The features of temporal lobe epilepsy are extremely varied. The "uncinate fit" is usually ushered in by an aura of unpleasant odor, epigastric sensation, and a feeling of fear, strangeness, or familiarity (*déjà vu*). The fit may involve only a transient clouding of consciousness and a series of automatic movements such as chewing, although in many instances a full convulsive seizure also develops. Of interest to psychiatry is the fact that this "psychomotor" epilepsy displays other forms which range from episodic assaultive rage to frank schizophrenia. In developing the thesis that psychopathology may be predominantly associated with disturbances in the limbic system, a number of difficulties arise. First is the indisputable fact that a few patients with psychomotor epilepsy, electroencephalographic spiking in the temporal area, or demonstrated small lesions in cornu Ammonis retain a normal personality. However, such findings can plausibly be attributed to unilateral or small lesions, or to locations or processes which differ from those producing personality disturbances. The more striking fact is that from 50 to 90 per cent of patients with psychomotor epilepsy or temporal lobe spiking manifest psychopathology which may be identical with that seen in the psychoses that are not accompanied by demonstrable brain lesions. The psychiatric problem is associated with the temporal lobe rather than with epilepsy per se since most authorities agree that focal epilepsy in other areas seldom produces personality changes.

Since the disturbance in personality is more or less permanent, it cannot be attributed wholly to the temporal lobe episodic seizure. It must be presumed instead that epileptogenic foci in the temporal lobe produce a continuing abnormal neuronal discharge just as occurs from such foci in dorsal neocortex, and that this background abnormality results in the alteration of personality. On the other hand, it can also be recognized that in some instances psychomotor seizures may last for minutes or even hours and that patients at such times can still perform complex acts, such as driving a car, for which they are subsequently wholly amnesic.

Patients with psychomotor epilepsy are not uncommonly diagnosed as having schizophrenia. The question arises, of course, as to whether they have one disease or two; i.e., schizophrenics might have psychomotor epilepsy in addition to schizophrenia. A distinction is made on the fact that such patients with psychomotor epilepsy obviously have a motor component in their seizures and also have more frequent and prolonged remissions than do schizophrenics. However, since patients with the diagnosis "psychomotor epilepsy" can be every bit as paranoid and psychologically disturbed as those whose diagnosis is

"schizophrenia," the most parsimonious approach would be to consider these but slightly different manifestations of a basically similar pathology. Procedures which control the epilepsy usually do not relieve the psychosis, but they often instead have the paradoxical effect of exacerbating it. (But, convulsions are used as therapy for psychoses.) On the other hand, a few dramatic instances are also known in which unilateral temporal lobectomy has relieved profound psychoses that were associated with electrical and histological abnormalities of cornu Ammonis. Thus, as a general rule, procedures which affect the epilepsy also influence the psychosis in a manner at least compatible with the hypothesis that there is a single etiology for the two conditions.

The other side of this coin is that electrical abnormalities would undoubtedly be a much more common finding in psychotic patients were they all studied with intracerebral electrodes. High voltage, convulsive spikes generated by applying strychnine to the mesial temporal cortex in man simply give no indication of their existence when records are taken only from the scalp.

Similarly, in Figure 10 no indication of the underlying pathology can be seen in records from the scalp until the patient is in a definite psychomotor seizure (Figure 10D). This patient displayed basic schizoid trends with paranoid symptomatology and suffered from *grand mal* as well as psychomotor epilepsy. He had episodes of psychotic paranoid behavior lasting from a few hours to several days. When the patient was symptom-free (Figure 10A), the electrical activity was nearly normal. During the records in Figure 10B the patient was irritable and agitated and had a low threshold for rage. During the recording in Figure 10C he was psychotic, compulsively chanting psalms, detached from his environment, and hallucinating. The stages of pathological behavior are correlated closely with the degree of electrical abnormality in limbic structures.

There is, of course, no reason to expect, even given the peculiar predilection of the limbic system for seizure discharge, that all the pathological processes producing psychoses should be so reflected in neuronal abnormalities recordable with gross electrodes. Nevertheless, the evidence is increasingly clear that in a very high proportion of psychotics such records can be obtained *intracerebrally* and that the focus of such electrical abnormality is in the limbic system.

The psychotropic drugs, which have been so successful in the treatment of mental illness, have profound effects upon the metabolism of the monoamines. In turn, monoamines are found in important concentrations in or above the mesencephalon only in the basal ganglia and limbic system. In addition to being useful in the treatment of psychoses, alterations of monoamine metabolism can also produce psychotic symptoms. Thus, for example, prolonged treatment of hypertension by administration of reserpine not uncommonly results in serious psychotic reactions in previously well adjusted individuals. These patients experience depression; depersonaliza-

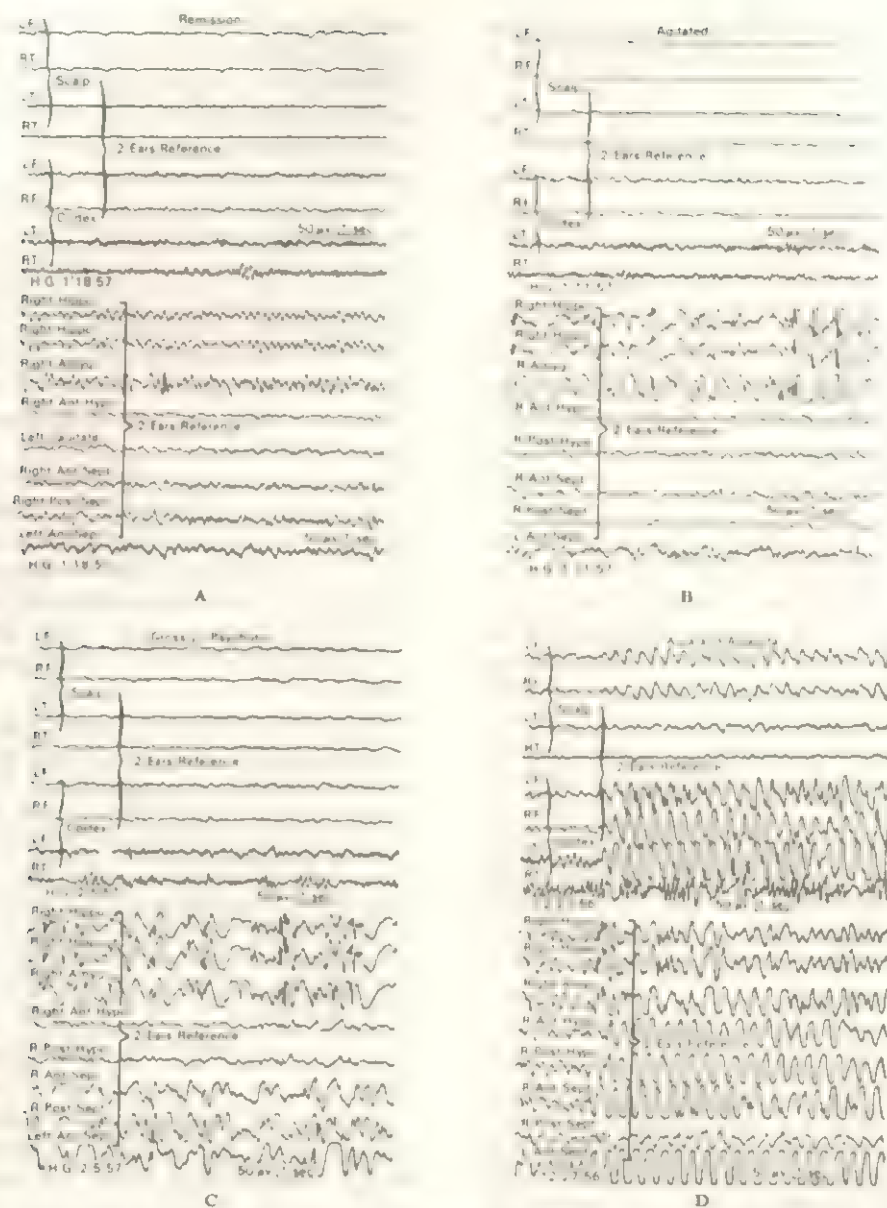


FIGURE 10. Electrical activity in brain of patient whose "psychomotor epilepsy" was accompanied by periodic psychosis. Records from scalp (F, frontal; T, temporal), implanted electrodes over cortex and various leads aimed at hippocampus, amygdala, septum, anterior and posterior hypothalamus, and caudate nucleus. In A, January 10, 1957, patient was symptom free, and records showed essentially normal activity. In B, January 11, 1957, patient was irritable and agitated; records from scalp and neocortex still normal, but convulsive activity apparent in right hippocampus and amygdala. In C, February 5, 1957, patient was hallucinating and reciting psalms; neocortex still normal, limbic system in turmoil. In D, December 27, 1956, psychomotor seizure, neocortex involved; patient complained of bad taste and nausea, and was subsequently amnesic (see the text). (From Heath, R. G. Correlation of electrical recordings from cortical and subcortical regions of the brain with abnormal behavior in human subjects. *Conn. Neurol.*, 18: 305, 1958.)

tion; disturbances of perception, e.g., distortions of size or distance; attacks of terror without reference to external events, etc. These effects can persist for several months after cessation of the reserpine treatment.

In summary, all knowledge gained from stimulating or ablating the limbic system in animals or man is consistent in revealing its power to overwhelm behavior with pathological emotion. Corollary evidence is now forthcoming that both the pathology and ther-

apy of psychotic conditions may be centered on the limbic system.

Suggested Cross References

Motivation is discussed here from a physiological point of view; for a discussion of it on a psychological level, see Section 3.4. For further information on the mechanisms of learning and memory and on theories of learning, see Sections 2.10 and 3.3, respectively. Fundamental concepts of psychopharmacol-

ogy are presented in Section 2.3, and the clinical uses of psychoactive drugs are discussed in Sections 35.1 and 35.2. Psychosomatic medicine, which rests upon the neurophysiological fundamentals discussed in this section, is discussed in Chapters 29 and 30. Some current hypotheses on the neurophysiological basis of psychosis are reviewed in Section 15.3, which also presents alternate, psychological hypotheses.

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2.9 CEREBRAL CORTEX

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Recovery of Function after Cerebral Lesions

Assessment of residual functions after cerebral lesion is one of the techniques that has been used in order to investigate the functions of the cerebral cortex. Analysis of the functions of the brain would be simpler if removal of an area were followed by a stable loss of a given set of functions. Such is not the case, however, as has been shown repeatedly in both clinical and experimental studies. A loss that may be severe shortly after operation dissipates to a greater or lesser degree over time. This waning of the syndrome following a cerebral lesion has given rise to various propositions about the mechanisms involved. According to the theory of *diaschisis* there is, after a discrete lesion of the brain, a loss of facilitative effects which arose from the destroyed areas and acted upon various intact areas, leaving them in a depressed condition. Recovery from this shock-like state was believed to occur spontaneously over an unspecified time. In attributing function to the area lost by the lesion, only the residual impairment could be used. According to another theory, that of functional substitution or vicarious functioning, other neural centers take over the function of the lost area and substitute for it functionally. Such surrogate areas might include the corresponding area in the opposite hemisphere, in the case of unilateral lesions. This theory gains support from the fact that after a monkey recovers use of the contralateral hand following a unilateral lesion of the motor area,

a second lesion, in the opposite motor area, will produce a re-appearance of paresis. It has been shown that after limited removal of the primary motor cortex a monkey is unable for a time to perform delicate, skilled acts with the contralateral hand. There is considerable recovery from this deficit. If cortex adjacent to the original lesion is then stimulated electrically, hand responses which could not be elicited by electrical stimulation during the first operation are seen. Ablation of this adjacent zone produces a re-appearance of paresis and a second, and more enduring, loss of skilled movements. Bilateral ablations of motor cortex have yielded comparable conclusions. Removal of both right and left primary motor cortex (area 4) in monkeys permits more recovery from motor symptoms than does removal of areas 4 and 6 on the two sides. Many of these principles apply to at least some of the complex behavior found in man, particularly language. There is considerable recovery of verbal function after destruction of frontal cortical speech areas, if remaining cortex on the dominant side of the brain has not been damaged.

When the cortex adjacent to a region ablated in infancy is stimulated, the range of movements elicited is considerably wider than in unoperated control subjects. This has led some to postulate the growth of new pathways, a notion which flies in the face of most data on regeneration in the central nervous system, but which probably should not be dismissed out of hand. A more conservative point of view is that after lesions there are brought into activity pathways which had already existed, but which were not active to any significant degree. The activity of these pathways may have been suppressed by the centers removed. This century-old idea has been made somewhat more palatable by recent neurophysiological demonstrations of inhibition of cells in sensory cortex surrounding an area of high activity, and of greatly increased evoked potentials in some subcortical centers after inactivation of the cortex.

The assessment of recovery of function after cerebral lesions must take account of whether there is substitution of another function similar in purpose to the one lost, or restitution of the original function. The dysphasic patient who manages to construct grammatical sentences, despite a marked vocabulary loss, by use of periphrasis, is substituting, just as is the monkey who solves a puzzle by a different sequence of movements than he did prior to operation. On the other hand, the patient who regains his skill in typewriting after a cerebral lesion, using the same habit skills he used before, such as finger positions, may be said to have a restitution of function. Such a patient would resemble the rat which, after complete bilateral ablation of the visual cortex, can relearn a black-white discrimination at the same rate as it did prior to operation. It is, of course, not always easy or even possible to distinguish the processes of restitution and substitution in any given case or experiment.

Although the theory of *diaschisis* maintained that recovery after lesions was spontaneous, there is considerable evidence that many functions do not recover spontaneously and that training can restore them or speed up their reacquisition significantly. The generality of effect of the training appears to be a function both of the type of skill and of the locus of the brain damage. It has been found, for example, that practice after operation is indispensable for reinstatement of the monkey's ability to solve correctly a patterned string problem after occipital lobectomy on one side. There is no spontaneous cortical reorganization of this task, nor is there wide generalization of the effects of practice. Practice on one pattern will not necessarily transfer to another string problem. After the cortical projection area for central vision is removed in the monkey, there is a transient inaccuracy of reaching for objects. If an operated monkey is kept in darkness for 10 days, he misreaches in just the same way as a monkey does immediately after operation, although nonoperated monkeys kept in darkness for the same period are unimpaired in this reaction. Here again, spontaneous reorganization is at the least unlikely, and visual experience is necessary for recovery.

Experience can influence the outcome of cerebral lesions in

another way. It is frequently found that bilateral removal of homologous areas on the two sides of the brain is followed by a smaller decrement in performance when the operation is performed in two stages than when the operation is carried out all at once. The degree of sparing by the two-stage operation is a function of the stimulation provided the animal in the interval between the two operations. On visual tasks, there is considerable recovery of a brightness discrimination when the subjects are kept in illuminated cages between stages, and complete recovery if the habit is practiced shortly after the first operation. But maintaining the animal in darkness in the interval between operations produces a deficit in visual discrimination performance of the same order as a bilateral, one-stage operation. The slow formation of a pseudofovea in cases of human occipital damage implicates a prolonged period of learning by the patient. In both man and monkey, recovery after occipital injury at maturity seems more a matter of substituting the remaining intact portions of the visual field than one of restitution of function within scotomata.

Recovery from motor lesions is hastened by requiring the animal to use the affected limb, and recovery in cases without formal training may be due in considerable part to the animal's use of the member in negotiating his environment. Recovery from lesions of the motor cortex seems to be somewhat more general than in the case of occipital lesions. The same is true for the temporal neocortex. Bilateral ablations in the temporal area cause loss of visual discrimination habits. If the animals are retrained on visual problems different from the ones they learned prior to operation, retesting on the original problems shows recovery of most of them. Controls show that there is no spontaneous recovery over this period and that visual discrimination habits are not lost if no operation intervenes. Practice on discriminations involving touch have no effect on visual discrimination performance, indicating that the recovery of the habits is not a highly generalized improvement in learning ability after the brain operations.

Effects of lesions as a function of age. The brain of the infant organism differs from that of the adult by having a greater plasticity, as may be seen by the smaller effects of lesions on discriminative and motor performance. Unilateral removal of the primary motor area, the entire frontal lobe, or an entire hemisphere in a baby monkey has much less effect on the motor system than does an equivalent lesion in the mature animal. Bilateral ablation of motor and premotor cortex in the adult monkey has profound effects on volitional movements and produces marked spasticity. The same lesion carried out on the infant has less dramatic effects, and even these dissipate to some extent, leaving as a residual a spasticity which increases with age to about 1½ years. The findings in experiments on sensory discrimination show even less permanent effect of cortical lesions when they are carried out soon after birth. Kittens operated on for removal of the somatosensory cortex showed, as adults, practically no deficit on discrimination of roughness, whereas the same ablation, carried out on adult cats, produced severe impairment of the discrimination. The only residual deficit seen in the case of infant operations was a small increase in the difference threshold. Removal of the primary visual cortex in the kitten, a few days after birth, does not abolish visual pattern discriminations in the adult survivor, even though complete degeneration of the lateral geniculate nucleus establishes that all of the striate area has been removed. Visual function is not entirely normal in such animals, as may be shown by a battery of tests, but the retention of a significant degree of pattern vision is in striking contrast to the complete loss in adult animals suffering extirpation of the entire visual cortex. Optic potentials can be elicited in remaining cortex in such preparations operated on in infancy, and the areas from which potentials can be recorded are implicated in the visual functions which persist, as extension of the lesion to these areas results in extremely poor visual performance on all tasks at maturity. A similar finding in the motor system is relevant to this point. Ablation of the frontal association fields in the monkey, after

bilateral removal of the motor and premotor cortex in infancy, adds to the paresis and spasticity. There is no parallel increment in the motor deficit when the association fields are removed after the motor and premotor areas are taken out in the adult animal. Such observations are consistent with the concept of vicarious function, at least as it may be applied to lesions which occur early in life.

Although not much information is available on the more highly integrated types of behavior, especially in phylogenetically more advanced forms, it has been shown that the delayed response (the classical test for which consists of placing a food reward under one of two covers in view of the subject, then interposing a screen for the delay period, and, finally, allowing a choice between the two food wells), when tested for at 4 months (the time of its first appearance in the normal monkey), is unaffected by lesions of frontal cortex made during the 1st week of life. This response, when tested for in the usual manner, is abolished by lesions made in mature animals. These operated infants, although at first somewhat slower to learn delays as long as 40 seconds, actually surpassed unoperated control animals during the course of an extended series of tests. The often profound effects of cerebral disease in children upon integrative behavior later in life have suggested that certain types of cerebral insult should work greater effects upon young organisms than upon adult ones. Until the specific anatomical differences between the kinds of damage done characteristically by disease in childhood and at maturity are known, experimental approaches to the problem will be impeded.

Cerebral Localization

In the section immediately following, experimental work and some clinical observations are drawn upon in order to indicate in very general terms the functions of various regions of the cerebral hemispheres. The problem of localization of brain function has a long history, and many of the questions raised a century and a half ago remain as pertinent, and unsolved, as they were at their inception. What is localized? Given localization of something, how do the various regions of the cortical mantle work together in an integrated fashion? In the recent past there was a period when localization of anything but the most elementary sensory and motor functions was doubted by many, as a result of overextension of the principles of mass action and equipotentiality. Equipotentiality refers to the ability of any intact part of a cortical system to execute the functions of other parts of that system. This may or may not involve a reduction in over-all efficiency of the system. Equipotentiality is subject in turn to the principle of mass action, which holds that the general efficiency of a complex behavioral function may be reduced in proportion to the extent of destruction of tissue within a system of relatively unspecialized parts. The finding that for the maze habit in the rat the system of relatively unspecialized parts comprise the entire cerebral cortex led many writers of the 1930's and 1940's to suppose that the brain was equipotential for all higher functions and that the law of mass action had quite obliterated functional localization of anything more than muscle twitches or dermatomes.

Although the perplexities of higher brain functions are still with us, we are fortunate in that at the present time localization of function has come into somewhat clearer perspective. The evidence to be summarized below indicates that some functions, especially those most closely related to sensory discrimination and motor control, are rather discretely localized; other traits, such as certain verbal and perceptual mechanisms, tend to be focalized within rather broad regions of the brain. And, in its broadest sense, the organism's over-all capacity to deal effectively with its environment will probably be diminished by any damage to the brain, although some parts may play a proportionately larger role than others. A discrete lesion of the cerebral hemispheres will therefore have a rather specific effect, a somewhat more generalized effect upon some capacity or group of related capacities, and finally a global effect upon integrated behavior.

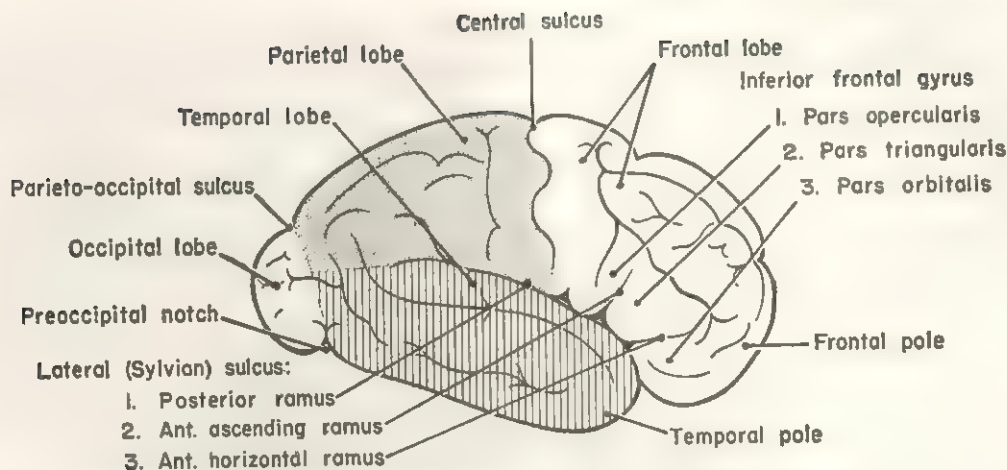


FIGURE 1. Lateral surface of the right cerebral hemisphere, showing lobes of the brain. (From Truex, R. C., and Carpenter, M. B. *Strong and Elwyn's Human Neuroanatomy*, p. 52. Williams & Wilkins, Baltimore, 1964.)

The most powerful tool available at the present time for analysis of the question of localization of function is double dissociation. By this is meant that lesion A depresses performance I but not performance II, and that lesion B depresses performance II but not I, lesions A and B being of approximately equal size. When this condition is met (and it is more often than not in contemporary studies), functions can be ascribed with some confidence to various regions of the brain. Defining a region is not in itself an easy matter. While size is a readily manipulatable variable, location presents a finite but vast number of possibilities, defying the attachment of a single value to locus as one can with size. In the past the principal guideline for locating a lesion to be made experimentally was the cytoarchitectonic maps of a past generation of neuroanatomists. There has been a tendency more recently to shift from cellular organization of the cortex as a criterion to criteria based upon connections. According to this principle, one removes an area all parts of which have similar connections, whether to some extracortical region or within the cortex itself. These areas may be defined neuroanatomically or by such electrophysiological means as evoked potentials or strychnine neuronography.

Frontal lobe. Although many frontal removals have been done in man for therapeutic purposes, the data available from this source have not revealed a great deal about normal frontal lobe function because most patients were unable to cooperate fully in procedures to assess their status prior to disease. We have many reports on tests applied before operation, but few on tests applied before the onset of the disease which prompted the use of brain surgery. Such data are available in very limited numbers, and they indicate a small but significant loss on formal intelligence tests when premorbid scores (that is, scores obtained before signs of psychosis had appeared) are (1) compared with postoperative scores obtained after the patient appears to have recovered from his psychosis, and (2) evaluated against control patients who recovered without surgical intervention. Despite the inherent superiority of man as a source for data, we must continue to make recourse to animal experimentation to analyze the functions of the frontal areas.

The idea of the frontal lobes as the seat of higher integrative functions has now been abandoned. Ablation studies on mammals high and low on the phylogenetic scale have revealed that, although performance decrements can be shown on certain types of tasks, there is no generalized deterioration. Conditioning experiments show that unconditioned responses elicited by noxious stimuli become more vigorous, and that positive conditioned responses, in which the animal carries out some active behavior in order to avoid the unconditioned stimulus, are either unaffected or even increased after removal of frontal neo-

cortex anterior to the motor zone. Animals are not impaired on visual discrimination learning, nor do they lose a discrimination habit learned prior to operation. The kinds of losses that do occur after prefrontal ablations center around inhibition of responses, and the delayed response. A number of experiments have shown that frontal damage can produce failure to withhold responses when this is demanded for correct solution of the problem. Thus inhibitory conditioned responses in dogs are disinhibited by ablation of the frontal pole, monkeys are less effective in withholding responses on negative trials, and cats show deficits in passive avoidance conditioning (which requires them to avoid approaching an electrified food dish). In all of these cases, the focus within the frontal lobe appears to be the orbital area, as restricted lesions avoiding this zone fail to produce any marked interference with response inhibition.

The delayed response, on the other hand, is selectively impaired by dorsolateral frontal lesions. Recent work has shown that various modifications of the classical method of testing for delayed response enable a monkey with dorsolateral frontal lesions to solve the problem with a high degree of success. These modifications include a "go"-no go" situation (single food well in which the experimenter either places or does not place bait on a given trial; on negative trials the animal must withhold or inhibit its response), gradual introduction of delay, increasing the degree of hunger motivation, and making the correct response dependent upon the subject's pre-delay choice rather than the experimenter's. It has been suggested that these variations of the delayed response experiment show that the crucial element in frontal deficit in monkeys is not delay, but one involving attentional factors operating during the pre-delay period. This finding in the monkey is consistent with the failure to find any deficit of immediate memory in human patients with frontal lobe damage.

Another loss characteristic of the frontal operate is difficulty in overcoming initial preferences in choice situations. Errors made by a frontal lobe monkey in discrimination performance consist not of failure to stick with the correct object when he hits it (by chance) on the first trial, but in failing to switch promptly to the other choice when he selects the incorrect object on the first trial. A similar deficit is found in patients with dorsolateral frontal lesions on card-sorting tasks. The situation differs somewhat in that the patient is required to sort cards according to some category which he must determine by being told whether he is right or wrong. After 10 successive correct sorts, the category is changed by the tester. The frontal patients were unable successfully to shift their sorting sets and consequently committed perseverative errors. The average I.Q. of these patients was normal, and many could verbalize what was

required in the situation, but they persisted in their perseverative (and incorrect) choices.

Parietal lobe. The parietal region of the brain has attracted less experimental work than the frontal and temporal lobes, despite the implication of this region in a number of complex functions in man. Consistent with the presence of the primary somatosensory area in the parietal lobe, tactile discrimination performance by monkeys and apes is impaired by lesions in this region. There are, however, functions beyond these simple somatosensory discriminative ones which may be demonstrated by the placement of lesions. Monkeys with unilateral lesions of the posterior parietal lobe failed to reach food by an approach on the side opposite the lesion when a roundabout route was required. When visual cues were excluded, the inability to reach the bait on the side opposite the lesion was relatively less. This finding suggests that the posterior parietal lobe may be concerned with the coordination of visual cues with purposeful movements, an hypothesis consistent with anatomical data indicating that fibers from the occipital lobe end here and that the posterior parietal area projects in turn to both the somatosensory and motor areas. The hypothesis of visually related functions in the parietal lobe receives further support from the finding that extensive learning experience with tactile stimuli fails to facilitate performance on a visual learning set series in monkeys with posterior parietal lesions. Even more straightforward visual spatial discriminations are impaired to some extent by bilateral posterior parietal ablations. Careful observations on patients with long standing parietal injuries has shown, in addition to the expected tactile sensory losses, an impairment in the ability in patients with left parietal injury to indicate successively a series of points on the body surface and in external space. Lesions of either side, located predominantly in the parietal zone, produce an impairment in the ability of patients to follow a map, using either tactile or visual cues. This deficit is independent of sensory defect or of losses in general intelligence, although the degree of impairment is correlated statistically with somatosensory defect. There is extensive evidence that, whereas injury in man's right somatosensory region produces difficulties related only to the left hand, left somatosensory lesions tend to produce bilateral impairment. Injuries to the left hemisphere are more likely to be associated with dysphasia and with a greater intellectual loss than right hemisphere injuries.

Temporal lobe. Experimental lesions in primates have demonstrated conclusively that a major focus for visual integration exists in the temporal lobe. Tests for discrimination of patterns show a persistent loss after bilateral removals of the inferior convexity of the temporal lobes, a loss which is not found after lesions of the dorsolateral temporal neocortex or other associative areas of the cortex, nor after removal of temporal pole, hippocampus, or amygdala. Long term studies of operated monkeys indicate that this loss is very persistent and probably permanent. The degree of loss is correlated with the difficulty of the problem, the greater impairments being most clearly demonstrated by difficult discriminations. When animals are trained successively on a large number of pattern discrimination problems, establishing a learning set, and are then subjected to bilateral inferotemporal removals, the learning set is lost and cannot be regained with extensive retraining. Object discriminations are less affected by temporal lesions, although some impairment is seen. This deficit does not seem to be one of attentiveness, as monkeys with temporal ablations continue to discriminate even when the stimuli are exposed for as short a time as 10 milliseconds. The probable route for arrival of visual information to the temporal lobe is via the primary visual cortex of the same side of the brain. Interruption of visual afferents to the striate cortex by cutting of the optic tract, followed by ablation of temporal cortex on the opposite side, produces a marked impairment in visual discrimination. Such an impairment does not occur when the optic tract and temporal lobe are interfered with on the same side of the brain. Lesions of possible subcortical routes to the temporal lobe, such as superior

colliculus or pulvinar, fail to duplicate the temporal lobe discriminative loss, giving additional support to a neocortical relay from the visual cortex.

Temporal removals in man indicate a laterality difference of function as strong, possibly stronger, than that found in the parietal region. Although the over-all I.Q. seems to be little affected by unilateral temporal lobe operations, there are difficulties in verbal recall, especially of rapidly presented material, when the lesion occurs on the left side. Right-sided temporal operations, on the other hand, are associated with inefficiency of comprehension of pictorial material. Memory defects, when seen in association with temporal lobe damage in man, seem to be referable strictly to rhinencephalic structures. Ideomotor and ideational apraxia are predominantly, perhaps exclusively, associated with left or bilateral damage to the temporal zone. Tachistoscopic recognition is also affected differentially. Recognition of letters is poorer in the visual half field opposite the side of the lesion, but since in normal subjects such recognition is not so good in the left field as in the right, one may conclude that right-sided lesions impair both half fields, whereas lesions on the left side give a deficit only in the right visual field. Thus the right temporal neocortex participates to some degree in visual functions through the entire visual field. So far there is no indication of similar right-left differences in experimental animals.

Occipital lobe. Research on the occipital lobe in man and animal has focused upon visual field defects after lesions. There are a few observations which suggest strongly that more than field defects are involved, but unfortunately they have not yet inspired well controlled studies to clarify the nature of the mechanisms that may be involved. It was noted long ago that ablations of the rat's visual cortex produce losses on maze performance which cannot be duplicated by peripheral blinding, and more recent work on peripherally blinded monkeys indicates that they too are impaired in finding their way about after extensive lesions of the primary visual cortex. Lesions in man (which may extend beyond the confines of the striate area) have been associated with deterioration of subtests of intelligence tests, particularly digit span and arithmetic problems. Studies such as these indicate that the striate cortex has non-visual functions, just as "nonvisual" cortex (the temporal lobe, for example) has visual functions. Visual field defects are particularly difficult to map in experimental animals, so that one may expect that studies on patients after occipital injury will be the more fruitful avenue of approach.

Suggested Cross References

In this section some fundamental concepts of cortical functioning have been discussed, but no attempt was made to describe and localize all the known functions. For a more complete summary of the cerebral functions and their locations, see the chart following this section. For a discussion of tests of mental status, the neurological examination and tests for organic brain disorders, all of which are based on assessment of cerebral functions, see Sections 11.2, 10.1, and 12.2, respectively. The cerebral cortex is discussed from the viewpoint of clinical neurology in Chapter 10. The symptoms seen in organic brain disorders are mainly disturbances of the functions of the cerebral cortex, and these are discussed in Chapters 18 to 21 and in Section 42.3.

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SUMMARY OF FUNCTIONS OF THE CEREBRAL CORTEX

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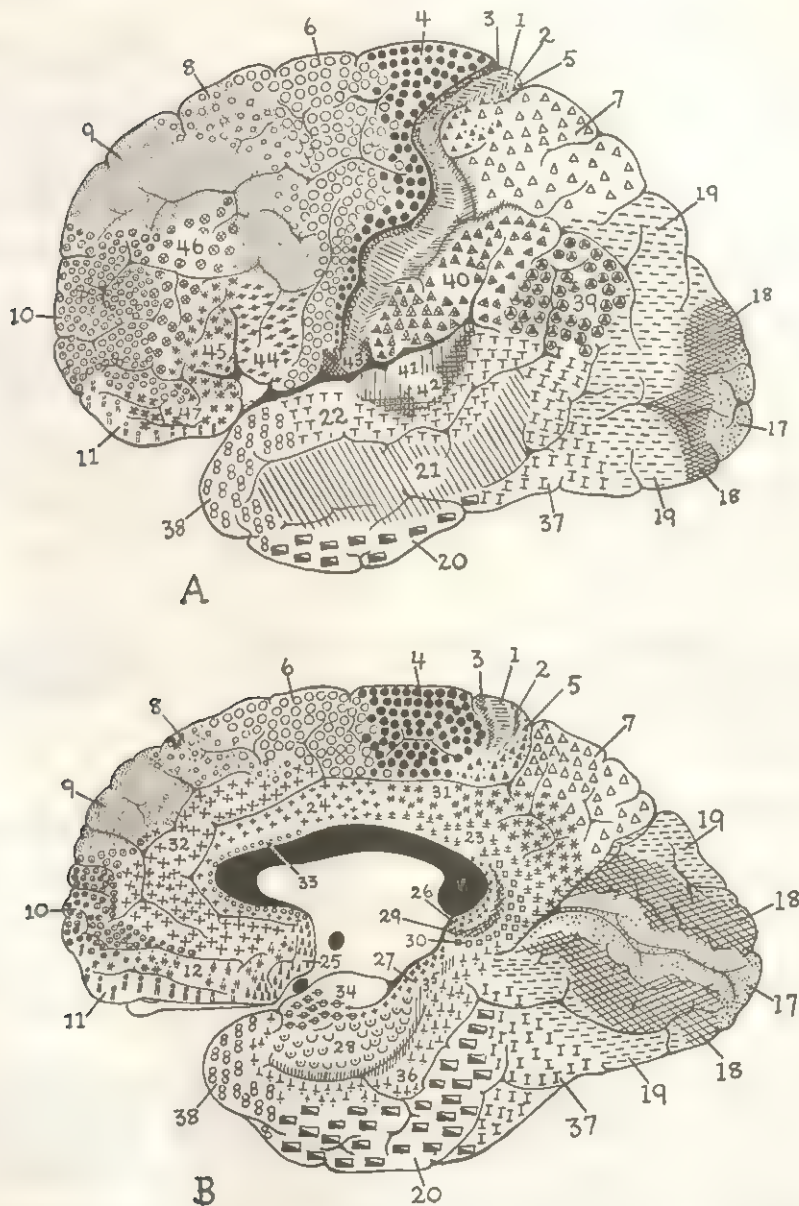
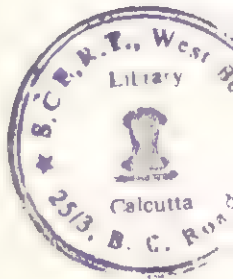


FIGURE 1. Cytoarchitectural map of human cortex. A, convex surface; B, medial surface (after Brodmann). (From Truex, R. C. and Carpenter, M. B. *Strong and Elwyn's Human Neuroanatomy*, ed. 5, p. 469. Williams & Wilkins, Baltimore, 1964.)

The numbers referred to below are those corresponding to Brodmann's cytoarchitectural map of the cerebral cortex (see Figure 1). These numbers are used *only* for simplicity of identification. Functions cited are not as precisely localized as indicated by the map; localization of aphasic phenomena are par-

ticularly inconsistent in this respect. The defects described in the last column are due to destructive unilateral lesions unless otherwise stated. As a rule, an irritative lesion evokes a focal seizure, augmenting or altering the function of the affected area.



Lobe	Area	Function	Effect of Lesion
Frontal	Primary motor area (4)	Initiate voluntary movement	Initial contralateral flaccid palsy of skeletal muscles; later, spastic paresis
	Secondary or premotor area (6)	Organize and control voluntary movement	Contralateral spastic palsy or paresis of skeletal muscles
	Transitional area between 4 and 6 (4S)	Inhibit motor activity	Spasticity of contralateral somatic musculature
	Motor eye field (8, 46?)	Control voluntary conjugate eye movement	Initial but transient deviation of eyes to side of the lesion and palsy of gaze to the opposite side (deviation of eyes away from irritative lesion)
	Speech area—Broca's area (44, 45?) (<i>dominant hemisphere</i>)	Control expressive speech	Motor aphasia
	Association areas or prefrontal lobe (9, 10, 11, 12, 32, 47)	Govern high intellectual processes and emotions	Mental and emotional symptoms, such as psychomotor retardation, lack of concern, <i>witzelsucht</i>
	Cingulate region (24, 25, 33)	(See temporal lobe)	(See temporal lobe)
	Poorly defined areas in motor and premotor cortex (4, 6, and adjacent zones) give rise to frontopontocerebellar pathways	Permit smooth voluntary and automatic skeletal muscle movement	Contralateral ataxia and other cerebellar signs
	Poorly defined areas throughout the prefrontal lobe (9, 10, 11, 12, 32, 47) give rise to connections:		Areas too diffuse for focal lesions to cause specific dysfunctions
	(a) to basal ganglia	Elaborate voluntary and automatic movement with cerebellar centers	
Parietal	(b) from thalamus and to hypothalamus	Integrate and elaborate stimuli for highest prefrontal functions	
	Primary sensory area (1, 3, and, minimally, 2)	Receive, identify, and localize simple somatic sensory stimuli	Contralateral impairment of somatic sensory modalities
	Secondary association area (5 and, especially, 7)	Further integrate, synthesize, and elaborate somatic sensory impulses, such as stereognosis	Slight contralateral impairment of somatic sensory modalities; astereognosis
	Posterior aspect of area 7	Further integrate somatic sensory impulses; discriminate fine grades of somatic sensation	Slight contralateral somatic sensory impairment; contralateral astereognosis, inattention (extinction phenomenon), trophic lesions
	Areas 39 (angular gyrus) and 40 (supramarginal gyrus)	Integrate visual and auditory stimuli with somatic sensory impulses	<i>Dominant hemisphere:</i> receptive aphasia; sometimes alexia, agraphia, or defect in body scheme
	Cingulate region (23, 31)	(See temporal lobe)	(See temporal lobe)
	Subcortical: optic radiations deep within the parietal lobe	Carry visual impulses	Contralateral homonymous inferior quadrantanopsia or hemianopsia
Temporal	Primary auditory receptive area—Heschl's gyrus (41, 42?)	Receive auditory impulses	No deficit because of bilateral cortical representation

Lobe	Area	Function	Effect of Lesion
Occipital	Auditory association area (22, 42, 52?, and adjacent areas)	Form memory patterns, especially for symbolic sounds, and may receive vestibular impulses	<i>Dominant hemisphere:</i> receptive aphasia
	Olfactory areas (28 and 35)	Receive olfactory impulses	No deficit because of extensive bilateral representation
	Gustatory areas unknown and may even be beyond the temporal lobe, such as in area 43	Receive gustatory impulses	No deficit because of extensive bilateral representation
	Association areas (20, 21, 36, 37, 38) make connections with cortical areas of frontal, parietal, and occipital lobes	Form memories and take part in other intellectual and emotional phenomena	Little or no deficit because of extensive cerebral representation
	Cingulate region: areas 26, 29, 30—temporal; 23, 31—parietal; 24, 25, 33—frontal; subcortical structures of the limbic system	Control visceral phenomena, sexual activities, and emotions	Personality changes [<i>Temporal lobe in general: Psychomotor seizures with irritative lesion of any part; memory impairment, Korsakoff-like syndrome or modified Klüver-Bucy syndrome with bilateral lesions</i>]
	Subcortical: optic radiations in the temporal lobe	Carry visual impulses	Contralateral homonymous superior quadrantanopsia
	Primary visual receptive area (17)	Receive visual impulses	Contralateral homonymous hemianopsia with macular sparing; cortical blindness with bilateral lesions
	Parareceptive area (18) Preoccipital area (19)	Interpret visual impulses Form visual associations: perception, orientation, recall Both areas 18 and 19 take part in optically induced reflexes	Disturbance of spatial orientation and discrimination, visual agnosia, illusions, and hallucinations Transient conjugate deviation of eyes toward the side of the lesion

2.10 NEUROPHYSIOLOGICAL CORRELATES OF LEARNING AND MEMORY

E. ROY JOHN, PH.D.

The purpose of this section is to acquaint the reader with the broad outlines of present knowledge and current research related to problems of information storage and retrieval in the brain. Although space does not permit a more detailed presentation, the current understanding is inadequate for a definitive exposition.

Two types of processes can be distinguished in the functions of the nervous system—innate and acquired. Innate processes display essentially similar characteristics in all individuals of the same species, follow the same maturational course, and are probably mediated by approximately identical mechanisms from individual to individual. Innate processes subserve the essential functions necessary to maintain the health and integrity of the organism, fulfilling requirements

common to all members of a species. Acquired processes vary greatly among individuals of the same species, do not follow the same maturational course, and may be mediated in radically different ways by various individuals. Acquired processes permit the individual to adapt to, and benefit by, his unique personal life experiences. The nervous system is thus endowed with plasticity of response, enabling the organism to establish adaptive behaviors. Behavior can be altered by changes in the novelty of stimuli, by the results of environmental events or particular responses, and by associations based upon the similarity, dissimilarity, or contiguity between exteroceptive or interoceptive stimuli. These and other changes in behavior resulting from the accumulation of experience are classified as *learning*.

Learning, or defects in learning, can result in maladaptive as well as adaptive behaviors. Many psychiatric disorders may be the result of inappropriate learning, undesirable experience, or malfunction of the neural mechanisms of information coding, storage, and retrieval. Other disorders which seem related to malfunction or imbalance of neural systems concerned with arousal, attention, or motivation may be amen-

able to procedures that use systematic experience to improve function or restore balance. Much of psychiatric treatment can be viewed as the attempt to establish conditions conducive to learning adaptive behaviors, or unlearning maladaptive behaviors, whether achieved by electroconvulsive therapy, medication, or psychotherapy.

Theories of Learning and Memory

Since learning requires the modification of future behavior as a result of past experience, two distinct processes must be explained: (1) the neural mechanisms involved in storage of a representation of an experience and (2) the neural mechanisms that are intermediaries in the retrieval of such stored information and its interaction with present experience. The first function might be called "read in," or memory, and the second "read out," or remembering.

Classical conditioned reflex. Early attempts to analyze the nature of these processes were strongly influenced by anatomical considerations. The laboratory study of the physiology of learning consisted largely of investigations of conditioned reflex mechanisms. The classical conditioned reflex arises from the association of two stimuli and can be thought of as stimulus substitution.

A conditioned stimulus that excites sensory receptors is systematically paired with an unconditioned stimulus that activates muscular or glandular effectors. After a series of paired presentations, occurrence of the conditioned stimulus alone is capable of eliciting a conditioned response closely resembling the effect of the unconditioned stimulus. The conditioned stimulus was presumed to activate neurons in brain regions of the corresponding receptor system and the unconditioned stimulus to activate neurons localized in regions that mediated the appropriate response functions. Paired presentation of conditioned stimulus and unconditioned stimulus was assumed to result in the formation of a connection between these two neural regions. This connection consisted of a pathway of neurons whose synaptic relationships were altered during conditioning, either by facilitation of existing synapses or by the growth of new synaptic processes. The memory was localized in the interconnections of the neurons constituting this pathway. Remembering consisted of the selective conduction of nerve impulses arising from the conditioned stimulus along this new pathway to the regions previously excited by the unconditioned stimulus, thus eliciting performance of the conditioned response. Similar explanations were proposed to account for other forms of learning, such as instrumental conditioned responses or maze habits, analyzed in comparable stimulus-response terms.

Attributing changes in behavioral response, after experience, to the establishment of new neural routes traversed by nerve impulses initiated by stimuli led to a search for the anatomical locus of the site of closure and for the connection between the input and

output pathways, which was the memory or engram. The fundamental tool in this search for a connection was the correlation of deficits in the acquisition or performance of learned responses with lesions or ablations localized in various brain regions.

Lashley's general theories. Although lesion studies revealed that particular brain regions were involved in the mediation of learned responses, it was not possible to demonstrate that memories were localized in specific areas or pathways. Deficits in performance following brain damage could usually be rectified by further training of lesser degree than that required for the initial establishment of the behavior. Interference with the set to perform, with motivation, with attention, or with level of arousal seemed to constitute the basis for such deficits, rather than obliteration of the memory trace.

Summarizing a vast amount of lesion data, Lashley proposed two related general theories: (1) the Law of Mass Action, which proposed that defects following brain ablations correspond in severity to the amount of tissue destroyed rather than to the location of that tissue; and (2) the Law of Equipotentiality, which held that, although a given region may normally be responsible for mediation of a given function, other regions are often capable of taking over the same role.

Memory storage and retrieval. Implicit in Lashley's formulations was the conception of memory as a process diffused throughout an extensive anatomical domain. Further, experiments revealed that the effects of localized lesions varied as a function of time after acquisition of the new behavior. These experiments suggested that different brain areas became involved at *different stages* in the elaboration of a memory. In particular, the hippocampus seemed to be involved in the process by which recent events were transferred to permanent storage.

It has long been known that the ability to remember lists of memorized material varies as a function of the amount and kind of activity interpolated between initial learning and subsequent testing. Systematic study of sufferers of traumatic head injury revealed that a large proportion of such persons could not recall events immediately preceding the injury. Evidence of this sort suggested that, immediately following an experience, the neural representation of that event was in a labile phase and was susceptible to disruption; after this period, the memory was somehow stabilized in long term storage. With the introduction of electroconvulsive shock therapy, studies revealed that the disruptive effects of such treatment upon recent memories diminished systematically as a function of the time between experience and shock.

Numerous studies have indicated that interference with ongoing brain activity for a period of time after an event prevents registration of that event in memory. Among the agents capable of such action are elec-

troconvulsive therapy, anesthetics, convulsions induced by various chemical agents, and insulin hypoglycemia. This evidence had led to the concept of a consolidation phase, during which the neural representation of an experience gradually shifts from a labile to a stable mediating process. Recent studies have shown that systemic injection of analeptic drugs immediately after an experience can extend the period of labile representation, can bring about more rapid acquisition of learned responses, and can accelerate the rate of consolidation.

It is generally believed that the representation of an experience during the labile phase is mediated by continued reverberatory activity in neural networks. The mechanism responsible for long term storage is the subject of intensive current research.

Chemical studies. The remarkable persistence of memory in spite of the relatively rapid turnover of chemical compounds in the brain directed the attention of numerous investigators to those chemical systems capable of specifying templates for the continued synthesis of particular molecules, ribonucleic acid (RNA) in particular. A mass of evidence accumulated in recent years suggests that ribonucleic acid and protein synthesis are somehow involved in long term information storage in the brain. It has been shown that (1) RNA turnover in nerves increases upon stimulation, (2) RNA turnover is increased in neural tissue that undergoes learning-like experiences, (3) interference with RNA synthesis impedes learning, and (4) facilitation of RNA synthesis or increased availability of RNA results in more rapid learning.

Although such evidence suggests that RNA is involved in memory storage, the demonstration that the blockade of protein synthesis by intracerebral puromycin injection may erase previously established learned responses suggests that the role of RNA may be secondary to that of the protein whose synthesis is governed by RNA. Although puromycin blocks protein synthesis, present knowledge indicates that it does not in any way interfere with RNA synthesis. Further research is needed to clarify this problem.

Electrophysiological studies. Such studies, usually conducted with chronically implanted electrodes, show that there are widespread changes in the response of brain regions to a stimulus during learning. These changes involve many anatomical systems in the brain. The data suggest that, early in learning, the stimulus exerts marked effects upon the mesencephalic reticular formation. Later in learning, the thalamic reticular system seems to play a dominant role, while the mesencephalic reticular formation seems to be inhibited, perhaps by hippocampal influences interacting with the cortex.

Among the useful electrophysiological techniques are the biasing of local excitabilities by polarization (so-called dominant focus), studies of evoked potential changes to intermittent conditioned stimuli, and conditioning to direct electrical stimulation of

specific points in the brain. Such methods, combined with such chemical techniques as spreading depression and classical ablation methods, as well as the more recent split brain technique, can be expected to provide a steady increment in understanding of memory storage and retrieval mechanisms.

Electrophysiological studies with intermittent conditioned stimuli have revealed that the brain seems to possess the capability to reproduce previously experienced, temporal patterns of activity. Under particular conditions, the electrical activity of the brain seems to contain two components: exogenous activity, arising from stimulation of sensory receptors, and endogenous activity, related to previous experience. Endogenous activity is particularly noteworthy in nonsensory specific regions of the brain. Various writers have suggested the existence of a coincidence detector system, in which exogenous activity in sensory specific pathways is compared to endogenous activity released in nonsensory specific regions by the afferent input from the stimulus.

Neutral stimuli have been reported to release endogenous activity patterns together with concomitant behavioral performance of previously acquired responses. Such released patterns can arise at different anatomical levels and do not appear to be a property of a localized region. Evidence of this sort suggests that memory may be mediated by a widely distributed mechanism capable of initiating particular patterns of activity in large neural aggregates. Much further work will be necessary to evaluate the functional significance of such phenomena.

Suggested Cross References

For a description of the anatomy and the functions of the neural structures referred to in this section, see Sections 2.5 to 2.9. Bachrach's section on learning theories, Section 3.3, contains a more extensive discussion of current concepts of learning. For a discussion of the application of concepts derived from learning theory to the practice of clinical psychiatry, see Urban and Ford's section on behavioral therapy, Section 34.2, in Area G, on treatment.

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Chapter 3

BASIC PSYCHOLOGICAL SCIENCES

3.1 ✓ PERCEPTION

CYNTHIA P. DEUTSCH, Ph.D.

Definition

Perception, according to a generally acceptable definition, is "...the process of organizing and interpreting sensory data by combining them with the results of previous experience." This definition contains several elements which give it its distinction. First, the term "process" implies that perception is not the name of a static structure or property of an organism but of an activity. Thus perception is something that is going on. The second element to be noted is the naming of the process that is going on: "organizing" and "interpreting." These words indicate that the process is an active one, and one which involves the organism in acting on something. The third element tells what that something is: "sensory data." Sensory data, in turn, may be defined as the uninterpreted product of the stimulation of end organs, or receptors, such as the eye or the ear. The last element is the entire last phrase of the definition, "...by combining them with the results of previous experience." The "combining" again indicates that it is an active process which is going on. The "results of previous experience" brings in another activity: *memory*. This element in the definition implies, then, that without memory and without bringing the memory to bear on the sense data, there is no perception. It also implies that without previous experience there is no perception. (This last point will be discussed again in the examination of some theories of perception; for now, however, let its implication stand.)

This definition indicates, then, that perception is a complex process involving the past as well as the present, and involving an external stimulus as well as an internal response. This fusing of past and present, of external and internal, makes perception a complex area, and its complexity accounts for the fact that many different theories of perceptual processes have arisen.

Scope

Perception, like the science of psychology itself, stretches from the biological sciences on one side to the social sciences on the other and includes data and ideas from physics and philosophy as well. The study and understanding of perceptual processes include these four broad fields.

Epistemology, that branch of philosophy which asks the question "How do we know?" sets the question which the study of perception endeavors to answer. The answer involves the physical properties of stimuli, the individual's nervous system, and his background and experiences. The physical properties of stimuli—wave lengths of light, frequencies of sound, and the like—are fundamental in determining the nature of the sense data. The individual's nervous system is the locus of the sensation and the perception, and its functional strengths and deficiencies relate to what is sensed and what is perceived. And the individual's family background and general social milieu and experiences contribute to his interpretation of his sense data.

For example, say a group of people, one by one, look through a small aperture at a green light. Afterwards, each one is asked what he saw. One subject says, "I saw a light, but I can't say any more about it." What might be the explanation? It could be explained by any of the aspects described above. For example, it might be that when he looked through the aperture, something went awry with the transmitting apparatus, the wave length of the light changed several times, and he experienced a variety of colors subjectively. Or it might be that the subject was color-blind, having a physiological or anatomical disorder involving certain of the sense cells of the retina. Or it might be that he had never been taught color names or the differences between colors, an example of social factors at work. Just as the descriptions of an elephant by several blind men were determined by which part each man felt, so a view of perception could be determined by which aspect is emphasized. The goal must be to mesh all aspects into an understanding of the whole. Especially is this important when one is attempting to evaluate an individual's perceptions—and aberrant perceptions.

External Stimuli

In considering the external stimulus, we must first of all be aware that there are various sense modalities through which organisms are stimulated, and that the sense organ which is stimulated yields only a particular type of sensation. This last point was enunciated first as the doctrine of the "specific energy of nerves" by Johannes Müller in the 19th century. This was an important milestone in the path to modern considerations of perception, as it spelled the end of the concept of the transmission of entire images from the external environment to the brain. As long as the idea was generally held that an object such as a pencil was transmitted, as it were, whole, from the external world into the brain, there was little opportunity to investigate the components of sensation and of perception and the components of the attribution of meaning to sense data. When that idea was replaced by the notion that each set of nerve fibers transmitted impulses which were consistently and characteristically sensed in particular ways, it became clear that what was received was a set of sensations having to do with dimension, form, color, and similar attributes of the object. Through experience, the individual learns that that particular configuration of attributes is called a pencil. With this understanding, the whole area of sensation and perception as we now know it was opened to study.

Deriving from the doctrine of the specific energy of nerves is the categorization of "adequate stimuli" for each sense modality. Thus, sound is the adequate stimulus for the ear and the acoustic nerve complex, light for the eye, and so forth. A physical analysis of a given environment could determine the particular modality that would be stimulated in it.

Visual stimuli. A great deal of the work on the influences of the stimulus field in perception has been done in the visual area. This is probably because what is perceived visually is strongly determined by the ordering of the stimulus components in space, and this is rather easy to manipulate. For example,

* * * * *

is a row of 16 asterisks. By manipulating the spatial relationships, one can enhance the probability that they will be seen as 8 pairs of asterisks:

* * * * *

In this pairing, the first and second, the third and fourth, and so on, constitute pairs. It is quite difficult to see the first as a single asterisk, with the second and third, and the fourth and fifth, and so on, being the pairs. Yet this perception can be encouraged by changing the spaces again:

* * * * *

It can also be done by adding another formal element and returning to the earlier spacing:

* * * * *

In simple experiments such as these, what is perceived depends upon and varies greatly with the

grouping and the spacing of the individual stimuli. Analogies can be drawn in audition: the same set of tones will be heard as different melodies, depending on the timing and spacing of their presentation.

Motion pictures provide another example of how perception is determined by the organization of the stimulus field. The stimulus of the motion picture is, of course, not motion per se but a series of still pictures taken at very short intervals. The intervals between the pictures taken determine how fast the movement appears to be: the longer the interval between pictures during filming, the faster and the less smooth the movement seems when the pictures are projected. Slow motion films are actually those in which the camera action is the fastest; there is, for instance, the least excursion of a moving extremity between successive pictures. Seeing the subjects of the pictures move is a perceptual phenomenon called *Phi* phenomenon or apparent motion. Another example of apparent motion is the moving sign in which a light appears to go around the edge of a marquee, but the physical stimuli are really a great many electric bulbs being switched on and off in sequence.

Such situations, in which what is perceived is based on physical stimuli but is different from them, led to the enunciation of a principle to the effect that *the whole is different from the sum of its parts*. One explanation of this principle defines stimulus organization, or *Gestalt*, as an additional property of the stimulus field.

Selectivity. Since man has receptors for many types of stimuli and since he lives in a complex environment in which there are numerous varieties of stimuli, he is constantly being stimulated. In fact, in the usual environment, far more stimuli than the individual can be aware of or respond to are impinging on him at any given instant. While these stimuli are impinging simultaneously through many different channels—sound through the ear and along the acoustic nerve and its connections to the central auditory projection areas, light through the eye and along the optic pathways, etc.—the *perceptual process is a central one*, and only a limited amount of this vast information can be processed at one time. Therefore, a process of selectivity becomes operative. Some stimuli are perceived and some are not; some that are perceived are responded to and some are not.

Some objective and many subjective factors govern the operation of this selectivity; both the stimulus field and the attributes of the perceiver determine what will be perceived. One important objective factor is the strength of the stimulus: typically, a strong stimulus is more likely to be perceived than a weak one. When two noises are present in the environment at the same time, the louder noise will mask the softer one. And usually (though not inevitably) a stronger stimulus in one modality will be perceived in preference to a weaker one in another modality.

Thus, a very bright light may diminish the perception of a low sound. Another objective factor that governs what is perceived is timing: a stimulus that begins an instant before another may be perceived at the expense of the second, although the relative intensity of the two stimuli must also be considered. And there is a paradigm visual perceptual experiment that demonstrates that a particular type of stimulus can distort the perception of a *preceding* stimulus so that the earlier one is not perceived as it was presented. The nature of the fibers that transmit the impulse can also determine the order in which stimuli are perceived. If one touches a very hot surface, he will usually feel the heat first and then the pain because the fibers that transmit the heat sensation carry impulses faster than do the pain fibers.

Other factors that determine which of a variety of impinging stimuli will be perceived have to do with the neurophysiology of perception and sensation and with individual experience and learning.

Neurophysiology of Perception

In the exploration of the neurophysiology of perception, we move away from emphasis on the stimulus field as a determiner of what is perceived. The first step is the response of the end organ to stimulation from the field. It is not appropriate here to discuss the anatomy or the basic physiology of the sensory pathways or to do more than note in passing that the intactness of the sense organs and tracts is a necessary condition for accurate perception. As noted in an earlier example, color blindness will interfere with the perception of color. Similarly, diminished auditory sensitivity to particular frequencies will distort the perception of sound. The nature of such distortions and their relationship to various types of sensory disabilities will not be discussed here.

However, the perception of physical stimuli involves more than simply the sensory pathways specific to a particular modality of stimulation. Recent work has placed considerable emphasis on the role of the reticular formation in the perception of stimuli. This activating system is apparently essential to the arousal of the organism, which must precede the reception of a stimulus from any modality. The work of Magoun and his associates indicates that when the reticular pathways of an animal are cut, the animal is rendered insensitive to stimuli that normally produce arousal and response. The full role of the reticular activating system is not yet known, but the evidence is such that it can be safely accepted that this system plays a critical role in the perception of stimulation, probably through its effect on general arousal and on attention.

Neurophysiological factors, it has been hypothesized, enter into the selectivity of perception through the reticular activating system. An experiment by Hernández-Peón illustrates this. He placed electrodes in a cat's cochlear nucleus in the brain stem and re-

corded the evoked potential in response to the presentation of clicks. That the cat's sensory apparatus was being stimulated by the clicks was evident from the evoked potential record. However, when a mouse was placed in the cat's visual field, the evoked potentials disappeared from the electrographic record, even though the clicks were still being presented. The cat's visual attention to the mouse—a very compelling stimulus for a cat—superseded its aural attention to the clicks, which were apparently not even noted in its brain. In one interpretation, this experiment shows the importance of the activating system in the perception of stimuli and indicates that selectivity in perception can have a strong neurophysiological component. There has been some theoretical argument about the strength of this interpretation, but the facts of the experiment are unassailable.

A different type of experiment relating to the selectivity of perception was done by Cherry. He presented differing stimuli to each of the subjects' two ears and asked them what they heard. He found that "irrelevant" information is rejected in favor of "relevant": the subjects could not report the irrelevant stimuli fed to one ear, but they could follow the directions presented to the other ear. However, he also found that a "noisier" noise masks the perception of a more meaningful one.

Individual Development and Experience

Let us now consider the influences on perception which arise from individual development and experience. One tends, for example, to perceive the more important stimuli rather than the less important. Since the attribute of importance is based on individual experience and interests, two people in the same situation may perceive very different things, and yet both may be accurate. What each perceives is a function of his own learning and experience. This is true in terms of both long term and short term experience. For example, the letter "A" would be simply a collection of lines for someone who does not know how to read. But for someone who did, seeing the "A" as a letter would inhibit perception of the letter's individual lines. A particular experience could invest the percept with additional meaning, as, for instance, the special meaning of the letter "A" to Hester Prynne in *The Scarlet Letter*.

The short term influence of experience on perception can be illustrated by an experiment that presented the same rather ambiguous figure to two groups of subjects. The figure could be seen as most resembling either a pair of eyeglasses or a dumbbell. On the initial presentation, one group of subjects was told that it was a picture representing eyeglasses; the other group had its attention called to the dumbbell characteristics of the figure. When both groups were later asked to reproduce the figure, the first group emphasized the eyeglass properties, while the second emphasized the dumbbell characteristics. Since the figure

presented to the two groups was the same, the differential interpretation of it—the different perceptions of it—could be attributed only to the differential short term experience.

An experience that predisposes an individual to certain types of perceptions is called a set. The influence of set on perception has been quite extensively studied, and several groups of principles have emerged. One large group of principles concerns the properties of the stimulus. The prototype principle here is that the more ambiguous the stimulus, the more will its perception be determined by the set or proclivities of the subject. Another group of principles concerns the properties of the respondent. The prime example here is that the stronger the set of the individual, the more will it determine his perception. When the two groups of principles interact, what emerges is the proposition that the meaning attributed to a particular stimulus by an individual is a function of the ambiguity of the stimulus and the strength of the individual's set.

Application of Principles

These principles have been extensively applied in studying individuals. By presenting unambiguous stimuli and analyzing incorrect responses, one can get a rough measure of the strength and nature of sets of particular subjects. This technique has its greatest application in the evaluation and study of individuals who show considerable distortion in their perceptions of the world around them.

Projective tests. The major application of these principles, however, has been in projective testing, in which ambiguous stimuli are presented to individuals and their responses are analyzed in terms of their emphasis and patterning. Extrapolated from this analysis is a description of the individual's personality in terms of his perceptual proclivities. Perhaps the best known projective test is the Rorschach test, which is a collection of 10 inkblots. These are, of course, highly ambiguous stimuli that are in themselves meaningless. The individual is shown each inkblot and is asked the question, "What does this remind you of?" His responses are categorized according to a developed system and then interpreted in terms of his personality structure. Hermann Rorschach, the originator of the test, considered it a perceptual experiment, and it does, indeed, make use of one of the basic assumptions about the determination of what is perceived: that a percept is a function of the ambiguity of the stimulus and the strength of the individual's set.

The needs of the individual also influence the content of what is perceived. A classic experiment in this area presented ambiguous pictures to a group of college students 1, 3, 6, and 9 hours after eating. The incidence of food and food-related perceptions was lowest 1 hour after eating and increased in their reports 3 and 6 hours after eating; it decreased some-

what at the 9-hour testing but remained higher than at the 1-hour test. Another experiment showed that hungry subjects judged food objects as larger than other ambiguously structured stimuli.

Over-all psychological needs as well as immediate physical needs influence perception. Another well known projective test, the Thematic Apperception Test, or TAT, is based on this proposition. The stimuli for this test consist of pictures of people in various situations. The situations are ambiguous enough to allow for a variety of interpretations. The subject is asked to tell a story about each picture, and his story is interpreted in terms of his particular needs and drives. The test yields information about the individual's personality through an analysis of his need structure.

Studies of individual perception. Emphasis on analysis of responses to stimuli as a means of learning about the individual is seen in a now classic series of experiments by Witkin and his associates. The basic experimental task in the series was adjusting a rod so that it would be exactly vertical within a frame. The experiment was usually carried out in the dark, with the rod and the frame painted with luminous paint. Numerous variations were introduced. For instance, in some experiments the frame was presented at an angle; the subject could then adjust the rod to make its position consistent with the presumed verticality of the frame or with other cues to the dimensions of the environment, such as his own bodily orientation in space. These latter variables were also manipulated; in some experiments, the subject sat in a tilting chair. By comparing the rod's direction and degree of deviation from the vertical, the experimenter was able to determine which cues the subject used. A series of studies then investigated correlations between personality traits and types and the cues relied on to adjust the rod. Subjects who relied mainly on the position of the frame to judge the vertical were labeled "field-dependent"; those who relied in the main on cues coming from their own body position were called "field-independent." The field-dependent subjects tended to make greater errors in the estimation of the vertical than did the field-independent subjects. Also, the field-dependent subjects were found to be generally more dependent as people, to lack self-insight, to be more suggestible, and to have more inferiority feelings.

This work is an example of the approach to the understanding of individual personality through a study of individual perception. It is a particularly good example because it managed to avoid a major pitfall in this area: reliance on the subject's report to learn what he perceived. By using an objective physical manipulation, the adjustment of a rod to the vertical, it avoided the problem of determining whether the subject's report of his perceptions was an accurate one. A variety of motives besides the desire to report sensation accurately can influence what a subject says

he saw. Many experiments have indicated that people can be influenced in their own perceptual judgments by the judgments of others. For instance, a point of light in an otherwise pitch dark room will appear to move, probably because of natural eye movements. When a subject is asked to judge the distance of the excursion of the light and then is permitted to hear the judgments of others, his own subsequent judgment will be closer to the other judgments. The degree of modification will depend on an assortment of variables, including the consistency of others' judgments, the status of the other judges with respect to the subject, and the expertise attributed to the other judges.

In terms of the definition of perception, what is being manipulated here is, of course, the interpretation of sensory events by the individual. Since the light in the dark room does not in fact move, the sense data are somewhat ambiguous, and the subject is more prone to influence by social factors. Other experiments, however, indicate that, even with a more concrete sensory event, subjects are highly susceptible to suggestion in their reports of perceptual experience.

Learned Behavior

Much of perception is learned behavior. How much is actually learned and how much occurs as a result of the intrinsic organization of the nervous system is an issue that has occupied theorists ever since perception was first studied. Information pertaining to early perception is difficult to obtain because infants are not able to report what they see or hear. Some experiments on sensory deprivation, however, do yield information about what kinds of abilities are lacking when sensory experience is lacking. In a sensory deprivation experiment, the subject is removed from all stimulation possible. In experiments reported by Riesen, chimpanzees were raised wholly in the dark from birth until certain predetermined testing times. The chimps' vision was tested after varying periods of rearing in the dark; in this way, the importance of visual sensory experience in the development of visual perception was studied. Riesen found serious decrements in visual perception on the part of the chimps and also found that the length of time the animals were reared in the dark determined the possibility of reversing the decrements.

While such experimentation is not possible with human subjects, nature on occasion supplies relevant experimental conditions. Senden reports a series of studies of people who were blind from birth and who, at varying ages, underwent successful surgery for the removal of cataracts. Studies of their visual perception indicated that they had great difficulty in perceiving objects and even greater difficulty in distinguishing one object from another. Those who had learned to differentiate a square from a triangle by feeling the forms found that vision disrupted their recognition of the objects. What many became able to

do was to count the corners of the figures in order to distinguish them. Most of the younger subjects were able to acquire adequate visual perception with time and practice, but many of the older subjects sustained an apparently permanent visual handicap.

These experiments are interpreted by some as evidence of the importance of experience in the development of visual perception. But others point to the evidence that the timing and duration of sensory deprivation influence its effect on perception and argue for the possibility of innate or intrinsic factors in perception. Their argument is that perhaps certain abilities develop in the absence of stimulation at certain very early periods in life but do not develop after those critical times. However, recent research supports the position that learning and experience exercise very strong influences on perception. For instance, Krech, Rosenzweig, and Bennett report that perceptual discrimination ability can be enhanced by enriching the normal environment of rats.

Psychopathology and Perception

If the motivational and need states of the organism influence his perception of his environment, then it follows that psychopathological disturbance will have a profound effect on perceptual functioning.

Some experimentation in an area called "perceptual defense" makes this clear. A central experiment in this area was done by Postman, Bruner, and McGinnes. They found that words related to the highly valued areas of a subject's concern were recognized more quickly than were words related to areas of little or negative value to the subject. The term "perceptual defense" derives from the idea that the subject defended himself against the perception of words that had negative connotations for him; he took much longer to recognize them when they were presented. This was illustrated in another experiment by McGinnes in which he found that subjects took a longer time to recognize "taboo" words than neutral words.

An individual who has a pathological fear or need to avoid certain categories of people or experience may, therefore, be expected to "block out" perception of the threatening stimuli. It is possible that the mechanism by which this is done will ultimately be found in the neurophysiological processes by which Hernández-Peón's cat no longer perceived the clicks being presented when a mouse entered its visual field. It is also possible that future experimentation will reveal chemical changes in the brains of people with psychopathological disturbance and will reveal that these changes influence perception. It can be shown now that some drugs influence perceptual functioning and that different drugs influence it in different ways. Here the influence must be directly on the neural functioning underlying the apprehension and interpretation of stimuli. Some experimentation relevant to both the effects of drugs on perception and the effects of severe psychopathology on perception con-

cerns differential effects of the same drug on schizophrenics and on nonschizophrenic subjects.

Schizophrenics versus nonschizophrenics. The literature on the differences in perception between patients and normal subjects is voluminous, and much of it is contradictory. To review this field is a task far beyond the scope of this section, and no attempt will be made even to summarize it. A few examples should suffice to indicate the kinds of experiments and findings reported in the literature.

Whether one views serious mental illness as functional or in some measure organic, the perceptual studies relate to the influence of the perceiver and his needs and state on the content of the perception. Many of the studies have taken some objective behavior, such as reaction time, and studied its attributes in a patient population and in a nonpatient, and presumably normal, population. (In this way, schizophrenics especially have been compared with nonschizophrenic groups on a variety of perceptual measures—figure-ground differentiation, perceptual constancies, differential reaction times, and the like. It has been found, for example, that schizophrenics have a consistently and significantly slower reaction time than do nonschizophrenic subjects. However, attentional impairments can confound much research with schizophrenics: it may be that one is simply defining a difference in how much attention is being paid to the stimulus rather than a difference in the actual perception or speed of perception between schizophrenics and normal subjects.

Sutton and his colleagues, using a quite ingenious technique, avoided this problem of differential attention by first comparing the various aspects of the performance of a single individual and then comparing this relationship among parts to the same relationship obtained in the performance of nonschizophrenic subjects. Using this method, Sutton found that schizophrenics took relatively longer than normals to shift from one sensory modality to another. Since one of the prevalent clinical signs of schizophrenia is a kind of stickiness and perseveration, it is possible that this research is building a basis for objectifying and ultimately quantifying some clinical observations. This is an example of the way in which an attribute of perception can be used to study differences between groups of subjects and then to make hypotheses about the disease process.

Although much of the work in this area of perception and psychosis is done simply to define differences, at least one theory of psychopathology is used to predict the kinds of similarities and differences that might be found both between patient populations and normal ones and between the various groups and types of subjects within the patient population. Eysenck postulates a theory based on assumptions as to the state of the brain in various types of disturbances. For example, he says that a hypermanic individual has a cerebral cortex that is in a state of inhibition

and that a depressed individual's cortex is in a state of excitation. From this, Eysenck postulates that the hypermanic person will be much more difficult to condition than will the depressed individual. (Experiments done on these assumptions have yielded conflicting findings.) This is another example of how the perceptual processes have been used to reflect the properties of individuals.

This very brief discussion of the highly complex area of perception is meant to give a general orientation to the field and to its importance in the determination and the measurement of human behavior. Many important topics and areas have been omitted, and for a presentation of them, as well as for the fuller explication of those touched on here, the reader is referred to the bibliographic references.

Suggested Cross References

The clinical significance of disturbances in perception is discussed in Linn's chapter on psychiatric symptoms (Section 13.1) and also in Sands' section on the psychiatric examination (Section 11.2). Principles of perception are applied in the use of some of the psychological tests used in the assessment of psychiatric and neurological disorders. These are reviewed by Piotrowski in his discussion of projective tests (Section 12.1), and by Benton in his section on tests of organic brain damage (Section 12.2). Descriptions of specific disorders of perception, such as hallucinations and illusions, may be found in the sections dealing with the various psychiatric and neurological syndromes, especially the schizophrenic reactions (Chapter 15) and the organic brain disorders (Chapters 18 to 21), in Area F, on psychiatric disorders.

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3.2 COGNITION

MARTIN DEUTSCH, Ph.D.

In his search for proof of his own existence, Descartes arrived at a satisfactory basis on which he could accept his own reality: "Cogito, ergo sum." "I think, therefore I am." This became a cornerstone of Cartesian philosophical doctrine, which has had a profound effect on modern science. What concerns us about Descartes' statement is that he affirmed his own existence in terms of the basic human process of thinking.

Cognition as a word is generally used to refer to more than thinking processes; for many theorists it includes sensation, perception, and learning processes. However, in contemporary usage, the main aspect of cognition is considered to be thinking and problem solving. Perhaps the very importance and inclusiveness of the area have made its margins somewhat fuzzy; exactly where cognition begins and perception or sensation ends, for example, is not entirely clear. For purposes of this section, however, we will discuss cognition mainly in terms of thinking and problem solving with only brief references to perception and learning.

First of all, cognition develops, and it develops in interaction with the circumstances of the individual's life. A number of theorists have defined stages in cognitive development. Most of these sets of stages have one particular progression in common: Cognitive development proceeds from the more concrete to the more abstract, from being more dependent on the actual presence and the sensing of stimuli in the environment to being relatively more independent of

concrete stimuli and operating, instead, with the symbolic representations of stimuli in memory. In essence, these progressions represent the change from having to manipulate objects in physical space to solve a problem to being able to manipulate the symbols of objects in one's mind in order to arrive at a solution. And here is where man emerges as the superior, symbolic animal, the one most capable of problem solving on the highest level.

When any part of man's symbolic language system is impaired, as by psychopathology in its many forms, his thinking or problem-solving process is adversely affected. Disturbed thought processes characterize most forms of mental illness. Through analysis of these thought processes, much insight can be gained into the nature of the individual's pathology and, by extrapolation from many such studies, into the nature of various types of disturbance.

Studies of thought processes and methods of problem solving in the nondisturbed individual also yield information that relates to personality organization and type. This is an area of study and theory called cognitive style. One aspect of individual differences is in their capacity to solve problems, sometimes referred to as intelligence. Although "intelligence" is one of those too encompassing words, one of its frequent definitions has to do with skill in problem solving.

From the discussion so far, it can be seen that what is referred to as "cognition" or "cognitive process" is a function related to problem solving, to symbolization, to the field of learning, and generally to a kind of aptitude called intelligence. Even this string of definitions and associations, however, does not quite explain the area referred to by the term "cognition." Perhaps an example used by William James provides the best description. In talking about the inception of cognitive life, James said that the point when it begins is when one is able to say, "Hello! Thingumbob again." In a sense, a discussion of cognition must revolve about the various skills and processes that make that exclamation possible. These would include recognition, recall, and symbolization (labeling). Implied in these skills is the development of the individual in interaction with his environment.

Language

Let us begin with language. In a sense, language may be considered the currency of cognition, at least for humans. We manipulate objects symbolically by labeling them. There is even a theory, proposed by Benjamin Whorf, that the structure of thought is determined by the structure of language. Essentially, such a theory means that, if there were a culture in which language did not include a past tense, it would be a culture without historical discussion. The Whorfian hypothesis has given considerable impetus to the study of semantics. Its enunciation has served in the behavioral sciences to place more emphasis on re-

search into linguistic processes and the acquisition of language by the child.

The Whorfian position represents an extreme point on the continuum of theories relating language to thought. A somewhat more moderate theory was suggested by Vygotsky, a Russian psychologist who studied both language acquisition and thought processes. His book *Thought and Language*, which was only recently translated into English, has considerably influenced this area of research and theory. Essentially, Vygotsky discusses thought as the progressive introjection of speech, and he regards thought and words as quite inseparable. He said: "The relation between thought and word is a living process; thought is born through words. A word devoid of thought is a dead thing, and a thought unembodied in words remains a shadow."

Verbal mediators. Many experiments have shown that adding language to apparently nonlinguistic problems facilitates their solution. For example, when labels are given to nonsense figures, it takes less time to learn their sequence.

Similarly, when prepositions are interjected between pairs of words that are to be learned, the number of repetitions needed to learn them decreases. For example, if the subject is to learn to say "table" after the experimenter says "hat," he learns the association faster if he adds, "on the" to himself; "hat on the table" is learned faster than simply "hat... table." This finding has been verified with many different groups of subjects, including those who are mentally retarded. According to some recent work of Jensen, the difference between retarded and normal subjects is that, if the normals are given the words to interpose on one occasion, they will make up such words on the next occasion; the retarded subjects, however, have to be supplied with the words each time. But for all of them, the use of interposed prepositions—called "verbal mediators"—speeds the learning of the word associations.

The field of verbal mediation in problem solving is receiving much attention at the present time. The assumption is that verbal mediators and labels play a very important role in the learning of even non-verbal material. For instance, learning to tell different bacteria apart is not essentially a verbal skill; it is a visual perceptual one. Yet, if one can label particular shapes verbally, it helps him remember and differentiate them.

This area of work has served to place much emphasis on the acquisition of language by children and on the study of their progressively greater familiarity and ease with it. It has stimulated a great many studies in language and the use of language. This work has implications for an understanding of cultural factors in thought and of linguistic factors in mental disturbance.

Acquisition of language. Language and its forms come to the child from his environment. He learns to speak the language of the people who surround him,

even though his *capacity* for language learning and use are a part of his biological endowment, anatomical and neurophysiological. It becomes apparent that, if language plays a major role in thought and if language is environmentally stimulated and its content environmentally determined, then environmental stimulation has much to do with thought.

As indicated earlier, Jensen found that all his groups of subjects for learning studies, except the mentally retarded, learned to supply their own mediators for remembering verbal stimuli. For some of these groups, however, he had to supply the mediators in the beginning; they did not supply their own mediators spontaneously. What, then, of the child who is reared in a largely nonverbal environment in which he neither spontaneously learns to use mediators nor is specifically taught to use them? Such a child may be perfectly capable of learning as fast as a more privileged child, but without the verbal facility he may be handicapped in the solution of many different types of problems.

Use of language

Social levels. That environmental and social factors play a large role in language usage is attested to by a number of investigators. Bernstein, in England, has done a substantial series of studies in this area and has concluded that social class designations—or, rather, the kinds of occupational, social, and environmental conditions that go along with certain social class levels—define also the type of verbal behavior seen in people.

Lower class families tend to show what Bernstein calls "restrictive speech codes," and middle class families tend to speak in what he designates as "elaborated codes." The two speech types differ from each other in the complexity of syntax, sentence length, richness of vocabulary, and several other categories used for linguistic analysis. What this means in everyday terms is that the lower class families have a less rich speech, and the middle class groups have a more complicated syntax and, therefore, a means for expressing more complicated thoughts.

The language of science, for example, is an elaborated code, but the language of the simple transaction in a store is a restricted code. This is not to say that children from lower class families who speak in restricted codes cannot become scientists; it is only to say that, according to this theory, they will have to develop a more elaborate language system, one that the middle class child is more likely to start school with in the first place.

Bernstein's results were obtained from studies he carried out in London, where the social class lines are much more rigidly drawn than in America. But investigators here have obtained data generally consistent with his findings. At the Institute for Developmental Studies in New York, investigators are discovering a more limited syntax for lower class children as com-

pared with middle class children. Hess and his associates in Chicago are reporting similar findings.

Child-rearing techniques. Hess's studies also attempted to relate language systems to child-rearing techniques, and here is another point of direct contact between language systems and personality organization. He found that the mothers who speak in restricted code are more likely to be what he calls "status-oriented" in their relationships with their children, but the mothers with the more elaborated speech codes tend to be what he defines as "person-oriented." The status-oriented mother, for example, disciplines her child in terms of "because I say so" and refers to the necessity for certain things to be done because "they say so" or because "the President says children should drink milk." On the other hand, the person-oriented mother is more likely to give reasons for actions and for discipline that are within the child's experience and his own motivations: "You should drink your milk because you want to grow up to be strong and healthy."

These differing kinds of child-rearing techniques can have very differing effects on the development of children's personalities. And these examples are only some of those available to illustrate the profound effect the variables labeled "cognitive" can have on personality development. These are not one-way effects; they are part of an interacting feedback, by which personality and emotional factors also influence cognition.

Language development. Many of the special programs designed to help disadvantaged children reflect the emphasis on linguistic influences in thought and the corresponding emphasis on social factors in language development. These programs are, in general, cognitive-enrichment efforts. They are directed toward the improvement of many cognitive skills, but a prime emphasis is language and language development. One of the reasons for the language enrichment is to improve the children's social communication skills; another reason is to influence their problem-solving abilities.

Irwin found substantial positive effects on children's language development simply from having their mothers read to them for half an hour every evening. Of course, when an adult reads to a child, there is usually a verbal interchange as well as the simple reading, so the effects are probably attributable to these other related language activities as well.

Development of Cognition

Many theorists define a series of stages in cognitive growth. Usually, these theories indicate that one stage grows out of the next and that the stages follow a certain invariable sequence. Most, but not all, of the theories include the supposition that each succeeding stage expands on and replaces the prior one, though there can be vestigial remnants of the previous stage.

Piaget's theories. A major theorist in this regard

is Jean Piaget, a Swiss psychologist, whose exhaustive and ingenious observations of his own three children provided the foundation for an entire elaborated developmental theory, with cognitive development at its base. For a long time in the United States the scientific *Zeitgeist* was such that the works of Piaget languished in libraries, with many of his books not even translated into English. This ignoring of Piaget stemmed from the American emphasis on emotional rather than cognitive development and the American stress on large sample, controlled experimental studies in preference to Piaget's naturalistic and small sample method. The growth of interest in cognitive development sparked a renewed interest in the work of Piaget, and a series of controlled experiments with children has verified some of the generalizations he made from his own observations. In turn, the theories and research stimulated by Piaget's work are coming to be regarded more and more as basically relevant to an understanding of the relationship between higher thought processes and emotional and social development and disability.

Schemata. During the entire developmental period, according to Piaget, the child is involved in building schemata, which are organizations of behaviors relevant to each other. Thus, there can be a "schema of sucking," which would include all the activities related to sucking: apprehension of the object to be sucked, activities of the mouth, lips, and hands during sucking, etc. The child's responses to the world are made up of schemata, though not exclusively. Piaget speaks more about schemata in the earlier, simpler cognitive periods than in the later periods.

Schemata are acquired by the dual processes of assimilation and accommodation. The first refers to the introjection of knowledge about the environment, which is then incorporated into the child's existing body of knowledge. In this incorporation, the existing body modifies somewhat to accommodate the new elements. It is by this continuing dual process that schemata are organized and changed, that concepts are built and expanded.

Stages of development. Piaget postulated a series of stages in cognitive development, beginning with what he designated the sensorimotor, progressing through the preoperational thought period to the stage of concrete operations into the period of formal operations. Age equivalents for these cognitive levels are very rough ones, with, presumably, fairly wide individual differences. A characteristic of the progression of levels is that the child becomes less and less dependent on particular external stimulation and more and more able to function in terms of symbols, without concrete referents.

In the first period, the sensorimotor stage, the infant begins as a reflexive organism that responds to its environment in an undifferentiated manner. Later in this stage he becomes an organism that displays, as Flavell put it, "a relatively coherent organization of

sensory-motor actions vis-a-vis his immediate environment."

The next stage, the preoperational thought period, is preparation for the stage that follows, the stage of concrete operations. In the preparatory stage, the child first begins to understand and use symbols, though he is able to do so only in unitary ways; double classifications elude him. For example, though he can understand that a particular person can be another child's mother—and, in fact, sees her in those terms: as "Johnny's mother" and not as "Mrs. Smith"—he is unable to see the same person in another classification as well: as "Mary's teacher."

By the end of the preoperational stage, the child is able to think in terms of classes, to see relationships, and to handle number concepts. He is still egocentric in his thought—he relates everything to himself, and his judgments are subjective—but the basis has been laid for the development of logical operations.

The stage of concrete operations includes the increasing ability to handle numbers, the development of a real logic, and an ability to relate external events to each other, independent of the self. The child can now classify the same person or object along more than one dimension. This period of from 7 to 11 years of age is one of massive intellectual and conceptual development. Interestingly, this period roughly corresponds to that defined in psychoanalysis as "latency": a period of relative overt quiescence in psychosexual development.

The last developmental stage that Piaget defined is the period of formal operations, from about 11 to about 15 years. This is when the child develops true abstract thought and is able to make hypotheses and test them logically. He has achieved conceptual independence from the concrete and can operate wholly with symbols, with no need to introduce the concrete objects they represent.

Within all these stages are many substages and the development of particular concepts and conceptual frames, such as concepts of time and size. Included in Piaget's system are accounts of the development of perceptual, linguistic, mathematical, and moral concepts. It is a developmental system, and it is an interactive one, in the sense that development is seen to take place as a function of the contact between the child and his environment. None of these functions is presumed to progress as described in the absence of environmental contact and interaction; the basic processes by which the development proceeds are accommodation and assimilation.

This point is emphasized, as it was in the discussion of language, because it contributes to a view of the individual as plastic in his development, and responsive to his surroundings. While the neural substrate must be responsible for the *possibility* for cognitive development to take place, it is the relationship between this neural substrate and the stimuli which act upon it which promotes the actual development. Such

an understanding occupies a central place in modern behavioral science: it offers the possibility of influencing man's development in the most basic sense. For fields which deal primarily in attempting to teach and to change people, such as psychiatry and education, it offers an optimistic view of potential success for both prevention and remediation of disability.

Stimulation and cognition

Intelligence. There has been a popular assumption that intelligence—which, in the context of this section, is the aptitude for cognitive development and cognitive functioning—is quite resistant to change by external intervention. The evidence does not bear out this assumption. There is, however, a consistency in scores on intelligence tests at age 8 and at adulthood in the absence of any special educational or interventional experiences in the interim. The consistency in intelligence test scores at age 2 and at age 8 is much less definitive.

The concept that intelligence is determined by the operation of internal processes, presumably genetically determined, is no longer current. Some theorists still hold to portions of it, but the evidence favors those who view intelligence as a function that develops in the relationships between the individual and his environment; that draws on various tools, such as language, which are developed in the same manner; and that grows or declines as a consequence of the amount and nature of environmental encounters. At the same time, these properties of change are relatively long term ones. Slight variations in living conditions, or very temporary ones, do not appreciably affect cognitive abilities.

Enrichment programs. Over the last 30 years, many programs have been mounted to attempt to enhance cognitive functioning. Many have been successful. Skeels, for example, found that the adoption of children from very poor and difficult institutional circumstances into more favorable ones enhanced their intelligence test scores substantially. In a follow-up study he reported maintenance of the positive changes associated with adoption. A control group of children, who were not adopted and who were studied at the same times, showed a maintenance, on the whole, of the lower functional levels.

Wellman reported positive changes in intellectual functioning as a result of a special nursery school experience. More recently, Kirk reported significant improvement of cognitive skills of mentally retarded youngsters enrolled in a special preschool program. Although the improvement did not continue after the end of the special program, the gains acquired were not lost.

Current attempts to enhance cognitive development with special programs are also focused on the preschool years. The long term programs that begin for 4-year-olds and continue for several years are as yet too new to show definitive long term results, but the

short term gains they report are significant in terms of raising functional cognitive levels and intelligence test scores.

On the basis of these results, large scale short term programs are being mounted all over the country with support granted under the antipoverty legislation. This is just one example of how both theory and research from the behavioral science field are applied to current social problems. This application, in turn, can be expected to stimulate more research and experimental programs in the cognitive area.

Reading. The general ferment about stimulation of cognitive processes has also affected thinking about the skill of reading. For many years, the educational dogma stated that teaching children to read too early could be harmful to them and that the appropriate age to learn reading was approximately 6. This emphasis on the potentially harmful effects of earlier teaching effectively stopped experimentation with reading at earlier ages, even though Davidson in 1931 was able to make substantial progress in teaching reading to children who had a mental age of 4, including some retarded 5-year-old children.

Now interest in early reading has been reawakened, and many educators are rethinking their earlier opposition. As with other cognitive skills, there are vast individual differences in the ages at which children can acquire reading skill, but there is no scientific basis to any assertion of inevitable harmful effects from early teaching. Not all children are able to learn before 6, but apparently the only harm that comes from earlier attempts to teach them is caused by coercive methods used, rather than by such attempts per se.

Effects of environment. There is evidence that, in the absence of special intervention, children in a non-stimulating environment will show a drop in intelligence test scores over years. This was reported in 1924 by Gordon, who studied gypsy children in Europe whose schooling and cognitive stimulation was highly irregular because the families lived on traveling barges. Gray and Klaus refer to this phenomenon as "progressive retardation," and Deutsch and Brown call it "cumulative deficit."

The influence of environment on intelligence can also be positive, even in the absence of specific programs of stimulation. Klineberg did a classic study that showed significant intelligence test score increases for Negro children who moved from poor and unstimulating environments in the South to better living conditions and better school situations in the North.

Personality and Cognition

Interrelationships among cognitive processes affect the individual's intercorrelated modes of thinking, problem solving, and perceiving, which in current literature are referred to as "cognitive style." Kagan and his associates studied the development of such styles in children and defined certain consistencies over time. They also found relationships between the styles

of analyzers and nonanalyzers and their motoric impulsivity, with the nonanalyzers being much more impulsive and generally motoric in their reactions.

The authoritarian personality. A book by Adorno and his associates, *The Authoritarian Personality*, represents one of the first systematic attempts to relate certain personality characteristics, attitudes, and cognitive orientation. The studies reported in that book and elsewhere were oriented toward the personality and cognitive correlates of particular political attitudes, but part of the approach involved study of the relationships among perception, cognition, and personality. In general, those studies report a correspondence among fascist political attitudes, a status-oriented view of interpersonal relationships, and a cognitive rigidity.

This series of studies has been criticized because of the involvement with the definition of an authoritarian personality—although that was the aim of the studies in the first place—and the correspondingly lighter emphasis on definitions of other personality types and their cognitive correlates. However, the authoritarian personality studies set the pace in this area and provided an impetus for work that is still being felt. In the criticism and discussion of the book, many theories were formulated, and many investigators were stimulated to carry out related work.

Some interpretations of the data contained in the authoritarian personality studies have quite direct relevance to the process by which individuals can be influenced to alter their behavioral modes. For instance, Brown suggested that the person with the authoritarian mind can be classified in terms of the kinds of information that will influence him to alter his thinking about particular topics. Brown said that the more the authoritarian an individual's orientation is, the more he can be induced to change his mind because of the statements of authority or high status figures alone. As the individual approaches the nonauthoritarian point on the continuum, the more he will need other kinds of evidence to change his thought or attitude.

The open and closed mind. Following in the tradition of the authoritarian personality studies, but avoiding many of the pioneering pitfalls, Rokeach reported a series of studies in a book entitled *The Open and Closed Mind*. According to his studies, the closed mind person is dogmatic and rigid and is characterized by the operation of many mechanisms of defense, which serve to shield him from uncomfortable conflicts in his belief systems. The open mind, on the other hand, is just that: open to external stimuli and more apt to be probing the world of knowledge, seeking more information.

Almost the same type of dichotomy was enunciated by Witkin and his associates under the "field-dependent" versus "field-independent" rubric. Goldstein and Scheerer, in work that antedated the authoritarian personality studies, and that was oriented less to attitudes and more to "pure" cognitive abilities, which

they related to the presence or absence of central nervous system disability, defined two groups as "concrete" thinkers and "abstract" thinkers. Many other investigators have come to similar conclusions, albeit in different words.

Allport summed up the individual characteristics defined by all these investigators: "Some people are chronically unable to change their sets when objective conditions demand it; others, by contrast, are flexible."

What is most relevant about this work to the general field of psychiatry is its union of the cognitive and the emotional—the relationship defined among belief systems, cognitive rigidities, and personality orientations. This is perhaps best enunciated by Rokeach in *The Open and Closed Mind*:

Many important aspects of intellectual functioning in particular and cognitive functioning in general can be attributed to personality rather than to intelligence.... It is possible to investigate many spheres of activity—ideological, conceptual, perceptual, and esthetic—via the common structural bond that ties them all together in the person's belief system.... A person's cognitive functioning is not a thing apart from his affective or emotional functioning. They are seen to be different facets of a person's total behavior.

Kagan, Shaffer, and Frenkel-Brunswik all indicated that these systems or styles develop early and are influenced by child-rearing practices.

Psychopathology and Cognition

The relationship between development and cognitive style and between the cognitive and the emotional has provided the basis for extensive inquiry into the thought processes of persons who are emotionally disturbed.

Comparisons with children and primitives. One of the most specific discussions of the relationship between development of cognitive skills in children and their dissolution in the mentally disturbed is in Werner's book, *Comparative Psychology of Mental Development*. The book presents a system of mental development that includes stages not too different from those enunciated by Piaget. Werner, however, is concerned with the entire life span and is more concerned than Piaget with brain function. Werner propounds a complex theory of mental development and cognition that includes comparisons among cultures, among individuals at different points in the life span, and among individuals with different types of organic and psychological pathology.

The fact that children, individuals with brain damage, and those with various forms of psychopathology are all concrete in their thought processes has tempted many theorists to compare these clinical groups to children. Cross-cultural studies, too, at times relate primitive concrete thought to the concretism found in children in our culture. Werner labeled all these comparisons false and disposed of them by pointing out that there is an essential difference between the concretism of the developing child and the regression to

concretism that characterizes the disturbed or organically impaired adult. With regard to equating the primitive thought of psychopathology with primitive thought in primitive cultures, he said, "The primitive man lives in a world to which he is admirably adjusted; the pathological individual tries to adjust himself by means of primitive behavior to a world for him inadequate and nonprimitive." He also pointed out that any developmental stage contains elements of the preceding one and, therefore, that the primitive and concrete thought of the mentally ill adult contains vestiges of his earlier, more abstract, and intact functioning.

Schizophrenic cognition. There is voluminous literature on thought processes in mental disease. About the only common point of departure for most researchers in this area has been the conviction that schizophrenic thought is somehow different from normal thought.

Investigators in this area have operated from different theories of cognition and from varying theories and definitions of mental illness. The experimental results are inconclusive and often contradictory. The reliability of these results is further confounded by the widespread experimental use of either heterogeneous schizophrenic populations or differently classified populations. The classical diagnostic categories of hebephrenic or paranoid schizophrenia have been used, as have newer categories, such as process-reactive, chronic-acute, and good and poor premorbid schizophrenics. Also, schizophrenic cognition or conceptual ability has been measured by a wide variety of tests, ranging from I.Q. and simple learning tests to "higher order" tests of concept formation and deductive, inductive, and abstract reasoning.

Conceptual ability. Experiments concerning schizophrenic conceptual ability have yielded results that range from no conceptual deficit in schizophrenia to specific deficits associated with the type of psychosis to significant differences between *all* schizophrenic and normal subjects. Although the issue is still controversial, recent research has indicated that schizophrenics are not necessarily unable to form concepts and that the concepts they form are not significantly concrete or infantile. Rather, it has been pointed out that schizophrenics may be concerned with bizarre and personal concepts that they are unwilling to communicate or that they communicate in a private language. Other theorists have demonstrated that schizophrenic concept formation ability can be raised to a normal level by decreasing the number of distracting stimuli and that their conceptual performance can be significantly lowered by increasing the number of stimulus distractions.

Conceptual functioning. Schizophrenics have often been observed to include irrelevant and extraneous factors in their response to a conceptual task, a phenomenon termed "overinclusion." Such a phenomenon has been explained on the basis of a schizophrenic inability to select only those stimuli that are relevant to

the task being performed. The results in this area are controversial and are not easily fitted into a single or simple theoretical framework. But the results may be summarized in the following way. Although some schizophrenics may form bizarre or personal concepts and may exhibit the phenomenon of overinclusive thinking, all schizophrenics, including the chronic population, have performed normally on a variety of conceptual tasks when time pressure and distractions were eliminated and when the levels of stimulus input (cue information) and motivation were increased.

Several major theoretical approaches have attempted to account for schizophrenic conceptual performance. One theory, presented by Goldstein and Scheerer in 1941, characterized schizophrenic thought as concrete; schizophrenics, like brain-damaged patients, are seen as having lost the ability to think in the abstract. Although early results with the Goldstein-Scheerer and Vygotsky blocks tests tended to support this view, research in the last decade has generally tended to disprove it.

Another theory was presented more recently by Arieti, who characterized schizophrenic thought as paralogical, dreamlike, and primitive rather than logical. He suggested that the schizophrenic is unable to handle stress and, therefore, regresses to a less advanced level of personality integration. The schizophrenic then uses his thought processes to isolate himself from a threatening social environment. This withdrawal or desocialization takes place together with, or even because of, a concomitant process of cognitive desymbolization. In this state, objects assume a different and highly personal meaning to the schizophrenic.

Williams attempted what he regarded as a test of Arieti's theory, but the tasks he used did not yield differences in logical and syllogistic reasoning between schizophrenics and normals. This should by no means be considered a definitive disconfirmation of Arieti's theory, as the tasks Williams used may not have been adequately reflective of the kinds of logical difficulties that schizophrenics have. It is also possible that the testing situation influenced the performance of the subjects. There is some evidence, for example, that the conditions set for task performance influence the functioning of schizophrenics in predictable ways. This would mean that at least some persons with schizophrenia are still related enough to the world around them to be influenced by it, at least in cognitive functions.

A number of theorists have suggested that the apparent cognitive deficit observed in schizophrenia is a function of a high anxiety level, impaired attentional and time reaction abilities, a lowered motivation level, and an oversensitivity to distractions. Some experiments in the area have tended to support these theories.

It is becoming fairly clear that the cognitive styles in schizophrenia are not necessarily stable and irreversible ones. Experiments have demonstrated that the abstracting and interpreting ability of mildly disturbed

schizophrenics can be improved under conditions of enriched stimulus information. Schizophrenic concept formation ability can be significantly improved and raised to normal levels under avoidance learning conditions, by presenting subjects with a noxious stimulus that can be terminated by the correct conceptual response. In general, these results tend to support other experiments concerning less complex cognitive and learning tasks in which the schizophrenic response improved under conditions of punishment, censure, or failure threat.

The relationship of schizophrenic functioning to the nature of the task presented is supported by evidence, reported by Hunt and Cofer, that the schizophrenic functional deficit becomes greater as the complexity of the task increases. Mednick used this concept to reconcile the differing views of various investigators with respect to the thinking disorder seen in schizophrenia. He pointed out that "thinking is perhaps the most complex behavior in which man can engage" and indicated, therefore, that this would be a focus for schizophrenic dysfunction. Although theorists differ, Mednick believes that they all acknowledge that the thought of the schizophrenic can be described as disordered and that this disorganization results from irrelevant, fragmented, and competing associations.

One view of the genesis of such disorder is that it represents a reaction to stress. This assumption underlies one view of delusions, a prominent characteristic of certain types of schizophrenia. McReynolds, for example, said that a delusion may be viewed as a form of cognitive reorganization that desensitizes threatening and anxiety-producing thoughts by reinterpreting them. Thus, a delusion should be a less threatening organization of information for the schizophrenic. McReynolds and his associates later made a somewhat oblique test of his view of a delusion and confirmed his earlier theorizing. No experiment should be regarded as definitive, but this one does represent a promising line of investigation of cognitive functioning and cognitive deficits in schizophrenics.

Memory

Memory is an integral part of all thinking and learning, but it has also been studied separately in a variety of ways. First of all, it is well known that memory plays tricks—in the sense that one does not always remember accurately what one learned or experienced—and that these inaccuracies are, in part, a function of individual experience. Different individuals in the same situation will later remember different aspects of it and are likely to remember the same aspects differently. A portion of these differences can be attributed to their differential apprehension of the experience in the first place. But another portion can be related to vagaries of memory function and to the influence of the individuals' varied experiences subsequent to the experience which is being recalled.

Intervening experiences. Experimental studies of

memory indicate that what is remembered is related to the experience that intervenes between the initial learning and the recall. The closer the intervening experience is to the learning situation, the more interference there is with the initial learning and, therefore, the more data is lost in the recall or is confused with the subsequent learning. For example, if one were to learn the names of all the rivers in Africa and then learn the life cycle of the snail, the chances are that he would do better on a subsequent test of his knowledge of African rivers than if that learning had been followed by the learning of the names of African mountains.

Testing methods. Accuracy of memory varies also with the method used to test it. The most difficult circumstance in which to remember something is in response to an open-ended question that gives no information itself; for instance, "Name the rivers of Africa." If one were asked to name four rivers in Africa that begin with the letter "N," the task would be somewhat easier. The simplest form of the task would be to pick out the African rivers from a list that includes rivers of other continents.

Timing. There are also differences between immediate memory and memory for events that occurred longer ago. The memory defect in senility is so well defined, in fact, that it is used diagnostically; the senile person has a much better memory for remote events than for recent events.

Drugs. Certain drugs apparently enhance or interfere with memory functions. Scopolamine, for example, seems to cause forgetfulness, and some of the hallucinogens, such as lysergic acid diethylamide (LSD), seem to heighten both sensation and memory. The effects of drugs on memory and on other cognitive functions provide a promising line of investigation into the nature of the cognitive process and its deficit in various forms of psychopathology.

Summary

Cognition includes many points of relationship between cognitive and emotional processes and their subsequent interaction and relationship with that individual orientational entity called personality. However, relationship does not imply causation. From the data reported and discussed, it is not possible to say that cognitive processes *cause* particular emotional reactions or that those reactions *cause* particular cognitive perceptions or distortions. Rather, the functions are related and interrelated, and all owe their genesis, in one degree or another, to the relating of the individual to his environmental and social circumstances. Vygotsky said with respect to language, "Words play a central part not only in the development of thought but in the historical growth of consciousness as a whole. A word is a microcosm of human consciousness." The same could be claimed for each of the elements discussed here.

Suggested Cross References

The neurophysiological basis of memory is discussed by John in Section 2.10. For some clinical applications of the concepts of cognition see Piotrowski's section on psychological tests (Section 12.1), with special reference to tests of intellectual functioning, and Benton's section on tests for organic brain damage (Section 12.2). Sands also discusses the assessment of disturbed cognitive functions in Section 11.2, on the psychiatric examination. Linn's section on signs and symptoms of psychiatric disorders (Section 13.1) contains descriptions of the various forms of thinking disorders seen in the clinical practice of psychiatry. Finally, a more detailed account of the specific disorders mentioned in this section, such as schizophrenia, organic brain syndromes, and mental retardation, may be found in Area F.

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3.3 LEARNING

ARTHUR J. BACHRACH, Ph.D.

Learning is basic to every form of psychological theory. As Hilgard observed, "Psychologists with a penchant for systems find a theory of learning essential because so much of man's diverse behavior is the result of learning. If the rich diversity of behavior is to be understood in accordance with a few principles, it is evident that some of these principles will have to do with the way in which learning comes about." When Hilgard asserted that learning theory is critical "if the rich diversity of behavior is to be understood in accordance with a few principles," he was stating an assumption completely in keeping with a scientific method designed for explanations of events in terms of lawfulness and a striving for a minimal set of rational, demonstrable principles to account for these events. In a laboratory science such as experimental psychology, the search for laws of learning has been carried on with just such methods. The leaders in formulating theories of learning—Hull, Tolman, Skinner, Spence, Thorndike, Pavlov, and Guthrie—have all been, to one degree or another, laboratory scientists committed to research. A major part of their efforts and those of their colleagues has been the definition of learning variables.

The definition of learning has always been a difficult problem. Kimble has suggested that the roads to definition are two—factual and theoretical. The factual definitions relate learning to observable events in the physical world. The theoretical definitions are concerned with descriptions of basic processes that the learning theorist believes to be necessary in order for learning to occur. Hebb illustrated the theoretical defi-

nition when he discussed central nervous system (CNS) activities, the neural messages that occur in the CNS pathways: "Learning means a change in the direction of messages in the CNS." Skinner, in discussing response probability as a basic datum in the learning process, offered a factual definition: "We may define learning as a change in the probability of response, but we must also specify the conditions under which it comes about." Hebb was postulating changes in the CNS that may be difficult to observe. Skinner concentrated on the frequency and altered probability of a specific observable response under specified observable conditions.

There is, withal, a general agreement that somehow learning is a change in behavior that results from practice, with learning representing an intervening process or variable which links organismic states before and after a change in behavior occurs. As Kimble observed, the definition of learning always assumes a relatively permanent change in behavior, excluding changes resulting from maturation, sensory adaptation, or fatigue.

The central question has always been one of differentiating learning from performance. Learning is inferred from observed performance. Kimble saw learning as a change in behavior potentiality. The organism may acquire capabilities to perform some act through learning, but the act itself may not occur. He stated, "Learning refers to long-term changes of the organism produced by practice... Performance... refers [to the] translation of learning into behavior." At this point Kimble introduced another aspect of the definition in observing that practice alone does not produce learning; it is necessary for some maintaining event to occur, and so it is necessary to add reinforcement. Sidman defined reinforcement as "any event, contingent upon the response of the organism that alters the future likelihood of that response."

Learning, then, is defined as a change in behavior potential resulting from reinforced practice. Reinforcement, as so considered, becomes an example of an empirical law of effect that is basic to much of contemporary learning theory. The law of effect, as stated by Thorndike in 1931 says: "Acts followed by a state of affairs which the individual does not avoid, and which he often tries to preserve or attain, are selected and fixated, while acts followed by states of affairs which the individual avoids or attempts to change are eliminated." The following year, 1932, Thorndike modified his law and indicated that rewarded responses were always strengthened but that punished responses did not always diminish in strength, thus leading to an emphasis on reward as a primary determiner of behavior.

Conditioning

(It is fairly traditional to view conditioning as a case of learning.) Hull in many of his writings described the classical Pavlovian conditioned reflex as a

special case of the law of effect, assuming reinforcement to be operative in such simple learning examples as well as in higher order learning. Most theorists accept a rough dichotomy between two types of conditioning: classical (Pavlovian) and instrumental conditioning.

Classical conditioning. Ivan Pavlov, the Russian physiologist, observed in his work with gastric secretions in dogs that stimuli that were often present at the time the dogs were offered food came to evoke salivation in the animals even in the absence of food. For example, the footsteps of the experimenter as he entered the room came to evoke salivation in dogs, even though the dogs could not see or smell food. Pavlov assumed that the stimulus of the footsteps came to be associated with food. His research was directed toward an analysis of this event, which he called the "conditional reflex" (the reflex would occur, given certain conditions), later somewhat mis-translated as the more familiar "conditioned reflex" or "conditioned response."

In a typical Pavlovian experiment, a stimulus that, prior to training, had no capacity to evoke a particular type of response becomes able to do so. To illustrate: under normal circumstances, a bell sounded near an animal will probably do no more than evoke exploration, such as a turning of the head toward the sound or perhaps, at most, a startle response. Also, under normal circumstances, a hungry animal may be expected to salivate in the presence of food. Pavlov's conditioned reflex experiment was a training experience in which the previously neutral stimulus of a bell was made (by pairing it with the food) to evoke the response of salivation, which it normally would not do.

To diagram this:

Preconditioning: $S \longrightarrow R$
 (bell) (exploration)

$S \longrightarrow R$
 (food) (salivation)

Conditioning: $S(\text{bell}) \longrightarrow S(\text{food}) \longrightarrow R(\text{salivation})$

Bell sounds are followed by the presentation of food. The animal salivates at the sight of the food and ultimately pairs S (bell) and S (food).

Postconditioning: $S(\text{bell}) \longrightarrow R(\text{exploration})$

'conditioned
 ↓
 $S(\text{food}) \longrightarrow R(\text{salivation})$
 (unconditioned stimulus) (unconditioned response)

Because the food naturally produces salivation, it is referred to as an unconditioned stimulus. Because the bell was originally unable to evoke salivation but, by pairing with the food, came to do so, it is referred to as a conditioned stimulus.

Instrumental conditioning. In contrast to classical conditioning, in which the organism is usually restrained (in a Pavlovian harness, for example) and in which the response is elicited by the experimenter, instrumental conditioning is an experimental technique in which a freely moving organism emits behavior that is instrumental in producing a reward. For instance, a cat in a Thorndike puzzle box must learn to lift a latch in order to escape from the box; a monkey in an experimental chair must press a lever to effect the presentation of food.

Sanford lists four kinds of instrumental conditioning:

The simplest kind is called *primary reward conditioning*. The learned response is instrumental in obtaining a biologically significant reward, such as a pellet of food or a drink of water. In *escape conditioning* the organism learns a response that is instrumental in getting him out of some place he prefers not to be. *Avoidance conditioning* is the kind of learning in which a response to a cue is instrumental in avoiding a painful experience. A rat on a grid, for example, may avoid a shock if he quickly pushes a lever when a light signal goes on. *Secondary reward conditioning* is that in which there is instrumental behavior to get at a stimulus which has no biological utility itself but which has in the past been associated with a biologically significant stimulus. For example, chimpanzees will learn to press a lever to obtain poker chips, which they insert in a slot to secure grapes. Later they will work to accumulate poker chips even when they are not interested in grapes.

Generally, it is assumed that most learning occurs as a result of instrumental responding, rather than as an elicited consequence of classical conditioning. But both classical and instrumental conditioning techniques have begun to occupy a central place in the theoretical and practical behaviors of a growing group of clinicians who consider their methods to be clearly based upon experimental laboratory procedures, therapists who derive their techniques and principles from learning theory as based in the laboratory. The clinicians—represented by such theorists as Mowrer, Wolpe, and the followers of methods developed by Skinner—refer to themselves as "behavior therapists," "learning therapists," and "conditioning therapists," such appellations being virtually interchangeable and synonymous.

The most influential contemporary theories of learning have been advanced by Hull (upon whose theoretical structure much of Wolpe's work is based) and Skinner (whose methods are basic to operant conditioning techniques in treatment). These theorists fall within the group of learning theorists espousing a reinforcement model of learning. The two-factor learning theory espoused by Mowrer, in which classical conditioning and reinforcement theory are considered, has also been influential.

Hull's Learning Theory

Clark Hull's approach to learning theory is strongly mathematical and neurophysiological. He sought to establish a theory of behavior (which he equated with

learning) that could be quantified and tested in accordance with scientific method. In his book *Principles of Behavior*, Hull described the learning process this way: "Just as the inherited equipment of reaction tendencies consists of receptor-effector connections, so the process of learning consists in the strengthening of certain of these connections as contrasted with others, or in the setting up of quite new connections." For Hull, these connections occurred internally and were mediated by nervous system stimulation. The establishment of a connection occurred as follows:

$$S \rightarrow s \rightarrow r \rightarrow R$$

where an external stimulus, S , has as its function the stimulation of an efferent system, s , which, in turn, effects a motor impulse, r , within the nervous system. The final response, external R , does not have to occur for learning to take place: the critical connection is the s - r connection, leading to a "habit."

Habit family hierarchy. The habit, for Hull, is an established connection within the nervous system, but these connections are not limited. The concept of the habit family hierarchy allows for transfer of learning or generalization to occur. Thus, a given stimulus, S , may evoke a number of different responses in varying levels of strength, but this stimulus, as we have noted, evokes a response or set of responses within the nervous system that anticipate a goal response. For Hull, the goal response is antedated by fractional responses in the establishment of a habit. Thus, r may become a fractional response, an element of R , called a "fractional anticipatory goal response" or r_G , which in itself is stimulating. "A fractional anticipatory goal reaction must," said Hull, "produce continuously a stimulation (s_G) characteristic of the point of reinforcement or goal situation... s_G becomes a guiding stimulus leading to its own realization, to the final complete act of which it is a part. As such, the fractional goal reaction (r_G) is a *pure stimulus act*, i.e., an act whose only biological or survival function is that of producing a stimulus for the control of other action of a more direct adaptive value." The fractional response, r_G , then becomes a mediating element between S and R . An example of this is salivation occurring before the consummatory goal response of eating.

Because there is variability in response sequences leading to a goal as a result of varying environmental conditions, Hull postulated that "since all the alternative behavior sequences have led to the same goal, all of the component acts of all the sequences will alike be conditioned to the same fractional anticipatory goal-reaction stimulus (s_G), and in this sense will constitute a *family*."

The habit family hierarchy, noted Bugelski, proposes that "any of a number of S 's can eventuate in the same R_G goal response." There is a common fractional goal reaction (r_G) to all the elements in the series, and hence in the habit family, but some of

these will be weaker than others in excitatory potential (Hull suggested that this results from being more remote from the final R_G at the beginning of the sequence); therefore, they form a hierarchy of strength. This conceptualization forms an important basis for the therapeutic application of this learning theory, inasmuch as it allows for an analysis of behavior clearly in terms of adaptation through alternative response conditioning.

Hull's concept of drive. Thorndike's law of effect used the concept of satisfaction to account for reinforcing effects of certain responses. Hull attempted to make the satisfying element less subjective by stating the law of effect as he understood it to be: "If the central afferent receptor discharge (s_c) of a stimulus element (S_c) of a stimulus compound is active in the central nervous system at the same time that a reaction (r_u) is evoked and if at about this time there occurs a 'reinforcing state of affairs,' there will result from this conjunction of events an increment to a habit (s_Hr). The "reinforcing state of affairs," for Hull, represented the "diminution in a need (and the associated diminution in the drive (D))."

This principle of primary reinforcement is clearly a drive reduction approach: attaining the goal response reduces the drive associated with the aroused need, strengthening the behaviors that led to the reduction in tension. This strengthened sequence becomes the habit.

Inhibition. Hull postulated that neural impulses (afferent receptor discharges) "occurring at about the same time interact and so modify each other." He called this afferent interaction and viewed this as a basis for the reduction or elimination of a response through the presence of an "extra or alien stimulus in a conditioned stimulus compound which can reduce the excitatory potential." An example of this is the interference of "irrelevant stimulations resulting from an emotional upset" that may disrupt a child's classroom performance.

Hull saw this as equivalent to Pavlov's external inhibition. Pavlov's concept of internal inhibition is similar to Hull's conditioned inhibition (s_I), which resulted from reactive inhibition, a "negative drive state" similar to fatigue or physiological impairment resulting from activity. Hull's conditioned inhibition is an interfering set of events.

This brief summary of salient features of Hullian learning theory indicates that Hull's theoretical position was largely based on neurophysiological postulates and concerned itself with drive and drive reduction as basic to reinforcement. Let us turn now to Wolpe's behavior therapy and briefly examine its Hullian bases.

Wolpe's Conditioning Theory

Wolpe defined neurotic behavior as behavior that "consists of persistent habits of learned (conditioned) unadaptive behavior acquired in anxiety-generating

situations." It is no coincidence that Wolpe invokes the term "habit" to describe neurotic behavior in this regard. The Hullian influence becomes clear again in the following observation about anxiety responses: "They necessarily produce anxiety drive (with concomitant central neural excitation) as an antecedent." He also reflects this neural approach to learning when he notes that "learning is subserved by the development of conductivity between neurons in anatomical apposition." Here we see the Hullian concepts of learning as being mediated by central nervous system activity, the neurophysiological basis of drive, and anxiety as a drive leading, presumably, to activity aimed at drive reduction.

Reciprocal inhibition. Wolpe also reflected a Hullian orientation in his important principle of reciprocal inhibition, which may account for anxiety drive reduction: "If a response inhibitory to anxiety can be made to occur in the presence of anxiety-evoking stimuli, it will weaken the connection between these stimuli and the anxiety responses." Relaxation, for example, is considered to be incompatible with and, therefore, inhibitory to anxiety.

Anxiety hierarchy. Wolpe also used Hull's concept of habit family hierarchy in an interesting clinical fashion when he established anxiety hierarchy relationships among anxiety-evoking stimuli. Assuming that varying stimuli may evoke the response of anxiety, Wolpe asks his patient to imagine (usually under hypnosis) the least disturbing item of a list of potential anxiety-evoking stimuli, then to proceed up the list to the most disturbing stimuli. For example, a patient with a fear of death might rank the sight of a coffin lower in the hierarchy than a corpse (highest intensity), with perhaps a tombstone ranked somewhere in between.

Wolpe's technique of desensitization is a counter-conditioning technique in which responses designed to inhibit the anxiety response are evoked at each level along the hierarchy. Reciprocal inhibition of the fear response is thus conditioned.

Skinner's Learning Theory: Operant Conditioning

Proponents of an experimental analysis of behavior based on operant conditioning techniques and also reinforcement theorists form a group of behaviorists who tend largely to minimize theoretical considerations and to concentrate on an analysis of the functional relationships among events. For example, instead of dealing with the repression of unacceptable thoughts, as psychoanalysts do, Skinner suggested that it is more important to avoid the inner causes and to emphasize the questions that ask "why the response was emitted in the first place, why it was punished, and what current variables are active."

The term operant refers to a class of responses that are emitted by the organism rather than elicited by some known stimulus. Operant responses are also fre-

quently referred to by such terms as "voluntary," as opposed to "involuntary" or reflex behavior. Reflex responses are elicited, as in classical conditioning, and are termed respondents. Thus respondents, such as pupillary reflexes, are differentiated from operants. An example of an operant response is reaching for a telephone. An operant has some effect on the environment. Keller observes: "Respondents, right from the start, are evoked by their own special stimuli. Food in the mouth will bring salivation. . . . In the case of operants, however, there are at the beginning no specific stimuli with which we can evoke them. Rather, we are compelled to wait until they appear before we can do anything about them. . . . It is for this reason we may speak of operant behavior as emitted ('sent out') rather than elicited."

Skinner in his first major work, *The Behavior of Organisms*, differentiated two types of conditioning, which he called type S and type R. Type S conditioning "is defined by the operation of the simultaneous presentation of the reinforcing stimulus and another stimulus." In type R conditioning, the reinforcing stimulus "is contingent upon a response." This distinction between classical (respondent, involuntary, type S) and instrumental (operant, voluntary, type R) conditioning is not entirely accepted by many learning theorists, on the grounds that the criteria are too ambiguous. Psychophysiological interactions, for example, are not clearly differentiated into operant or respondent. For most purposes, however, the distinction can be a useful one if one avoids the tendency to let theoretical niceties restructure the nervous system.

Reinforcement. A key concept in operant conditioning is that of reinforcement, which, as was noted earlier, Sidman defined as "any event, contingent upon the response of the organism that alters the future likelihood of that response." In operant conditioning the term positive reinforcement is used to describe an event consequent upon a response that increases the probability of that response recurring. A negative reinforcement is an event likely to decrease the probability of that response's recurrence. A negative reinforcement is an event that strengthens the response that removes it; for example, if a punishing consequence attaches to a response, any behavior that avoids or escapes the punishment will be strengthened, that is, increased in probability.

Response frequency. Another important concept is the use of response frequency as a basic datum. The frequency with which a response is emitted is a clear, observable measure of behavior. Skinner has observed that personality descriptions are couched in frequency terms; to say that a person is "an enthusiastic skier," "an inveterate gambler," or "hostile" reduces to a statement of a perceived frequency with which a certain class of behavior is emitted, presumably with some normative conceptualization in mind. "Aggressive" behavior is emitted by most people; to say that a person is "hostile" suggests that this class

of response occurs with a higher level of frequency than is usually expected.

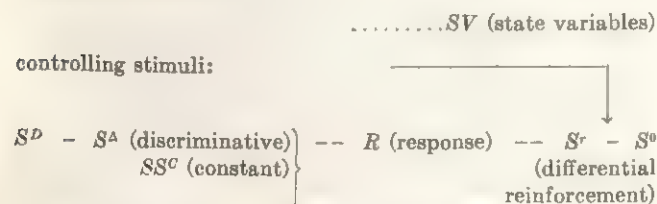
Shaping behavior. The concept of shaping is also of importance in discussing operant conditioning. Working with a freely moving organism, the experimenter selects the final response he desires to produce. Sidman describes the shaping process this way:

Shaping is accomplished by reinforcing successively closer approximations to the behavior with which the experimenter ultimately wants to work. The experimental situation, for example, may be one in which a monkey is to be reinforced with food for pressing a lever. If the monkey just sits quietly at first, the experimenter will wait until the animal moves and will then immediately deliver the food. By continuing to reinforce all movements, the experimenter will soon have an active animal with which to work. He then reinforces only those responses which bring the animal closer to the lever, as if drawn by an invisible string. The experimenter now directs his attention to the animal's hand. He delivers the food whenever the hand moves closer to the lever, and it is not long before the animal places its hand on the lever and depresses it. The experimenter can then turn the rest of the job over to his automatic apparatus, which will deliver the food only when the animal actually depresses the lever.

This successive approximation, by steps, towards the final terminal behavior is a critical aspect of the experimental method. But it is necessary to specify the response desired, not in general terms but by specific behavioral criteria. One of the key factors in operant conditioning is the frequency with which a carefully specified response occurs in an equally carefully defined environment.

Control of the environment does not necessarily mean the rigorous controls of an experimental laboratory. Skinner, in a paper on teaching animals, observed that it takes a controlled laboratory situation to work out full learning experiments but that a great deal can be accomplished under informal home conditions, provided that the elements of reinforcement (such as food for the family dog) and a conditioned reinforcer (such as a snap cricket) are present.

Operant paradigm. A summary statement of basic concepts in operant conditioning has been presented by Goldiamond, who noted that Dollard and Miller listed the four variables of learned behavior as drive, response, cue, and reinforcement and who suggested that these are identical to the variables stated in the following paradigm:



Bachrach, Erwin, and Mohr have presented the following explanation:

To modify Goldiamond's explanation of this paradigm somewhat, presenting a discriminative stimulus (S^D) in the presence of other constant stimuli (S^{S^C}) will occasion a response (R); whether this response recurs is contingent upon the conse-

quences (S^r) of that response (under these specific conditions) and the state variables (SV), usually referred to as "needs," "motivation," "deprivation," and the like, which make the consequences of the response effective in controlling it. Assuming that behavior is governed by its consequences under specified conditions, discriminative behavior can be produced, maintained, and altered if the constant stimuli, the discriminative stimuli, the response contingencies, and the state variables are specified and controlled.

This paradigm was used in a clinical case described by Bachrach, Erwin, and Mohr in which the experimental therapy program was planned according to the variables. The patient was an anorexic whose eating behavior was restored through operant conditioning techniques.

Mowrer's Two-Factor Learning Theory

O. H. Mowrer in a paper in 1939 offered, as Hilgard has observed, "the first clear statement of the anxiety-reduction or fear-reduction theory of reinforcement." Mowrer then theorized that much learning could be explained on the basis of acquired fear (anxiety) and that responses which reduce this anxiety are learned and maintained.

Contiguity and drive reduction. Mowrer suggested that anxiety responses are learned by contiguity. An adventitious association of a neutral stimulus with a painful stimulus conditions fear by contiguity in a fashion related to stimulus substitution in classical conditioning. In other words, a stimulus that in itself is not fear-evoking is accidentally presented at the same time as a painful stimulus; by simple conditioning (what Mowrer then called sign learning) the neutral stimulus becomes a conditioned aversive stimulus.

Any response that results in the avoidance or elimination of such a conditioned aversive stimulus (as an anxiety-producing event) is reinforced, even in the absence of other reinforcement, because the response reduces anxiety (drive). Once learned, these avoidance responses persist.

Mowrer considered that these were different from other types of conditioned responses in that there was no need for continued reinforcement to maintain the response. Other conditioned responses would extinguish in the absence of reinforcement; Mowrer felt that conditioned anxiety responses did not need the reinforcement of repetition of the original trauma. Although the responses were conditioned by contiguity, they were maintained by the reinforcing effects of drive reduction; classical conditioning of fear by contiguity was maintained by the subsequent conditioning (instrumental) of avoidance behavior by drive reduction.

Autonomic responses. Another differentiation Mowrer assumed in his two-factor theory was that fear responses are entirely autonomic. Emotional responses are involuntary and largely autonomic; instrumental responding is voluntary and largely under the control of the central nervous system. The classically conditioned fear response learned under con-

tiguity (sign learning) was, therefore, physiologically differentiated from the instrumentally conditioned avoidance responses maintained by anxiety reduction (what Mowrer came to call solution learning). The operant-respondent, type S-type R dichotomy is clearly in evidence here.

Some experimental evidence supported Mowrer's position that drive reduction is important in solution learning (instrumental conditioning) but that it is not crucial in the autonomically controlled anxiety response. Studies such as those reported by Mowrer and Solomon tended to support such a position although Solomon and Wynne suggested that fear responses are more than autonomic, involving such events as visceral and neuroendocrine responses as well as skeletal motor discharge. Thus central nervous system functions and voluntary behavior are also involved.

Mowrer has also invoked a model in which the stimuli conditioned to the onset of painful events acquire certain drive (anxiety) characteristics but those stimuli associated with the avoidance of or escape from pain become positively reinforcing. These two events, Mowrer described as responses of "fear" and "hope." In recent years, Mowrer's theorizing has centered largely around the development of neurosis and, in particular, the centrality of guilt and anxiety in emotional disorders.

Conclusion

In the application of some of the laboratory procedures derived from learning research, the behavior therapies have fallen heir to the very problems that beset the research scientists. Foremost among these is the problem of definition; the precise definition of such crucial concepts as stimulus, response, and reinforcement remains a theoretical and experimental problem. It is true, for example, that the definition of reinforcement when an experimenter is working with deprivation variables (deprivation of food or water, for instance) is a relatively uncomplicated experimental manipulation (although even here there are problems). But these problems are enormously complicated when the reinforcements are based on socially acquired drives, such as approval or attention, vaguely defined social events that appear of importance in human behavior. The precision with which experimental contingencies can be stated in both the laboratory and the clinic, then, is a continuing theoretical and research issue. A dedicated and meaningful interaction between research and clinical scientists in the development of learning theories and their application appears to be a most important and fruitful enterprise.

Suggested Cross References

The neurophysiological basis of learning is discussed by John in Section 2.10 in the chapter on basic biological

sciences in this area. For a discussion of a clinical application of learning theory, see Urban and Ford's section on behavior therapy (Section 34.2) in Area G, on psychiatric treatment.

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3.4 MOTIVATION

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Under the general topic of motivation are many subtopics that are of interest from the psychiatric point of view, and this section focuses on these instead of attempting to touch on all points in the general area. For example, the topic of experimentation on drug dependency in animals has been selected not only because it is relevant for theories of motivation but also because these observations on animals have proved invaluable in placing the human problems of drug dependency in much clearer perspective. The second part of this section, drawing on data from human subjects, summarizes various clinical and experimental approaches to problems of human motivation. In addition, some current theoretical issues in this field are discussed. For example, the relevancy of data at the physiological level is considered. The affirmative point of view is in part documented with references to observations on neurological patients with operations on their frontal lobes and on psychiatric patients suffering pathological anxiety. The activation concept, which is introduced in the subsection on animal motivation, is also brought to bear on the human problem of anxiety.

The reader may well ask what some of these subtopics have in common and how they differ from those aspects of behavior dealt with under other headings, such as perception and learning. First of all, it should be pointed out that these topics are not mutually exclusive. For example, learning is certainly involved in becoming addicted to a drug, and when the drug is withdrawn, the resulting bodily changes are clearly perceptual phenomena. But given an organism with certain perceptual capacities and with a particular learning history, what is called motivation determines the nature and intensity of the behavior that will occur under certain conditions of environmental stimulation.

Animal Motivation

Biological mechanisms and homeostasis in motivation. In the mediation of learning and perception in mammals, the cerebral cortex plays a major role. But the limbic system (the hypothalamus in particular) appears to hold the main keys to understanding basic biological mechanisms responsible for motivating behavior. Neural and glandular processes mediated by this system as they appear to relate to motivation are the subject of extensive investigation at the present time. So numerous are these studies that even listing various lines of attack on basic biological motivational mechanisms is not feasible here, and this discussion, therefore, is highly selective.

Homeostatic mechanism for water regulation.

In order to provide a concrete reference point for the discussion that follows, the homeostatic mechanism for water regulation is described briefly. This mechanism has been chosen as an illustration because most of its aspects are well understood and because its principles of operation are typical of other homeostatic mechanisms.

Everyone knows that for the mammal to remain alive it must have water. When it has not had water for a period of time, its behavior is dominated by search for water and relief of thirst. But the whole problem of water regulation requires analysis at more than one level.

At the physiological reflexive level, water deprivation causes a release of antidiuretic hormone (ADH), which in its action on the kidneys reduces urine flow to a minimum, thus conserving water. Crucial for understanding this mechanism (and other fluid-regulating homeostatic mechanisms) is the *milieu intérieur* concept of Claude Bernard. In the case of water regulation, *milieu intérieur* refers to critical physicochemical relations between internal conditions of certain cells (called receptor cells or sensors) and the extracellular fluids (chiefly the blood supply) surrounding them.

Three questions are generally raised when the detailed workings of any homeostatic mechanism are being sought: (1) What critical changes in physicochemical conditions represent a significant departure from the optimal *milieu intérieur* (or other steady state)? (2) What sensor detects this departure from the optimum? (3) What is the line of transmission from sensor to the mechanisms responsible for effecting return to more optimal conditions? For water regulation, the answers are these: (1) The critical physicochemical changes are increments in effective osmotic pressure in extracellular fluids and intracellular volume changes. (2) The known sensors are neurons in the supraoptic nucleus of the hypothalamus, called "osmoreceptors" because their rate of firing increases with treatments that increase effective osmotic pressure in the extracellular fluids (for example, injection of hypertonic sodium chloride). Ishikawa, Koizumi, and Brooks, whose experiments with unit recordings established this fact, also found that the osmosensitive neurons responded to injections of hypertonic sodium chloride by an acceleration of firing, even after isolation from surrounding brain tissues. (3) It has been established beyond question that the supraoptic nuclei of the hypothalamus are involved in the production and release of antidiuretic hormone from the posterior lobe of the pituitary. The resulting conservation of water by the kidneys completes the reflexive chain, effecting return to more optimal physiological conditions.

At the reflex level, then, the picture is relatively complete. But renal water conservation is only a temporary measure, and, of course, the animal must seek

and ingest water in order to avoid fatal dehydration. What is known about neurophysiological mediation of these *behavioral mechanisms*? Water intake, as well as renal water conservation, is increased by tiny intrahypothalamic injections of sodium chloride. This indicates that, generally speaking, the sensors for reflexive and behavioral mechanisms share the same general area of the brain. But much more investigation is required on the behavioral aspect of this problem.

Other innate homeostatic mechanisms. The homeostatic mechanisms for regulation of temperature and of food intake have sensors in the hypothalamus. Microelectrode studies of cells in the hypothalamus—their reactions to changes in the *milieu intérieur* and their relations with other structures in the brain—are actively proceeding at the present time, with prospects of gaining important information in the next few years.

These innate homeostatic mechanisms serve to maintain an equilibrium essential to the health and survival of the animal, and their role in the motivation of animals is obvious.

Homeostatic mechanism for drug addiction. Drug dependence, though acquired and detrimental rather than beneficial, also appears to involve some kind of homeostatic mechanism. At least, the hypothesis that it is an acquired homeostatic mechanism seems useful in investigating this problem.

The physiological and behavioral aspects of morphine addiction (the most thoroughly studied addiction in animals) may be considered with reference to the following questions.

1. *How is the homeostatic mechanism acquired?* Considering the gaps in knowledge concerning the innate mechanism for maintaining the constancy of the water content of the blood (and the even greater gap in knowledge of other innate mechanisms), it is not surprising that much less is known about acquired homeostatic mechanisms, such as the one mediating dependency on morphine. Still, animal studies have thrown considerable light on the problem of how morphine dependency can be produced.

It does not matter whether the morphine is self-administered or administered by the experimenter. The only requirement for establishing dependency on morphine is that the administration be kept up regularly, day after day, until some objective criterion of dependency has been reached (usually the appearance of withdrawal symptoms). In Spragg's investigation of morphine addiction in chimpanzees, a typical course of morphine injections was 0.1 mg. per kilogram twice a day for the first 3 weeks, thereafter gradually raised to 2 mg. per kilogram and continuing at that level for several months.

When a dose was skipped or delayed for a few hours, some early signs of mild withdrawal were noted: slight rhinorrhea, drops of perspiration on the face, unusually large quantity of feces in the cage,

heightened irritability, and yawning. Animals differed in the time required to produce the first clear (withdrawal) signs of dependence from as early as 2½ weeks in one animal to 7 weeks in another.

When the animal sought out the injection on his own initiative, which happened after as long as 5 months of injections, Spragg called the animal "addicted." Examples of such purposeful goal-seeking behavior (usually after some break in the continuity of dosing with the drug) were: showing eagerness to be taken from the living cage by the experimenter when doses were needed, in clear contrast to behavior exhibited when taken from the living cage at other times; tugging at the leash and leading the experimenter toward and into the room in which injections were regularly given; exhibiting frustration when led away from the injection room and back to the living cage without having been given an injection; showing eagerness and excitement when allowed to get up on the box on which injections were regularly made; cooperating eagerly in the injection procedure; choosing a syringe-containing box (whereupon injection was given) in preference to a food-containing box.

2. *What sensor signals a need for the drug?* To put the question concretely, does the acquired homeostatic mechanism underlying dependence on morphine have a sensor resembling the osmoreceptor cells in the hypothalamus, which help maintain constancy of the water content of the blood? It is conceivable that certain hypothalamic cells, not already specialized for detecting dehydration or other such primary need states, may somehow undergo modification during the course of continuous morphine administration, thereby acquiring a sensitivity to the physicochemical conditions that underlie withdrawal symptoms in the morphine-dependent individual. This possibility would be susceptible to experimental attack if, by means of microelectrode recording, a search could be made for cells in the hypothalamus that fire at a faster rate just prior to a needed injection and reduce their rate of firing immediately after injection. At present, of course, this notion is speculative.

3. *What physicochemical conditions stimulate the sensor?* That is, what are the physicochemical conditions in drug dependency that correspond to the blood osmotic pressure in hydration constancy? According to Sourkes, the nature of the cellular adaptations in states of drug dependence (and tolerance) is an unsolved problem that presents a challenge to the physiologist and biochemist. Two kinds of theory about dependency may be distinguished. Both models postulate a form of cellular adaptation, and they are not mutually exclusive. According to one theory, the mechanism of adaptation requires that the drug be present on the neuron itself. According to the other theory, it is simply necessary that neurohumoral input be reduced; in other words, the reduction of nervous activity per se, and not the exposure of neu-

rons to the drug itself, is directly responsible for the development of withdrawal hyperexcitability.

4. *What central nervous system mechanisms act to restore equilibrium?* A reflex such as renal water conservation can work for a limited time only. Eventually, the animal must engage in purposive or goal-seeking activity in order to maintain conditions essential for life. For example, the dehydrated mammal must seek water. Similar goal-seeking activities are observed when an animal acquires an addiction, although they are not essential for maintaining life. Examples of purposive activity in chimpanzees suffering morphine deficiency have been mentioned. Such activities reflect at least two things: the strength of the dependency and the fact that the animal has learned the connection between his withdrawal symptoms and the means to eliminate them. It will be recalled that this learning did not occur until several months after withdrawal symptoms first appeared.

It was once believed that lower mammals like the rat could not become addicted to morphine. Compared with the chimpanzee, the rat is obviously limited in its range of responses instrumental to obtaining morphine. But after dependency (as shown by physiological withdrawal symptoms) had been produced by continuous injections over a period of several weeks, rats drank more fluid containing a morphine substitute than they drank prior to this period of morphine administration. Furthermore, H. D. Beach has shown that, after dependence was established, rats exhibited a preference for stimuli associated with the effects of morphine. Recently it has been shown by Weeks that, after dependence on morphine had been established, rats would press a bar to inject themselves with morphine by means of an indwelling injection device. (A plastic tube was passed under the skin from behind the ears to the front of the neck, where it was connected to a silicone-rubber cannula inserted into the rat's jugular vein, leading to the heart.) All these data indicate that taking morphine away from an addicted rat elicits goal-seeking behavior.

Experimental alcoholism in animals. Continuous administration of alcohol to animals for periods sufficiently long to produce dependence has rarely been carried out. Richter succeeded in producing dependence in three wild rats by restricting their fluid intake to a 10 per cent alcohol solution for a period of about 40 days. At the end of the period of force-feeding with alcohol, the rats continued to drink large quantities of alcohol, even though plain water was made available to them. One animal drank progressively more alcohol and less plain water, ate less and less, and died 30 days later. The course was one that closely parallels that of some human alcoholics.

In domesticated rats, however, Richter states that, even with more prolonged periods of forced feeding of alcohol, no such clear signs of dependence were ever observed. It is possible that dependency in the domes-

ticated rat could be demonstrated with still longer periods of exposure to alcohol. But Richter found no such difference between wild and domesticated rats when force-fed for 3 to 6 months on diets supplemented with increasingly higher concentrations of morphine sulfate. Wild and domesticated rats showed very similar withdrawal symptoms when the morphine sulfate was removed from the diet. Other workers have also reported clear cut dependency on morphine in domesticated rats. Again, absence of reports in the literature of dependency on alcohol in the domesticated rat may simply be due to the failure of investigators to administer alcohol in sufficient volume and over a long enough period of time. Still, the available evidence from animals is in line with clinical knowledge that dependency on morphine is much more readily established than is dependence on alcohol. That dependence is much more common in the case of tobacco than alcohol has been commented on recently by Brain.

It may be supposed that alcohol (or acetaldehyde) per se does not act on a receptor site in the nerve cell. In cases where dependency does occur after long continued heavy alcohol intake, the effect of alcohol may be much less direct than the effect of morphine. Recent research suggests such a possibility and is cited as an example of what *might* occur, although this suggestion is highly tentative. It seems possible that continuous ingestion of large quantities of alcohol may cause a deviation in the metabolism of norepinephrine and that in this process ethanol or acetaldehyde may promote the formation of catecholamine catabolites that resemble morphine. If dependency following heavy drinking of alcohol does turn out to involve some indirect process such as this, the fact that moderate drinking does not ordinarily produce dependency would be understandable, since moderate drinking would not ordinarily cause sufficient deviation of norepinephrine metabolism to promote the formation of morphine-like catabolites and subsequent dependency. Apparent proneness of certain individuals to dependency on alcohol might also be understandable in terms of their norepinephrine metabolism being more prone to interference, resulting in more rapid appearance of the addicting catabolites.

Or it may be that, compared with morphine, ethanol is a less effective blocking agent. Furthermore, it is logical to consider that individual differences in effectiveness of ethanol as a blocking agent may account in part for differences between individuals in their susceptibility to dependence on alcohol.

However, these are highly tentative suggestions. The nature of neural or other cellular adaptations in *all* states of drug dependence is still an unsolved problem, a problem urgently in need of further experimental work.

Immediate effects of drugs versus effects of withdrawal symptoms. The fact that even sated rats developed a preference for the goal box where they were injected with morphine was interpreted by H. D. Beach as evidence that the drug's immediate effects, after many exposures, had reinforced learning. Beach and others have demonstrated a second kind of reinforcement, that of relief from withdrawal symptoms in dependent animals. Unfortunately, some authors, perhaps through failure to be explicit, cause confusion in the minds of readers between immediate effects of the drug on nondependent animals and the

relief from withdrawal symptoms in dependent animals.

It appears that there are two motivational mechanisms involved, one mediated by the immediate reinforcing nature of alcohol or morphine and the other mediated by the relief of a *need* for the substance in the homeostatic sense. In the first case, when the animal chooses to drink alcohol, the alcohol is most probably not fulfilling a homeostatic need; instead it has gustatory or postingestional effects that are reinforcing. In the case of an addicted animal, however, the ingestion of an addicting substance is necessary to keep from becoming ill.

The literature dealing with alcohol ingestion by animals particularly suffers from confusion of these two mechanisms. Sometimes it is implied that conditions that strengthen the animal's preference for an alcohol solution *necessarily* make him significantly more prone to chronic dependency on alcohol. This, of course, is clearly wrong. As Richter's work has shown, domesticated rats can drink relatively large quantities of alcohol over long periods of time without showing withdrawal symptoms or other signs of dependency.

It is important, therefore, to distinguish between a shift in the *nondependent* animal's preference for alcohol and the *dependent* animal's intake of alcohol to relieve withdrawal symptoms. With this distinction clearly in mind, however, it is of considerable interest to investigate the question of what conditions, other than dependency, do increase preference for alcohol in animals.

Mammals below chimpanzee and man on the phylogenetic scale usually reject solutions of alcohol (with the exception of an inbred strain of mice that for some reason, as yet unknown, prefer certain alcohol solutions to water). Special conditions, however, have been shown to raise the animal's preference for alcohol solutions relative to plain water. Sex and strain differences are examples of constitutional variables that have been studied. Experiential variables have usually involved some kind of stress. In a recent study by McEwen at McGill it was found that alcohol intake patterns in rats could be modified under a number of conditions. These modifications were not due to simple correlations between intensities of stress in the variety of situations; they were dependent on complex interactions between strain, sex, and particular experiences.

Results of recent experiments on chimpanzees by Fitz-Gerald at the Yerkes Regional Primate Research Center are consistent with McEwen's findings of sex differences. Fitz-Gerald's data also indicate that chimpanzees resemble man in their enjoyment of alcohol. Unlike lower mammals (including rhesus monkeys), they drink alcohol voluntarily, without special inducements. It may be that a large brain with a relatively high proportion of cortex is required for

accumulation of residual tensions that are pleasantly relieved by alcohol.

Activation concept in motivation. The activation concept in its multifactor empirical form states that the level of physiological activation is determined by the interaction of internal and external factors. The changes in the *milieu intérieur* produced by water deprivation are examples of internal factors. In this situation the external cue factors interacting effectively with the internal ones to raise level of activation are, for example, perception of water or of other cues associated with the procurement of water.

Bélanger et al., at Université de Montréal have found that heart rate (HR) increases progressively with hours of water deprivation or food deprivation when the recordings are made under appropriate conditions of cue stimulation. The HR curve for rats in Figure 1 is a typical finding: HR in rats bar pressing for water showed progressive increment as a function of increasing hours of water deprivation. HR increment may also be regularly produced by depriving the animal of food. But food deprivation and cues associated with food must *both* be operative *together* for HR to show a rise. Even though the animal is deprived of food or water, HR does not increase in the absence of appropriate external cues. This observation provides important clues to the kind of neural mechanism that mediates goal seeking, motivated by deprivation of a basic need.

In the previous discussion of the mechanisms for water regulation, it was noted that the osmoreceptors in the hypothalamus react to changes in the *milieu intérieur* by acceleration of firing rate, even after isolation from surrounding brain tissues. The conditions

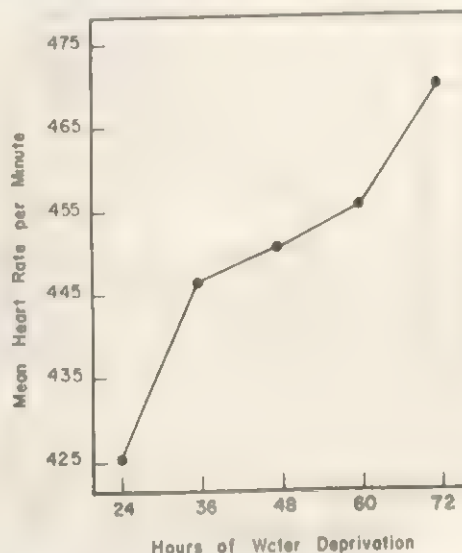


FIGURE 1. Heart rate level in relation to duration of water deprivation in rats. The rats were subjected to an increasing order of deprivation. (Data are from article by Bélanger, D., and Feldman, S. M. J. Comp. Physiol. Psychol., 55: 220, 1962.)

producing that acceleration are different from those accelerating HR because, obviously, afferent inputs are not required for accelerating the firing rate of the osmoreceptor cells, which appear to be under the sole control of the *milieu intérieur*. It may be that these osmoreceptor cells are specialized for taking part only in the reflex mechanism through which water is conserved by the kidneys.

It is possible that for a goal-seeking mechanism, where environmental cues are of critical importance, there are other cells, probably also in the hypothalamus, that accelerate firing in reaction to both internal (*milieu intérieur*) and external cue factors. This question can be attacked experimentally by recording from single cells in the hypothalamus of awake animals, following the paradigm of the Bélanger and Feldman experiment illustrated in Figure 1. Finding, under these conditions, that neural cells respond in a lawful quantitative manner (like HR) would provide strong support for one of the basic neural assumptions underlying the activation hypothesis.

The relation between hours of deprivation and frequency of bar pressing, as shown in Figure 2, takes the form of an inverted U. This finding is consistent with the prediction that there is a level of activation that is optimal for performance and that, on either side of this optimum, there is a performance decrement; the greater the departure from the optimum, the greater is the decrement in performance. It is probable that the freezing reaction in frightened animals represents impairment of normal motor sequences by overactivation. In any event, it is a good illustration of why it is important not to confuse overt activity and activation. Though inactive, an animal paralyzed with fear is nevertheless highly activated.

According to the activation or arousal concept, the

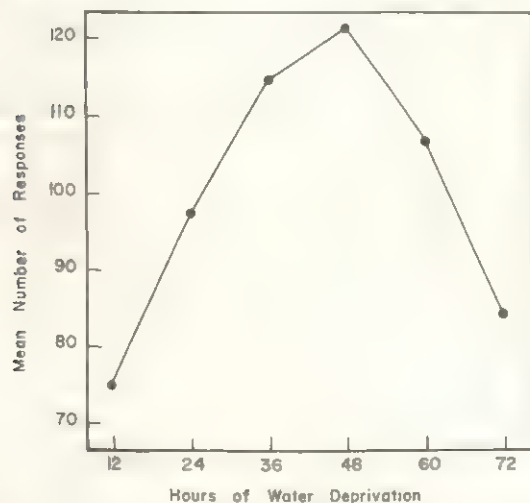


FIGURE 2. Number of instrumental responses in relation to duration of water deprivation in rats. The rats were subjected to an increasing order of deprivation. (Data are from article by Bélanger, D., and Feldman, S. M. *J. Comp. Physiol. Psychol.*, 55: 220, 1962.)

kind of neural activity considered here feeds impulses into organized neural cell assemblies, supporting the firing of their units in delicately timed sequences. According to this conception, optimal level of activation is that level of background firing (for example, of neurons in the hypothalamus) that provides the optimal facilitations of the organized neural activities (for example, in the cerebral cortex). It follows that too little or too much background firing of cells in the arousal system is deleterious with regard to organized neural firing (mediating performance).

Nonhomeostatic mechanisms of motivation.

When an animal is very hungry or very thirsty, his behavior is largely dominated by cues associated through learning with these organic needs. However, when the animal's basic needs are satisfied, his behavior is often directed by cues that have nothing whatever to do with seeking food or water or escaping from painful stimulation. Thorough experimental documentation of this point comes from extensive work on the curiosity drive in monkeys, in Harlow's laboratory at the University of Wisconsin. Harlow et al. demonstrated that monkeys will work for hours on mechanical puzzles with no reward other than solving them. Butler's experiments at Wisconsin showed that monkeys would work hard, hour after hour, just to have a small door open, allowing them the opportunity to look at objects in another room. They worked hardest to see another monkey there, but they worked nearly as hard to see an electrical train running.

This, of course, is one line of conclusive disproof of the drive reduction theory in its original form. As a matter of fact, these and other findings, such as Hebb's, show that far from seeking reduction in level of activation or arousal, animals will look for excitement. Even lower mammals like the rat manifest exploratory behavior that seems to have little or nothing to do with food seeking.

Another strongly motivated activity that does not depend on the animal's being in a deprived state is the Olds-Milner phenomenon of intracranial self-stimulation. Electrical stimulation of certain areas of the brain is clearly rewarding. Much remains to be learned about the mechanisms responsible for this remarkable phenomenon and the equally remarkable aversion to stimulation in other parts of the brain, first discovered by Delgado, Roberts, and Miller. But it is already clear that animals do seek positive stimulation. It is perhaps more correct to say that interactions between the relatively unactivated organism and its environment are often such that behavior is engaged more by stimuli that have activating than quieting effects.

Following the pioneering work of Hess and later refinements in technique by Delgado, current investigations are showing that rather complicated, well directed patterns of behavior can be elicited by means of stimulation through chronically implanted elec-

trodes in the brains of awake animals. Of particular interest to psychiatrists are the recent brain stimulation experiments by Flynn, Glusman, von Holst, and others on offensive-defensive behavior.

The importance of viewing motivated behavior as the product of complex (though potentially decipherable) interactions between external stimulation, hormonal influences, and neural influences is clearly illustrated in the work of Lehrman et al. on the reproductive behavior of ring doves. Normally, external stimuli are effective in eliciting a particular behavior only if the bird's reproductive cycle has progressed sufficiently far. But the behavior can be induced very much earlier in the cycle by injecting a hormone, provided the hormone is selected with knowledge of the succession of hormone secretions during a normal reproductive cycle. For example, if eggs are introduced into the cage before the doves have engaged in courtship behavior for 5 to 7 days, the birds will not sit on the eggs. Instead, they ignore the eggs while they engage in courtship. However, injecting both members of the pair with the ovarian hormone progesterone almost always elicits incubation behavior within 3 hours after the introduction of the eggs into the cage, instead of 5 to 7 days later.

An important key to an understanding of the neurophysiological aspect of these interactions lies in the fact that the activity of the pituitary gland, which secretes gonad-stimulating and other hormones, is largely controlled by the nervous system through the hypothalamus.

In the higher mammals, especially in the chimpanzee but to some extent even in the dog, copulatory behavior is more complicated than the stimulus-bound subcortically mediated behavior in lower mammals. The relative importance of the cerebral cortex in mating behavior increases in the mammalian series from rat to man.

Human Motivation

Activation. From the psychiatric point of view, it is a matter of great concern when a patient's work efficiency is chronically impaired by excessive tension. It is important, therefore, to try to gain a deeper understanding of the neurophysiological mechanisms underlying tension and its interactions with efficiency of performance.

Continuity from animal to human experiments on activation is illustrated in Figures 1, 2, and 3, graphs from two reference experiments: one with rats and one with human subjects. In both cases the curve for heart rate (HR) rises continuously, and the curve for performance takes the form of an inverted U. For the human subjects, different HR levels were produced by having the subjects squeeze a hand dynamometer, applying different degrees of force under the various conditions; the stronger the squeeze, the higher the HR. The performance measure was the score on a digit-to-symbol code translation task. Despite the

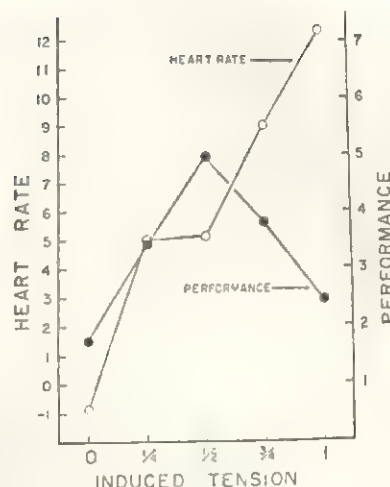


FIGURE 3. Heart beat and performance levels in human subjects under tension. (From article by Wood, C. C., and Hokanson, J. E. J. *Personality Soc. Psychol.*, 1: 506, 1965.)

great differences in subject, task, and means of producing HR change in the experiments with humans and with rats, the graphic functions obtained are remarkably similar from experiment to experiment. These findings are typical of results in a substantial number of similar experiments.

In other experiments with human subjects, graded verbal incentives have been used successfully by the experimenter in place of induced muscular tension to produce different levels of physiological activation. Performance on tasks of motor skill has been shown in some but not in all instances to vary predictably with the different activation levels. The physiological measures themselves are only imperfect indicators of central nervous (arousal) system action.

In all experiments with human subjects employing band-pass filters and integrators for quantification, electroencephalographic (EEG) changes concordant with the peripheral physiological changes have been found. It is presumed that the peripheral measures reflect activation level because the arousal system seems to have strong facilitation on peripheral effector mechanisms, in both autonomic and somatic spheres. It is not to be concluded, however, that a high level of activation is merely a state of extreme dominance of the sympathetic nervous system.

EEGs recorded along with various peripheral physiological measures, such as HR, respiration, and electromyograms (EMGs), have also been very useful in revealing an important difference between the rising functions just considered and a superficially similar but quite different kind of progressively rising physiological function called "physiological gradient." Unlike the rising activation level curves, where EEGs show progressive changes too, there are no systematic EEG changes accompanying the physiological gradients. These physiological gradients accompanying mental activity have been found in skeletal-motor and autonomic recording, commencing with the onset of the behavior sequence and terminating at its conclusion. Although it has been shown that these gradients do not represent increasing motivation or the like during the task, there is strong evidence indicating that the steepness of the gradients is a function of motivational level. It is presumed that there is some kind of mechanism that ensures the running off of a behavior sequence. Whatever the mechanisms are that furnish

the support for continuous productive mental activity, they seem to depend partly on normal exteroceptive sensory stimulation, since under prolonged conditions of sensory isolation, mental activity suffers markedly.

Achievement motivation. [There are individual differences in the plans of men. What are the conditions that make one man determined to achieve certain goals in a lifetime, and how are they different from those that operate to make another man content with a low level of achievement?

The hypothesis that the strength of achievement motivation can be gauged in a meaningful and useful way by analyzing the content of stories told from pictures, like those in the Thematic Apperception Test (TAT), underlies the extensive investigative work of McClelland et al. The research began with a demonstration that college students given instructions designed to heighten their intensity of motivation to perform well on certain tests produced (in the stories they wrote from the TAT pictures) more responses having to do with future achievement than students who were in a relaxed state at the time of writing TAT stories. The next stage in the experimental program was guided by the general hypothesis that individuals who obtain high TAT need (n) achievement scores under controlled conditions are normally more intensely motivated to achieve than persons who obtain low n achievement scores under the same conditions.

From the results of investigations so generated, it was concluded that intensity of motivation to achieve at any task in any particular situation is determined by at least two factors: (1) the achievement motive, that is, desire to achieve, and (2) expectancy of probable success or failure. McClelland has recently been engaged in highly successful field research, including some in underdeveloped countries, which has demonstrated that it is possible to teach businessmen to acquire n achievement and thereby to advance in business.

Expectancy \times value. The further development of this general line of attack has been pursued by Atkinson et al. in the expectancy \times value approach to motivation. The value factor refers to the common observation that there are marked individual differences with respect to values placed on certain objects or goals. Some students strive for A's, for example, and others depreciate the importance of grades, placing high values mainly on intellectual satisfactions or on extracurricular activities. The expectancy factor refers to the subjective probability that with expenditure of sufficient effort the object may be acquired or the goal reached.

It is appropriate here to call attention to the aphysiological character of Atkinson's theory and to suggest that theorists who look at neurophysiological data will probably be able to construct a more comprehensive and useful theory than theorists who choose to ignore those data. Atkinson states that his approach

is not "explicitly guided by any preconceptions concerning neurophysiology." However, Hebb has argued that behavior theorists who disregard contemporary neurophysiology and neuropsychology may unconsciously fall back on outmoded neural conceptions in their theoretical formulations. Aphysiological theorists are disinclined to speculate or to deal with data from two levels of description, neurophysiological and behavioral. But it seems there should be a two-way street here. Not only is behavioral research enriched by an appreciation of neurophysiological discoveries and observations in neurological clinics, but tracing relations between the behavioral and neural levels of description must inevitably be heuristic for research at both levels.

For example, the expectancy \times value theory surely would be enriched by observations of neurological patients, especially those showing motivational deviations. B. Milner has found that frontal lobe patients break test rules more often than other patients do. For example, in performing a stylus maze test, they would push ahead instead of going back to the point where they made an error, or they would move along diagonals (against the rules). It was not that they didn't realize these things were wrong; it seemed they just couldn't control their impulsiveness. When progress toward the goal came into conflict with rules, the value system normally respecting rules was shown to be abnormally weak in the frontal lobe patients. What is there about frontal lobe mechanisms that make them essential for such value systems to have normal control over behavior? This question seems highly relevant for the expectancy \times value theory of motivation, and the theory should gain considerably in scope if it took such data into account.

Drive (D) \times habit theory. As in the case of the activation concept, so too in the $D \times$ habit theory there are points relevant to the general problem of anxiety in its effect on performance. Using manifest anxiety scores (MAS) from a questionnaire to divide human subjects into high MAS and low MAS groups, Spence and Taylor have compared the two groups with respect to performance on various tasks. The main general finding is that high MAS scorers are favored over low scorers on simple tasks in which potential competition between conflicting responses is low and that low MAS scorers are favored in more complex tasks. These authors are careful not to extrapolate their findings to psychiatric patients suffering pathological anxiety. (Their subjects were usually university students.)

Their work stemmed from the drive \times habit formulation of Clark Hull, according to which habit strength is increased with an increase in drive, such as that produced by food or water deprivation (and later, following Mowrer's work, also anxiety). In Hull's terminology, D represented general drive, the combined effects of various specific drives. Hull proposed a multiplicative relation between the nonspe-

cific general drive (D) and the behavioral manifestation of habit strength: the greater the D , the stronger the response.

In an extensive series of experiments with human subjects, Spence and Taylor have attempted to verify the $D \times \text{habit } (H)$ strength hypothesis (earlier investigated with animals), and they have accumulated a certain amount of supporting evidence for better performance going along with high D . When high D (as measured by the MAS questionnaire) is found associated with *lowered* performance, the performance decrement is accounted for in terms of competing responses interfering with the correct response. But some very simple responses show the inverted U relation to drive strength instead of the monotonic relation predicted by the $D \times H$ hypothesis. These cases seem impossible to account for in terms of the competing response notion of the Hull-Spence formulations: they seem to require some kind of explanation like that provided by the activation concept.

Current motivational concepts. Certain terms appear frequently in the literature on human motivation. The concept denoted by each term gains clarification by reference to the experimental procedures employed in investigating each specific problem. Therefore, the main purpose of the brief remarks that follow is to indicate in each case the kind of experimental approach employed.

Dependency. On the basis of studies with children, Sears regards dependency as an acquired drive, one that is or may be developed very early in a child's life. The topic has received relatively little systematic study with adults.

Level of aspiration. This term has been used by Lewin and his students and involves a procedure in which the subject is asked to say how he will do on the next trial of a task. For example, a subject engaged in a dart-throwing task may be asked before his first throw what number he expects to hit. After the throw and before the next trial, he is asked again to predict his performance, and so on for several trials. The relation of level of aspiration to achievement motivation is discussed in detail by Atkinson.

Ego involvement. The term ego involvement, in the investigative sense, refers to observations of the individual in situations where persons, groups, or values with which he identifies are called into question. This topic is discussed by Cofer and Appley.

Cognitive dissonance. This is Festinger's term, and it means incongruity or disharmony with respect to such matters as expectation and actuality. An A student who makes a B experiences a tension not experienced by a B student making the same grade. In general, dissonance occurs when there is a palpable disparity between two experiential or behavioral elements. It is postulated that cognitive dissonance produces a tension state (like hunger) that is motivating. The kinds of experimental investigation generated by

the theory are illustrated by the following question: How does dissonance in different degrees affect the individual's inclination to seek out or to avoid new information? What are the reactions of persons who are forced to consider information or propaganda they would normally have avoided?

Perceptual defense. The concept of defense here resembles that of repression, unconscious resistance against the perception of things that are disagreeable or disturbing. Attempts to demonstrate such a phenomenon in the laboratory have invariably been challenged by critics who offer what they consider to be more parsimonious explanations of the reported observations. Probably the most promising line for future investigation is in the study of idiosyncratic perceptual defensive reactions, that is, in the study of individual differences in perception rather than in the study of average reactions from groups of individuals.

Intrinsic motivation. J. McV. Hunt defines intrinsic motivation as being "inherent in the organism's informational interaction with circumstances through the distance receptors and in its intentional, goal-anticipating actions." Promising new experimental work with human infants by Hunt et al. is concerned with the possibility of hastening certain aspects of development by providing the infant with interesting and varied exteroceptive stimulation.

Psychoanalytic motivation theory. From the historical point of view, Freud's contribution to the psychology of human motivation should come first, of course. Freud's writings were probably the most powerful single influence initiating scientific investigations of human motivation. The whole course of experimental psychology was changed by the combined attack of Freud and the behaviorists on structural psychology, which had become lost in sterile introspective exercises. From Freud's observations it was plain that a full understanding of the causes of human behavior could not be gained from conscious introspections. Clearly much of behavior is determined by unconscious mental activities, activities that the person is unaware of and consequently cannot report on.

Atkinson points out that Freud, the scientist, regarded his conceptions as tentative. An appropriate concluding statement to this consideration of the study of motivation is provided by the following quotation from Freud (cited by Atkinson):

We must be patient and wait for other means and opportunities for investigation. We must hold ourselves too in readiness to abandon the path we have followed for a time, if it should seem to lead to no good result. Only such 'true believers' as expect from science a substitute for the creed they have relinquished will take it amiss if the investigator develops his views further or even transforms them.

For the rest we may find consolation in the words of a poet for the slow rate of progress in scientific knowledge:

'Whither we cannot fly, we must go limping.

The Scriptures saith that limping is no sin.'

Suggested Cross References

The anatomy and function of brain structures, such as the limbic system and the hypothalamus, which were mentioned in this section, are described in greater detail in Sections 2.5 to 2.9 on neurophysiology and neuroanatomy. The clinical aspects of alcoholism and narcotics addiction are discussed respectively by Chafetz (Section 27.3) and by Wikler (Section 27.1) in Area F, on clinical psychiatry. Further discussion of human motivation, especially its behavioral aspects, may be found in Area C, on current theories of personality and psychopathology.

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3.5 ETHIOLOGY

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Since modern day psychiatry, psychology, and ethology can all trace their origins to work carried out in the last decades of the 19th century, it seems rather paradoxical that psychiatry has been more sympathetic to and made greater use of ethological concepts than has psychology.

The deep chasm that has existed until recently between ethology and psychology can be attributed to several factors. One is certainly the cavalier use of the term "instinct" by psychologists such as McDougall early in the 20th century; such usage eventually reduced the concept of instinct in the United States to a catch-all explanation for behaviors that could not be easily understood in other terms. Concurrently, J. B. Watson attracted attention with his behavioristic theory, which appealed to psychologists because of its parsimony and its promise of explaining behavior on the basis of simple relationships between the individual and his environment. The third major factor leading to the negative relationship between psychology and ethology was a fundamental lack of communication between researchers in Europe and in the United States, which lasted until the late 1940's.

In contrast, ethology and psychiatry have their roots deep in the same soil. Initial developments in both areas stem from the work of Europeans, and ethological ideas were familiar to many psychiatrists who transported them to this country in the period before World War II. Besides, there were no disrupting factors for psychiatrists in adapting ethological concepts to the phenomena with which they were confronted.

Development of Ethology

Some of the basic principles of ethological research can be traced back for several hundred years. So the

modern study of animal behavior, rather than implying that ethology is a new approach to behavior, seems to reflect a rediscovery of the relationship of the concepts and orientation of ethology to present day problems in behavior.

Natural behavior. Basic to the ethological approach to the study of behavior is the emphasis on familiarity with the natural behavior of the organism to be studied. Once the observer is acquainted with the functioning of the animal in its natural environment, he can vary the environment and learn with certainty how it influences the animal's behavior. This principle is well illustrated in the work of Baron von Pernau, a German zoologist whose major treatise was published in 1716 and who provided detailed descriptions of behavior peculiar to each of many different species of birds—what we now call species-specific behavior.

His most important finding was that in some songbirds the species-specific vocalizations of the adult are learned early in the life of the animal, but that in other species these vocalizations are completely innate. To reach this finding, he used a technique known to present day ethologists and to those dealing in psychological research as the deprivation experiment. Once familiar with the normal behavior of these species, von Pernau raised birds of several such species in an environment where they were deprived of contact with other members of their own species. Under these conditions, songbirds of some species exhibited species-specific vocalizations at the proper time in development; but birds of other species grew to adulthood employing the vocalizations and songs of the nonspecies members with which they had been raised. They retained these vocalizations even though they were later given an opportunity to live with their own species.

Species-specific behavior

Instinctive behavior. The next major contribution to ethology was provided by the work of the French naturalist and scientist Reaumur in the middle 18th century. Reaumur wrote of innate behaviors in a wide range of species, observing that many species-specific behaviors occurred even though the young animals were removed from the mother shortly after birth and reared without the companionship of species members.

Innate complex behavior. Reaumur was also the first to point out that, in some cases, rather complex behaviors involving the use of special organs must be innate, since the behavior patterns adapted for the use of these organisms are performed before the organ has developed and cannot have been learned through experience. An example may make this clear. Young goats push each other with their heads before they have horns, and young boars try to slash each other with sideways blows of their heads long before their tusks have developed.

Evolution of behavior patterns. The concept of innate or unlearned behavior was given a great impetus by the work of Charles Darwin. He wrote of complex behavior patterns that were characteristic of a species and required no learning, since they appeared full blown immediately after birth or after hatching. Darwin's major contribution in this area was his approach to behavior from the genetic point of view. He treated innate behaviors in the same way that morphological characteristics were dealt with and found ample evidence for the evolution of behavior patterns.

"Blind" behavior. Another person prominent in the study of instinctive behavior during the 19th century was D. M. Spaulding. As a result of observing the behavior of many animals, he felt that instinctive behavior patterns were fundamental in the behavior of many species and was the first to call attention to the "blind" aspect of certain instinctive behaviors. Spaulding noted that, when he presented himself to newly hatched chicks in place of the mother, these animals followed him and reacted to him in the same way that chicks normally do to their natural mother. In this case, the young animals had a built-in response (following), which was released by the first object encountered after hatching, but the animals did not have an innate conception of what this object should look like.

Writing in the early 1870's, before Mendel's work on genetics had been widely recognized, Spaulding emphasized the genetic transmission of instinctive behavior patterns and hypothesized that this transmission took place in the same way that physiological characteristics are passed on from generation to generation. Spaulding's work was the precursor of the concept of imprinting.

Umwelt. Jacob von Uexküll, whose writings encompass a 25-year period from the early 1900's to the middle 1930's, developed the concept that each organism has its own particular *Umwelt*, which means essentially that, of the vast complex of physical stimuli in an animal's environment that could possibly affect his behavior, he may respond to only a few. It was also demonstrated in von Uexküll's work that instinctive behavior is specifically geared to the survival of the individual and of the species.

The behavior of simple organisms clearly illustrates these concepts. The common woodtick, for example, apparently responds to only three environmental stimuli during the greater part of its adult life. First, as a result of photosensitive receptors in its skin, it goes to the brightest part of its environment. This leads the tick to climb a bush or tree. Second, it responds to the scent of butyric acid, which is given off by warm-blooded animals, by releasing its hold and dropping from the branch. Third, on encountering a temperature of approximately 37° C., such as that of a mammal, it attaches itself to the spot and gorges itself on blood before falling to the ground to lay its

eggs sometime later. The relationship between these stimuli and these responses is innate in origin, and certainly each is designed to ensure survival of the species.

In more advanced organisms, these relationships are not so easily seen. At the human level, any study of instinctive behavior mechanisms is confounded by the complexity of the physical and social environment that man has created for himself. Since man's technology has developed much more rapidly than he has changed through genetic adaptation, it may be necessary to ask how a bit of behavior, which we suspect is innate, fitted into the environment of primitive man and contributed to his survival.

Appetitive behavior and consummatory responses. Wallace Craig brought out this complexity in the behavior of more advanced species when he made the distinction between appetitive behavior and consummatory responses. Appetitive behavior is essentially variable, though goal-directed, and can be changed through experience with the environment. The consummatory response, however, is stereotyped in form and instinctive in nature. This distinction has illustrated that behavior may vary from species to species as the two components vary.

Instinct-training interlocking. Among contemporary ethologists, Konrad Lorenz has contributed to the greater understanding of instinctive behavior and has both clarified earlier concepts and presented new ones concerning the functioning of instinctive behavior mechanisms. Lorenz amplified Craig's idea of appetitive behavior and consummatory responses into a system which he has called instinct-training interlocking. This term implies that the behavior of a particular organism is a continuous process of smooth integration of learned aspects of behavior with the instinctive components. Those behaviors that are learned lend a flexibility to behavior and lead to greater adaptability in varying environmental situations. Those components that are instinctive insure that certain reactions to certain stimuli will be made without the necessity of learning; instinctive components are most clearly seen in cases where, if learning were required, the possibility of survival would be greatly diminished.

Action-specific energy. Another major contribution of Konrad Lorenz was the concept of action-specific energy. He observed that, with repeated performance, there was a waning in the ease with which instinctive behavior patterns could be elicited and that this waning was not related to general fatigue of the animal. After an interval of nonelicitation, however, the suitable environmental stimulus would again lead to the instinctive response. Lorenz concluded that for each instinctive response there was a certain amount of energy available and that, when this energy was depleted, the response would no longer be exhibited but that, with rest, the energy reservoir would be replenished. It should be kept in mind that

studies of action-specific energy are carried out under circumstances that do not simulate the normal environment of the animal, since under natural conditions the function of the response is served the first time it is released by the environmental stimulus.

Vacuum activity. Lorenz's belief in the existence of action-specific energy was strengthened by observing behavior he termed vacuum activity. In the absence of the appropriate environmental stimulus, an animal showed a precise instinctive response, just as though the stimulus were present. Since this occurred primarily in animals deprived of their natural environment, where the stimulus appropriate to the response would be encountered, Lorenz interpreted this behavior as a spilling over of action-specific energy into behavior when this energy had built up as a result of the long period of response inactivity.

Displacement activity. One of the first books devoted exclusively to the study of instinctive behavior was written by Niko Tinbergen and appeared in 1951. Tinbergen emphasized the relationship between internal factors, such as hormonal conditions, and external factors, such as distinct environmental stimuli, in leading to instinctive responses.

Another concept discussed in Tinbergen's first book is displacement activity, which had been noted previously by other ethologists. This behavior is most clearly seen in situations where there is a conflict between two instinctive behavior patterns and the expression of one or the other pattern is physically prevented or overwhelmed by ambivalence. As a consequence, the animal exhibits a third instinctive behavior, usually quite unrelated to either of the behaviors in conflict with each other. It is as though when blocked, the neurological activity generated by the two conflicting behavior patterns sparks over into the third behavior, which is inappropriate to the situation. For example, a chicken faced with an opponent that it would like to attack but that is clearly superior in size or weight may, instead, start to peck at nonexistent food.

Neurological mechanisms. Until recently, the concepts of action-specific energy and displacement activity have been in the realm of hypothetical constructs, together with such psychoanalytical ideas as sexual and aggressive energy systems. The research of Erich von Holst has done a great deal toward solidifying the position of neurological mechanisms that function in association with both types of behavior.

The basic technique used by von Holst involves the implantation of electrodes in the brain stem of chickens. Through electrical stimulation of various points in the brain stem, von Holst has been able to elicit almost all the simple and complex behavior patterns normally exhibited by the species. Activation through electrical stimulation seems to simulate the activities

of these areas in the same way as normal neurological processes.

The finding of centers in the brain stem directly related to behavior patterns in chickens supported some of the ethological ideas about the organization of behavior. Further support came from results that appeared to simulate action-specific exhaustibility. In these cases, von Holst found that, with repeated stimulation, the threshold for the response rose rapidly and there was repeated response evocation until the point was reached where even a large amount of current would not evoke the response. However, after the chicken had a period of rest, it was again possible to get the response with the normal voltage. Von Holst, in a way, was artificially replicating those results that had been obtained by others, who elicited and exhausted the response with an external stimulus.

If even greater consequence were experiments in which antagonistic drives and responses were simultaneously stimulated. This sort of experimentation fits the paradigm of displacement activity as exhibited by an animal in its natural environment. Although, in some cases under electrical stimulation, one response would supersede the other, there were also cases where, just as with displacement activity, a third response, completely unrelated to the two stimulated, was evoked during the experimental session. And whenever the two particular responses were stimulated simultaneously, it was always the same displacement response that was shown by the animal, indicating the same type of lawfulness found in nature.

Innate releaser and fixed action pattern. The innate releaser is a stimulus in the environment that serves to trigger a specific innate behavior on the part of the animal. This stimulus can be received by the organism via any of the sensory modalities, although the most common are visual and auditory stimuli. The response elicited by an innate releaser is stereotyped in manner and does not vary from one elicitation to another. For this reason, these instinctive responses have been termed fixed action patterns.

To the inexperienced or casual observer, the relationship between innate releasers and innate responses looks like a stimulus-response relationship based on learning. However, a response must meet several criteria before it can be called a fixed action pattern and thus qualify as an instinctive response. These are: (1) the behavior involved in a response must occur in exactly the same way each time the stimulus is presented; (2) the complete response must occur at the first presentation of the releaser before there has been a chance for learning to take place; (3) the response must occur in all members of a species; and (4) the response must occur in individuals raised in isolation from species members.

Ethology and Psychiatry

Since the middle 1950's, a number of articles in the psychological and psychiatric literature have used

ethological concepts to support certain psychiatric hypotheses that have developed over the years. The ethological concepts of action-specific energy, displacement activity, and imprinting have, apparently, been the most useful to the psychiatrist.

The basic phenomena with which the ethologists have concerned themselves and the hypotheses that relate these phenomena to human behavior and human development represent an effort to solve some of the behavioral problems that have confronted psychiatrists. In this effort, man is viewed as a member of the animal world rather than as a separate and distinct species exempt from developmental and behavioral regulations applied to the behavior of other animals. Clearly instinctive behavior patterns are designed to maximize the biological survival of the individual as a species, and this function is implicit wherever instinctive mechanisms are postulated as operating at the human level. Just as clearly, studies involving the concepts of action-specific energy and displacement activity have provided working hypotheses as to the internal control and organization of instinctive behavior patterns.

Action-specific energy

Relation to Freud's psychic energy. Freud's use of psychic energy as the basic force in human behavior has probably been one of the most difficult of his theories to accept. Psychic energy, obviously, cannot be visibly seen and studied but must be inferred from actions of the individual. The independent development of the concept of action-specific energy associated with instinctive behavior patterns has given great support to Freud's theory. There is a strong similarity between the two concepts, and action-specific energy can be precisely studied at a behavioral level, even though its physiological bases are just beginning to be elucidated.

Mechanisms and function. Konrad Lorenz presented the underlying mechanisms and function of action-specific energy in two of his earlier papers (1935 and 1952) and gave examples of how the concept operates at the behavioral level. Basically, action-specific energy serves both as a factor that energizes instinctive behavior patterns and as a motivational factor so far as the behavior is concerned. As the term implies, Lorenz felt that there was at any given time a quantifiable amount of energy available for the activation of a particular bit of instinctive behavior. Once this reservoir of energy was completely drained or depleted as a result of continuous activation of the response, a time interval was required in order for the supply of energy to be replenished.

The clearest example of this aspect of action-specific energy can be seen in behavior patterns that are used in nature with relative infrequency. For example, a bird, the whitethroat, has a characteristic response of feigning injury in order to lure a predator away from the nest. As the predator approaches the nest,

the bird hobbles away with one wing hanging, as though it had been seriously injured. When a safe distance away from the nest, however, and certainly before being caught by the predator, the whitethroat takes to the air and returns to the nest. This response appears in complete detail the first time the experimenter approaches the nest. Should the experimenter approach the nest again shortly after the bird has settled, the response is made again, but to a lesser degree. And on the third approach, immediately after the bird has resumed its brooding, no response is made at all. If the entire process is repeated several times, with an interval of a few days between sets of trial, exactly the same thing will happen each time the response is tested.

The draining of the energy available for such responses is not due to general physical fatigue, since other responses are readily performed when the innate response in question can no longer be elicited. The phenomenon is due neither to adaptation to the eliciting stimulus nor to fatigue but, rather, to the depletion of the energy used specifically for that response.

Displacement activity. Kaufman has pointed out the similarity between Freud's model of libidinal energy and the concept of action-specific energy. For a clearer picture of how action-specific energy might be applied at the human level, it is necessary to go into a more detailed account of the closely allied phenomenon of displacement activity.

As noted earlier in this section, displacement activity refers to a response that occurs out of its normal environmental context. In other words, the response, which is instinctive in nature, appears in the absence of the usual stimulation normally associated with the response. However, in contrast to vacuum activity, displacement activity can be directly related to an environmental situation.

Conflict of drives. Tinbergen outlines two situations in which displacement activity is most likely to occur. The first one is a conflict of two strongly activated drives that are antagonistic to each other. Displacement activity of this type is seen commonly in a fish, the male three-spined stickleback, when fighting behavior and escape behavior are simultaneously activated. In this species, each male has his territory containing the nest, which is closely guarded against the encroachment of another male. The sight of another male coming into the territory serves first as a sign stimulus for the male to respond with a threat posture. In some cases, this posture alone is sufficient stimulus to cause the strange male to leave the territory. At other times, if the strange male has no territory of its own and he is motivated by a strong internal drive to establish a territory and start nest building, he may not leave the established territory when threatened this way. The established male will then attack the strange male, but as he approaches the edge of his territory, this attack response weakens and starts to conflict with his flight tendency. At this point, when

the conflict between the two drives is such that each is at about the same intensity, the stickleback exhibits a third instinctive behavior pattern, displacement digging, which is completely out of the context of the situation. The movements involved are exactly the same as those seen during the time the male is building the nest. This, of course, clearly belongs to a set of innate responses that have nothing to do with either fighting or fleeing behavior.

In effect then, when behavior is blocked by the conflict of drive states and motor patterns involving those drive states, pressure is released by running off into a third behavior pattern. This is, of course, a purely conceptual way of dealing with the phenomenon.

Lack of external stimulus. The second situation in which it is common to see displacement activity occurs when there is a strong internal motivation for a consummatory act but the external stimulus necessary to release the act is lacking in the environment. This is most commonly seen in sexual responses, with hormonal levels acting as the internal stimulus and certain social responses in fellow species members serving as releasers for the sexual behavior.

Physical implications. Both action-specific energy and displacement activity suggest that there is an energy system controlling behavior, which under certain conditions must be discharged in overt activity, and that there is a built-in neurological relationship between internal excitation and the stereotyped fixed action patterns of instinctive behavior. Both types of situations leading to displacement activity indicate that, when the appropriate channel for the discharge of action-specific energy is blocked, the energy spills over into another channel, as the result of activity in the central nervous system, rather than leading to random activity.

Social implications. The transition from instinctive behavior, as we have discussed it in relation to action-specific energy and displacement activity, to the traditional psychoanalytic concept of instinct as outlined by Freud primarily involves a shift from purely physical relationships at the animal level to physical and psychic relationships at the human level. At the animal level, there is a specific, genetically determined relationship between internal excitation, a releaser in the environment, and the response, and this relationship cannot be altered through experience. At the human level, there is a certain amount of genetic determinism regarding psychic energy, which may be invested in the sexual and the aggressive drive, but the stimulus objects to which this energy is cathected can be the mental representations of these objects and may be determined through individual experience.

The possibility exists that, without the complex sociological pressures to which man has been subjected, there would be a lawfulness in the development of human behavior similar to the organization found in animal behavior. In fact, it can be predicted from what we know about the genetic determinants in the

behavior of men that without civilization man would nevertheless exhibit behavior and behavior patterns that would make him little different, to the best of our present knowledge, from the socially organized small groups of other primates. The blocking of the discharge of sexual and aggressive energy into natural channels, due to society's not permitting the individual certain modes of instinctual gratification, could be analogous to the situations leading to displacement activity in the examples from animal behavior.

Psychiatric implications. Contemporary psychiatrists have used the ethological concept of displacement activity in at least three ways in relating ethological principles to human behavior. Although each approach is somewhat different, each seems to provide a valid working hypothesis at the human level.

The fact that many displacement activities at the animal level do not serve to maximize the survival of the individual or species has been emphasized by Weigert. In a way, this relates displacement activity to neurotic anxiety, which Freud considered to be the result of a frustrated libidinal impulse and which is, of course, basically detrimental to the individual. This interpretation of displacement activity emphasizes the nonfunctional aspect of neurotic behavior. At the same time, it must be kept in mind that the conflict situation experienced by the individual may, under certain circumstances, result in the sublimation of libidinal energy into activities condoned by society. This has been pointed out by Freud.

Kaufman has postulated that, in addition to the sexual and aggressive instincts in men, there may be an instinct for flight. He has drawn heavily on work with displacement activity, since many such behaviors are the result of a conflict between aggressive and flight reactions. Kaufman points out that at the animal level sexual behavior, aggression, and flight are all built-in tendencies and that the same thing is likely to be true of man. He feels that this theoretical paradigm would be beneficial in the treatment of patients whose shyness and timidity (low intensity manifestations of a flight tendency) would not have to be construed as a reaction to hostile or sexual impulses but could be interpreted as a drive in its own right.

A third way of viewing displacement activity is that taken by Ostow. After drawing some parallels between the psychoanalytic concept of instinct and the ethological concept of instinct, he used displacement activity to illustrate a logical progression of development in man. Dealing only with the sexual instincts, he hypothesized that gratification of these instincts takes different forms during different periods of development and that the mechanism that leads from one form to another functions in the same way displacement activity functions in lower animals. As one mode of gratification is inhibited, the instinct accepts another mode of gratification. In this way, he traces the sexual aims in psychic development through oral, anal, phallic, and genital stages.

Imprinting. Research on early experience has shown that the environment of an animal early in life can play an exceedingly important role in later adjustment and later adult behavior. This point is made most clearly in the phenomenon that has become known as imprinting, derived from the German term *Prägung*, which is attributed to Konrad Lorenz.

Species recognition. Lorenz observed the behavior of newly hatched geese both with the natural parents and with himself when he presented himself to the young animals as a parental object before they had an opportunity to associate with their parents. Later in life, the animals treated members of that species to which they had first been exposed as fellow species members. Lorenz concluded that this species recognition was imprinted onto the nervous system of the young animal during the first period of exposure after hatching.

As a functional piece of instinctive behavior, imprinting serves its purpose well. Under normal conditions, the first object seen is, of course, the natural parent, and the rapid attachment of the young to the parent is necessary for the survival of the young animal. During the first days of life, the parent broods the young, protects it from predators, leads it away from dangerous situations, and takes the animal to food objects in the environment. None of this would happen if the young animal did not almost immediately become highly attached to the parent and follow it under all circumstances.

Contrasts with association learning. Since the early 1950's, imprinting has been studied in the laboratory, particularly in the United States. Ramsay and Hess in 1954 showed the feasibility of studying imprinting in a laboratory situation, and their work has been reviewed in papers by Hess in 1959 and 1964. The results of their laboratory work can be stated in five

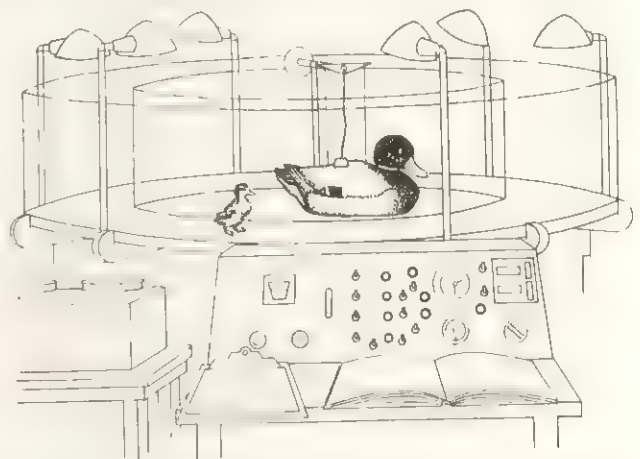


FIGURE 1. Imprinting—test apparatus. The apparatus used in the study of imprinting consists primarily of a circular runway, around which a decoy duck can be moved. In this drawing a duckling follows the decoy. The controls of the apparatus are in the foreground. (Reprinted by permission from Hess, E. H. *Imprinting*. Science, 130: 134, 1959.)

points that seem to make imprinting quite different from the association learning commonly studied by the experimental psychologists.

In the waterfowls studied, there is a critical period that is sharp and distinct. In the case of mallard ducks, for example, there is a peak of sensitivity to the imprinting phenomenon at about 16 hours after hatching, and this sensitivity drops rapidly thereafter. By 32 or 48 hours after hatching, the increased fear response of the animal appears to interfere with further imprintability. Similar critical periods have been found for other animals as well. Although not all the critical periods are within the 1st day, they have all been found to occur in the very early life of the organism.

The use of certain drugs, particularly muscle relaxants, interferes completely with the acquisition of the imprinting effect. These same drugs do not interfere at all with the normal acquisition of a discrimination such as one would experimentally study in a psychological laboratory.

Massed practice is more effective than spaced practice as far as imprinting is concerned. In addition, by the law of effort, the imprinting effect is positively related to the amount of energy expended by the animal in going to or in attempting to go to the imprinting object. In this case, too, there is a difference between imprinting and association learning.

In imprinting, primacy and recency work in a way completely different from the way they work in association learning. In imprinting, it is clearly the first thing learned that is retained, whereas in association learning the animal tends to respond to the last meaningful stimulus.

The effect of punishment or painful stimulation in imprinting has a result quite the opposite of what occurs in an association learning situation. This study is perhaps of particular interest to psychiatry.

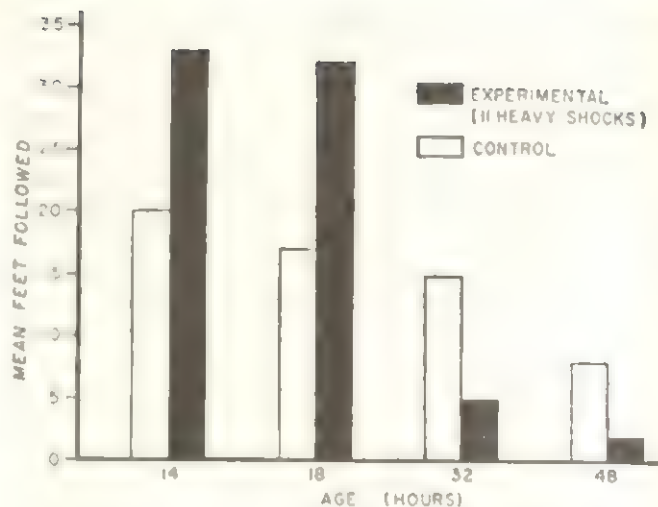


FIGURE 3. Effects of punishment during imprinting. This chart shows the number of feet that chicks of two major treatment groups, one shocked and the other not shocked, followed the imprinting object and their age at first exposure to the imprinting situation. The shocked chicks were given 11 heavy shocks of 3-milliamper intensity, $\frac{1}{2}$ -second duration, during the imprinting experience; the nonshocked control chicks were given none. (Reprinted by permission of Holt, Rinehart and Winston from Hess, E. H. *Ethology*. In *New Directions in Psychology*, Chapter 3, 1962.)

In this study (Kovach and Hess, 1963), data are reported on groups of chicks at an age close to the critical period, 18 hours, and well beyond the critical period for imprinting, 48 hours. At each age, chicks were given electrical shocks while in an imprinting apparatus with a "blue ball" (parent object); control chicks received no shock. At the age of 48 hours, those chicks receiving shock avoided the parent object which was evidently associated with the shock. However, those animals that were shocked in the same way during the optimum period for imprinting actually followed the parent object significantly more than the control animals, which had not received shock.

This result may be perplexing from the standpoint of association learning, but it is not unreasonable from the standpoint of instinctive behavior and the normal survival value of such behavior. For example, if in the natural situation the young animal were to be stepped on by the parent before he leaves the nest, it would not be biologically useful to have the young avoid the parent, leave the nest, and die. If anything, there seems to be an overcompensation for any punishment associated with the parental object, since the animals receiving shock did follow better than the control animals. The animal, in a painful situation at that moment when it depends on the parent to a tremendous degree to survive, seeks to get even closer to the parent object.

At least one paper published in the psychiatric literature seems to tie in this phenomenon with behavior in young children, where there is also a dependency relationship between the child and parent. In discuss-

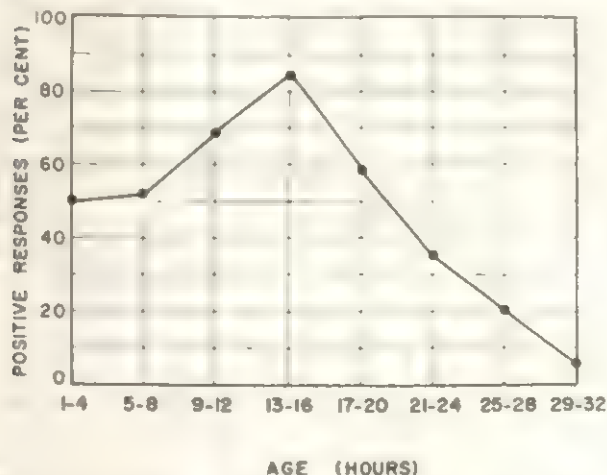


FIGURE 2. Critical age for imprinting ducklings. Ducklings are most effectively imprinted at the age of 13 to 16 hours, as depicted by this curve, which shows the average test score of ducklings imprinted at each age group. (Reprinted by permission from Hess, E. H. *Imprinting*. *Science*, 130: 135, 1959.)

ing ethological concepts as they might apply to moral masochism, Menaker takes the position that psychic development is as important to the child as physical development and that when the mother is "unloving, powerful, exploitative, and dominating" in relation to the ego needs of the child, the child will, as the weaker member of the pair, become submissive. At the same time "it creates an idealized image on which it can then be nourished for purposes of identification, ego formation, and ultimate survival." Menaker relates this type of behavior to innate mechanisms of submission that prevent species members from killing each other. It appears that the child, who is essentially in a punishing relationship with the parent and who reacts by idealizing the parent and picturing her as all powerful and loving is doing exactly the same thing a young chick does during its critical period when it follows a parent object even more closely after being punished in the presence of that object. It is not impossible that both mechanisms are operating on the unconscious level, are vital to the survival of the organism, and parallel each other on some phylogenetic basis. Just as nature has insured that the chick will stay with the parent under the most adverse conditions, a similar mechanism must operate with the child, who obviously could not survive alone.

In fact, that most modern societies have made provisions to give children adequate physical care may obscure the functioning of a mechanism that binds the child to the parent during his period of dependency, even when physically punished. However, as Polt suggests, it seems as though the normal parent-child relationship implicitly assumes that something of this sort operates. When a parent physically punishes a child for some misdemeanor, the purpose of the punishment is to deter the child from repeating the act with which the punishment is associated, not to lead the child to avoidance of the parent. If the normal association-learning laws were operative in the situation, the parent would be the object most closely associated with the punishment, and avoidance of the parent, rather than deterrence of the child from continuing the misdemeanor, would result.

Development of social behavior. The basic imprinting phenomenon implies that in a number of species there is a specific time in the development of the animal when it is most susceptible to the formation of primary social bonds with fellow species members and that this period usually occurs quite early in the life of the animal. In addition to adding a certain degree of substance to Freud's theory of developmental periods early in the life of the human child, imprinting research has served to reinforce and, in some cases, generate studies, such as those done by Spitz in 1945 and Goldfarb in 1943, that indicate the effects early institutionalization can have on later behavior. Very clearly, the environment of the human infant must satisfy certain minimal requirements during the 1st year of life if he is to show the psychological devel-

opment required or expected by the society in which he is living.

One of the strongest supporters of ethological concepts as applied to the development of social behavior in humans has been Bowlby, who has viewed smiling in the human infant as an instinctive behavior pattern and who has drawn certain analogies between imprinting and the human mother-child relationship.

In outlining the similarity between smiling in the infant and innate behavior patterns found at the animal level, Bowlby presents the hypothesis that the smiling response increases the infant's chances of survival since it makes the infant more appealing to the mother. He further suggests that there is a possibility that in the evolutionary history of man there has been a selection factor favoring this response and that infants without this response had a much higher mortality rate. Besides, there is a specific stimulus that elicits smiling in the infant—the schema of the human face—and this can be considered a releasing stimulus in the ethological sense. And the smiling response is said to be stereotyped and will occur in all members of the species. Ambrose, an associate of Bowlby's, points out that there also seems to be a critical period for early smiling, which is terminated by wariness of strangers, very much like the fear of strange objects that cuts off following in an imprinting situation. This application of ethology to human development has led Bowlby to conclude that other instinctive behaviors may also exist at the human level.

Perhaps of greater importance to psychoanalytic theories of the development of personality is the idea that clinging and following in the human infant are instinctive behaviors. This also has been outlined by Bowlby. It is his contention that, when the child is capable of locomotion, his following of the mother or mother object is like imprinting in other animals and that certain irrevocable bonds are formed through this behavior. On the basis of his observation and treatment of disturbed children, Bowlby has concluded that there is a high degree of correlation between emotional problems in childhood and complete lack of a mother object or lack of one that permits sufficient exercise of the child's responses of clinging and following.

The research on imprinting and the effects of early experience that has been carried out in a rather massive fashion with a variety of animals from the lower vertebrates to birds, mammals, and even primates has added substantially to an ethological approach to the problem of such bond formation, even at the human level. This research suggests the possible effects of an inadequate relationship and inadequate exercising of certain abilities.

Pupillary changes. Another area of research that has recently been developed in psychology uses some of the basic techniques of ethology and may prove to be of value to the psychiatrist. First reported in 1960 by Hess and Polt, this technique bypasses verbal

questioning of a human subject and relies on changes in pupil size as the subject reacts to stimulation. Briefly, Hess and Polt found that subjects looking at pleasing or interesting visual material had enlargement of the pupil. Looking at neutral material, there was no change. Looking at pictures that were distasteful in some fashion caused contraction of the pupil. The amount of brightness of visual stimulation was, of course, controlled. Just as the ethologist depends on his knowledge of the behavior of a species under normal conditions to judge what is not normal in the behavior, this technique uses observation of the pupil of the eye to determine what might be called the mental behavior of the person under observation.

Conclusion

The contribution already made by ethology to psychiatry is only a beginning compared to its potential. Thus far, ethology can be said to have contributed in three ways. First, it has given rise to concepts, such as displacement activity and fixed-action patterns, that have been taken up by psychiatrists and used in their interpretation of normal and aberrant human behavior. Second, a large body of experimental data has been accumulated in regard to effects of early experience and imprinting, and it has been possible to draw parallels to human behavior and, in at least some respects, to test the hypothesis generated from the animal work in relation to how they fit human early behavior. Third, the methods and techniques of ethology can be and to a degree already have been used in psychiatry. Knowledge of normal behavior and normal development of behavior are cases in point. The use of schematic representations to determine whether or not sign stimuli or releasers are operating at the human level, as in the case of the smiling response to schematic representations of the human face, allows us to come to grips with certain aspects of early human behavior. And the use of techniques that do not involve verbal responses, such as the pupil phenomenon technique described previously, may allow us to gain information about the development of attitudes and perceptions in the infant and developing child, either before verbal responses are possible or where verbal responses may, perhaps, not be trusted.

There is one great over-all value that ethology and what might be called ethological psychology can bring to psychiatry. This is the rediscovery that man is a biological organism, that man must have a background and bring to present day species members an ancient repertoire of behaviors that have some bearing on the problem of human behavior today. From the ethological point of view, the human infant is not a completely naive, innocent being. He has a legacy of potential behavior patterns that at one time assured the survival of the organism. Some of these innate behavior patterns must assuredly involve sexual behavior, aggressive behavior, and innate social responses. The realization that these potentials are present and that

much of these potential behavior patterns must be channelled into quite different directions in our present day civilized world may make a great contribution to an approach to the problems of man and could have a tremendous impact on the search for mental health. To assume, for example, that aggression is somehow the result of bad aspects and environment is to close one's eyes to the evolutionary usefulness and biological survival value of aggression, which surely must have a place in the makeup of man, as it does in all other organisms. If, in this one case alone, aggression were recognized as a normal and useful biological consequence, ethology would have made a major contribution to the field of psychiatry.

Suggested Cross References

For a more detailed discussion of the principles of learning, see Bachrach's section on learning theory (Section 3.3) in this chapter. Psychoanalytic theory, which is mentioned in this section, is described more fully in Chapter 6 on classical psychoanalysis by Mack and Semrad in Area C, on current theories of personality and psychopathology. Section 38.2 on child development by Eisenberg and Section 44.1 on maternal deprivation by Yarrow in the child psychiatry area (Area H) deal more fully with the subject of development of human behavior.

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3.6 SOCIAL COMMUNICATION

JURGEN RUESCH, M.D.

During the 19th century, physiologists talked about system-functions such as circulation, respiration, and digestion. The more behavior-oriented physiologists and psychologists added such considerations as locomotion, perception, expression, and motivation. Psychiatrists were mostly concerned with aberrations of thinking, feeling, and action. Anthropologists constructed cultural typologies. The linguists studied language codes. And the sociologists analyzed social structure. The tendency of scientific research was to study progressively smaller areas of structure and function. But, as Kety stated, "We do not always get closer to the truth as we slice and homogenize and isolate—that which we gain in precision and in the rigorous control of variables we sometimes lose in relevance to normal function, and . . . in the case of certain diseases or problems, the fundamental process may often be lost in the cutting."

The 20th century departure from the older scientific procedures of slicing structure and function into progressively smaller parts can be traced in the field of communication to the introduction of the concept of steersmanship or cybernetics, which, based on the notion of feedback, enabled engineers to integrate part functions into a whole. The advances made in the field of communication engineering soon spread to the field of human behavior, with the result that scientists no longer confined themselves to the study of single human beings in isolation from one another. The emphasis switched from the person to the message, making it possible to trace communications as they pass from one individual to the other through institutions and machines, to their ultimate destination in another person.

Communication can be defined as the process that links discontinuous parts of the living world to one another. It is made possible by three basic properties of living organisms found at all levels of organization, from the single cell to complex societies. In or-

ganisms, these properties are called perception, evaluation, and expression; in research, they are sometimes referred to as input, decision making, and output. In spite of the fact that these functions constitute an organizing principle of nature, there does not exist as yet a unified theory of communication. Instead, each discipline has developed its own theoretical position. A brief survey of the various approaches to communication is presented in Table I.

Basic Social Process

When individuals communicate with each other, they engage in a social process that is controlled by three sets of determinants. The organs of communication (sensory system, effector system, and central nervous system) and the urge to use these organs are part of the individual's genetic endowment. The environment to which a person is exposed and the people by whom he is surrounded represent the social determinants. And the manner in which his experience influences his knowledge, his skills, and his ways of adaptation can be considered the psychological determinants. Thus, communicative behavior is influenced by biological, social, and psychological factors.

When all these complex and interwoven patterns are reduced to a few fundamental premises, we arrive at a description originally formulated by Cantril, who stated that man requires the satisfaction of his survival needs and seeks security in a physical and psychological sense; he craves sufficient order and certainty in his life to enable him to judge with fair accuracy what will or will not occur; he seeks to enlarge the range and to enrich the quality of his satisfactions; and, being a creature of hope, he is not inclined to resign himself easily. Since man has the capacity to make choices, he desires freedom to exercise this capacity. He wants to experience a sense of his own worthwhileness, and he wants to share a system of values or beliefs to which he can commit himself. Also, he needs to live in a society that holds out a fair degree of hope that his aspirations will be fulfilled.

In implementing these needs and in seeking to realize his potentialities, man engages in a social process that can be described as follows.

Man is a herd animal, and distinct or prolonged separation from the group is frustrating to him. Therefore, every individual strives to prevent separation from the group at the same time that he attempts to remain a distinctly separate entity within the group. The individual achieves this balance by controlling the type and magnitude of social differences that exist between himself and others.

Excessive differences that may produce tensions can be decreased (1) through equal exposure of people to things, persons, and situations (similar experience); (2) through social interaction, thereby establishing correspondence of information and behavior (communicative exchange); (3) through shared explanations to justify existing differences (interpretation);

TABLE I
Approaches to Communication^a

Discipline	Field of Specialization	Source
History		
History of language	Development of language over the centuries	Hoselitz, Pei, Revesz
History of communication engineering	Development of communication technology and codes	Cherry
Theoretical disciplines		
Cybernetics	Steersmanship and feedback in biological and social systems	Wiener
Mathematical theory of communication	Information theory	Shannon and Weaver, Brillouin, Pierce
Communication engineering	Computers, automata, and control devices	George, Latil, Licklider
Scientific philosophy	Assumptions made in scientific procedures	International Encyclopedia of Unified Science, Ruesch and Bateson, Horowitz
Unified theory	Communication as general systems theory	Ashby, Bertalanffy
Behavioral sciences		
Neurophysiology	Communication and the central nervous system	Horrobin; MacKay; Miller, Galanter, and Pribram; Rosenblith
Neuropsychology	Perception, transmission, decision making, memory	Broadbent, Churchman, G. A. Miller, J. G. Miller
Ethology	Animal communication	Sebeok, Hess
Social sciences		
Social organization	The organization of social networks	Argyris, Kahn
Group process	Communication in small groups	Collins and Guetzkow, Homans
Mass media	Television, radio, press	Dexter and White, Klapper, Schramm
Language and codes		
Linguistics	Phonetics, language codes	Saporta, Osgood and Sebeok
Significs	The meaning of signs and signals	Berelson, Morris
Symbolic systems	Verbal and nonverbal codes	Hall, Skinner, Whorf
Biological codes	Genetic code	Beadle
Commercial disciplines		
Propaganda and advertising	Influencing people to act	Packard
Political thought reform	Influencing people to believe	Lifton, Hinkle and Wolff, Schein
Business organization	Efficiency of communication	Redfield, Haney, Haire
Clinical disciplines		
Family psychiatry	Communication difficulties inside the family	Ackerman, Bell, Howells
Individual psychiatry	Disturbed communication	Bateson, Jackson, Haley, and Weakland; Ruesch
Group therapy	Group analysis	Foulkes, Slavson
Psychoanalysis and psychotherapy	Communication with patients	Feldman, Haley, Meerloo, Ruesch
Mental hygiene	Community organization	Bellak, Duhl, Leighton
Neurology and neurosurgery	Pathology of organs of communication	A.R.N.M.D. Proceedings (1962), Pribram
Psychopharmacology	Influence of drugs upon communication	Kalinowsky and Hoch, Sargant and Slater
Speech disorders	Aphasia, reading disability	Brain, Hermann
The arts		
Painting and sculpture, dance, theatre, music	Expression of inner events through shape, color, movement, texture, and sound, resulting in the creation of nonverbal signals and signs to which others respond	Gombrich, Ostwald, Stanislavsky
Arts and crafts		
Architecture, decorative arts, cabinet making, handicrafts, interior decoration, fashion design	Shaping of the material environment embodies the assumptions and conventions of a particular period and person. Architectural structures and objects may become symbols for communicative exchange of people with each other and with posterity	Gorsline, Hall, Hogben, Larousse Encyclopedia of Mythology, Ruesch and Kees, Laver
Social games		
Law, politics, sports, special social situations	Stylized message exchange by participants who assume certain roles and abide by well established rules can be analyzed as if it were a game or a play	Berne, Neiman and Hughes, Jackson, Sarbin

^a For the pertinent works by the authors listed in the third column of this table, the reader is referred to the reference section at the end of this article. Complete bibliographic references for the sources cited may be found in other publications of the author.

and (4) through coercive action or threat of coercive action in case of deviance (social exclusion, imprisonment, hospitalization).

Insufficient differences may also produce tensions. Differences between people can be increased (1) through isolation from the group and exposure to self (solitude); (2) through exposure to new groups (culture change); (3) through the acquisition of knowledge or skill not possessed by others (achievement); and (4) through unusual life experiences not shared by others (illness, adversity, adventure).

If a balance cannot be achieved between personal identity and group membership, the ensuing tension usually exerts a disruptive influence on both individuals and group. This tension can be reduced to a tolerable level if one or more persons adapt pathologically, in neglect of their own needs, or if the disruption of the group leads to new group formations.

Assessment of Social Networks

The social process that connects person with person, or the social conflict that disrupts relationships, can be studied best through observation of the ways and means of message exchange. The following questions may serve as a guideline in the assessment of groups: Who? (status, role, identity); said What? (content); to Whom? (status, role, identity); When? (chronological, biological, elapsed time); Where? (situation); How? (codes); with what Effect? (feedback).

The questions *who* and *to whom* must be answered in terms of role, status, and identity. Out of a pool of thousands of people, the persons who actually sent and received a given message must be selected. The clues here may be found not only in the social characteristics of the sender but also in the message itself. The manner in which a communiqué is coded, phrased, and timed frequently identifies the sender, a fact used in detective and intelligence work. These explanatory or instructional aspects, which help in deciphering the main content of a message, have been referred to as the metacommunicative aspects of communication. For example, a certain signal given by a uniformed traffic officer is a command; the same signal given by a 10-year-old child may be interpreted as play. Or a poorly constructed letter containing errors in grammar and orthography may be assumed to have been written by a person with relatively little education.

The *what* of a communication refers to the events that signs and symbols stand for. Proper usage presupposes the existence of a dictionary or legend. Unfortunately, people use, in addition to the standard dictionary, a multitude of other informal and usually unprinted "dictionaries." Mothers and babies, husbands and wives, industrial and work crews, and sports teams develop private vocabularies. Thus, a message can be interpreted in many ways, according to which legend is used. The study of the broad conventions that regulate this process of attributing

meaning is the domain of cultural anthropologists. The narrower conventions are studied by language experts and psychologists. And in the case of patients and their relatives, the psychiatrist and the psychoanalyst are the professionals who specialize in deciphering idiosyncratic and particularistic language.

The *when* of a message refers to different aspects of time and timing. Clues must be found which indicate the historical period, the point in the development of the situation, the age of the participants, and the nature of other messages that preceded or followed the message under study.

The *where* of a message deals with the social context in which the communication takes place. The situation or occasion (wedding, traffic accident, lunch) usually furnishes a label that enables the participants to identify the pertinent rules. These, in brief, indicate who can talk to whom, about what, for how long, where, and in what manner—and the consequences if the rules are violated.

The *how* of a message refers to the code in which it is phrased. In the exploration of this area of communication, speech and language experts are joined by the gesture experts and all those other artists and craftsmen who specialize in nonverbal codes. In addition to written languages, there exist many auditory and visual codes, such as semaphore, Morse code, jungle drums, and the sign languages of the Indians and of the deaf and dumb.

The *effect* of a communication can be evaluated by studying the change it produces. An initial statement by one person or group is usually followed by a reaction on the part of another person or group. During the exchange, the identity of the participants, the schemes for interpretation, the rules of procedure, and the referential properties of the symbols are clarified. A message may be said to have had an effect if it has changed the parameters of the system. The chances of relating subsequent effects to the information contained in a given message are better if the interval between message and reaction is short. If the interval is long, intervening factors blur the cause and effect relationship. Large scale evaluations of effects are undertaken by advertisers, propagandists, government agencies, and public health experts.

Disturbed Communication

Disturbances of communication arise when messages are too intense, are perceived in a distorted way or not at all, arrive too early or too late, or are inappropriate to the situation. The therapeutic measures vary with the circumstances under which the disorders occur and the ways in which they affect the participants.

Disease, trauma, or malformation of the organs of communication may lead to distortions of perception, evaluation, and expression. In such conditions, the therapeutic intervention is predominantly somatic.

Perception, evaluation and expression may be quantitatively altered because of overload or underload, incorrect timing, and other factors subsumed under the term "stress." Here the therapeutic intervention is designed to program the individual in such a way that he no longer exposes himself to stress. Sometimes large scale social reorganization may reduce human stress.

Perception, evaluation, and expression may be qualitatively distorted in that these functions do not provide for correct information or response. Because of one-sided experience or lack of social skills, a person may be ill prepared to communicate in the setting in which he finds himself. Therapeutic intervention here is directed at reeducation or at helping the person find a more suitable environment.

The communicative process may be distorted because actual or imagined content is threatening to the participants. In this case, the therapeutic intervention is directed at the correction of erroneous perceptions and evaluations or at helping the patient accept circumstances that cannot be altered.

Communication may be disturbed if feedback processes are not functioning properly. Lack of acknowledgement, delayed response, replies that are not relevant to the original statement, and failure to reach agreements may all exert a disorganizing effect on both individual and group. Also, if the participants have an erroneous model of what is going on, they cannot behave appropriately. In dealing with distorted images of reality, the most significant therapeutic measure consists of exposing and discussing the unrealistic assumptions. If the processes that stabilize distortions have been rendered inoperative and corrective feedback has become rewarding, a more realistic image of the world is likely to develop.

Therapies Based on Communication

Once the presence of disordered communication has been established the psychiatrist must decide what type of intervention is appropriate in order to restore functioning. The psychiatrist may influence his patients by intervening with the human instruments of communication, as in psychosurgery, electroshock, and drug therapy. He may attempt to change the patient's body of information by means of the psychological therapies. Or he may try to alter the ways of responding, as in the social therapies, either through direct retraining or through changes brought about in the environment or in the relationship between the patient and the environment. These interventions may all be conceived of as being based on two central features, communication and organization.

As a therapeutic tool, communication may be used to help the individual increase his awareness of himself and of the ways he fits into the existing social and cultural patterns, acquire communicative skills and the ability to get along with people, abandon unnecessary assumptions that restrict effectiveness, and

modify his attitudes in the direction of understanding and tolerance of behavioral differences.

Within the small group, communication is used to clarify the roles of the participants, to specify the rules that the group observes, to verbalize the assumptions of the various participants, and to formulate goals of action acceptable to all.

Reorganization of the social system that surrounds individuals may consist of (1) introduction of new organizational structures or removal of obsolete ones (agencies, committees, associations, laws, and regulations can be created to take care of social needs as they arise; this is a task of social planning); (2) alteration of existing networks of communication (the flow of messages, the place of decision making, the organization of checks and balances can be changed; this is a task of management); and (3) adaptation of technological procedures to fit the needs of individuals (treatment methods can be adapted to blend with the political, economic, and ethnic values and practices of the local population).

In practice, the therapies aimed at improving the social communication of people are known under a number of different names.

The term community psychiatry refers to a complicated set of operations aimed at changing the attitudes and tolerance limits of a given group to insure the best treatment of their sick members. Once this goal has been achieved psychiatric treatment methods and procedures can be adapted to that particular community (rural, metropolitan, military, industrial, academic, etc.), and the necessary resources and facilities can be mobilized.

The term therapeutic community refers to carefully managed relationships between patients and staff in an institutional setting, whereby the patients have time limited and often controlled contact with the area and the people surrounding the hospital.

Group therapy, group psychotherapy, analytic group psychotherapy, and psychodrama all utilize the group setting for therapeutic purposes. Depending on the particular method chosen, the main efforts are directed toward guidance, counseling, lecturing, inspiration and exhortation, activity and play, or the acquisition of insight.

Family therapy involves the treatment of an entire family by the same therapist or by different therapists. The family members may be seen interacting with each other in the presence of the psychiatrist or the therapeutic team, or they may be seen separately.

Occupational therapy and work, play, music, drama, or dance therapy are oriented toward skilled activities, and human interaction is subordinated to the physical task at hand.

Social programing refers to the discussion of specific social tasks individually or in groups. The technical aspects of how to get a job, how to behave at a social gathering, or what side effects to watch for when tak-

ing medications can be reduced by step-by-step operations and taught to the patient and his relatives.

Regardless of whether the psychiatrist deals with organization, somatic therapies, psychotherapy, or group therapy, he has to deal with people. He relies on the built-in desire of the individual to seek human contact, and he gains leverage and exerts his influence through three fundamental processes: understanding, acknowledging, and agreeing. Understanding involves the establishment in the mind of the therapist of an accurate model of the patient's behavior; to be understood is a rather pleasant experience for the patient. Acknowledging refers to the therapist's receipt of the patient's purposive or involuntary messages; to be acknowledged is even more gratifying for the patient. Agreeing implies the isolation of a certain aspect within the universe of discourse and the establishment of corresponding views or bodies of information regarding this aspect; to reach an agreement is most satisfying.

Communication Engineering as an Aid to the Psychiatrist

The phenomenal advances made in communication engineering have left their mark on psychiatry. The psychiatrist's functions of perception, scanning, memory, computation, reasoning, decision making, expression, and action can be vastly expanded through the use of communication technology. Mass education and perhaps even mass treatment will become more significant as further technological advances are made. Some of the applications of communication engineering that may affect the work of the psychiatrist have been sketched in the following paragraphs.

Computers

Information storage and retrieval. Procedures are now available for storing the information contained, for example, in books or periodicals. Any page in such a collection could be located in a fraction of a second. It is possible that in the future computer storage and retrieval of information will be cheaper than the present system of libraries.

Computation and statistics. Complicated mathematical operations that would take human beings years to work out can be solved in seconds. Budget computations, logistics, and other administrative tasks are greatly facilitated by computers.

Data processing, decision making, and problem solving. Computers can scan, translate, combine data, and perform many other functions of the human mind. As aids in decision making, they can weight factors properly and can consider more material in a shorter period of time than the human brain can. For example, results of blood, urine, spinal fluid, x-ray, and other examinations can be quickly combined to yield a medical diagnosis. Similar procedures can probably be used

for the assessment of personality as better measurements of behavior become available.

Computers as scientific models. Computers can be used as models of organisms or society. The program for a computer that reenacts a process is becoming just as acceptable a theory of that process as the equation describing it. With such a procedure, more precise definition of various functions can be achieved than has been possible up to now. Reenactment or simulation of natural phenomena is the path on which scientific advances are currently made.

Programmed instruction

Texts. Textbooks can now be written in very much the same way that teaching machines operate. A question is presented, and if the student answers it correctly he proceeds to the next one. However, if he answers incorrectly he is advised to do more studying on that specific point.

Mechanical teaching machines. In a variety of semiadaptive teaching machines that are operated by hand or electrically, questions and answers are presented serially. The next question is not revealed if the previous one has been answered incorrectly. This forces the student to find the correct answer if he wishes to continue.

Computerized teaching programs. A computer can present questions to a student by way of television or on a typewriter. The student then types out his answers, and this serves as input to the computer. If the answer is wrong, the computer gives the student more training on the spot. If the answer is correct, the computer presents the next question. Such computerized programs can be used with a variety of psychiatric patients, for example, the mentally retarded, the brain-diseased, or the emotionally disturbed slow learner.

Therapy machines. With automatic control devices, suitable machines can carry out tasks formerly performed by people. Psychiatry has made little use of this aspect of technology, but in the future it should be possible to program computers to interact with patients or to rehearse certain behavioral features with which the patients have difficulty. For example, a patient can be given an opportunity to learn and abreact at his own speed; and if he is slow and redundant the machine has more forbearance than the human being.

Mass media

Broadcast television, closed circuit television, and radio. These media facilitate the delivery of lectures at any time, practically anywhere. Taped lectures can be preserved, evaluated, and sold, and for this reason they are generally more carefully prepared. The mass media approach is particularly significant in teaching students, training personnel, addressing relatives of patients, or informing boards of

hospitals or public health agencies of current trends and needs in psychiatry.

Perception and action by remote control

Microphones and television cameras can now be placed in difficult locations that formerly were not accessible to observation, e.g., inside an organism or amidst a social group. Recording observations in this way obviates the presence of the scientist. The observations can be preserved over time, and all the scientist has to do is evaluate the tapes. Psychiatrists use closed circuit television to monitor two-person and larger group sessions. With this method also the psychiatrist or the patient can be confronted with his own behavior, which he may never have seen or heard.

In the technological age the psychiatrist will progressively make more use of modern communication machines in teaching, research, and treatment. And in all probability the future training of the psychiatrist will include some aspects of communication engineering.

Suggested Cross References

In this section human behavior and psychiatric treatment were discussed from the viewpoint of communication theory. Alternate hypotheses regarding human motivation and personality are presented in Area C, which deals with current concepts of personality and psychotherapy. For discussions of psychiatric treatment procedures that are based on different conceptual models, see Area G, on psychiatric treatment. More detailed discussions of the many aspects of psychiatry to which communication theory may be applied are found in the sections dealing with community psychiatry,

milieu therapy, group and family therapy, and occupational therapy.

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Chapter 4

Basic Sociocultural Sciences

4.1 ANTHROPOLOGY AND PSYCHIATRY

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What is recognized as pathological in behavior is usually a matter of common consensus within a society. But the standards of consensus vary from one society to another. In the United States, for instance, hallucinatory experience is generally regarded as *prima facie* evidence of at least temporary mental disorder. But in many primitive tribes hallucination is not regarded as evidence of pathology at all; rather, it is an experience deliberately sought and prized for its presumed value as a communication from supernatural beings. The anthropologist, who studies human societies in an evolutionary and cross-cultural perspective, explains such differences as the results of differences in culture.

Culture, in the anthropologist's sense, is the sum of what the individual members of a community—be it a small band of hunters or a large industrial nation—have learned from generations of accumulated social experience. It includes manners, customs, tastes, skills, language, beliefs, and all the other patterns of behavior that are part of organized social life. Just as cultures differ in technology, kinship practices, and religious belief, so they differ in the behaviors classified as normal and abnormal.

History of Psychoanalytic Anthropology

The involvement of anthropology with studies of personality and psychopathology began in earnest with the efforts of psychoanalysts to apply their insights to cultural data. This tradition in Freud's own work is best known in *Totem and Taboo*, *Moses and Monotheism*, and *The Future of an Illusion*. Psychoanalytic anthropology has been developed and refined by a number of later scholars who combined anthropological training and field work, particularly Geza Roheim, Weston LaBarre, Abram Kardiner, and George Devereux.

The main stream of the culture and personality

studies, however, springs from a combination of the American ethnographic tradition, as developed by Franz Boas and his students, and a variety of psychological and psychiatric traditions, of which psychoanalysis is only one. Margaret Mead and Ruth Benedict, both students of Boas, are perhaps the best known representatives of this eclectic and humanistic tradition. In this tradition, psychological insights from a variety of sources infuse and illuminate ethnographic description.

A more systematic approach relies on tests, measurements, and formal models of analysis of values, communication processes, personality structure, and psychopathology. This approach is found in the work of Hallowell, Kluckhohn, Whiting, Spindler, Bateson, Opler, and Wallace. But many of the most significant contributions have been made by anthropologists who are not primarily identified with culture and personality. For instance, Malinowski's analysis of the important role of the mother's brother in many primitive societies suggested modification of the simpler forms of the Oedipus formulation. The work of anthropologists in these areas has been collected or reviewed by Honigmann, Kluckhohn, Murray, Schneider, Barnouw, Hsu, and Kaplan.

Correlations within a Culture

Cultural anthropologists have worked from intensive case studies of individual cultures and from statistical cross-cultural studies to explore the degree to which various aspects of culture are correlated. These studies show that change in any one sector of culture, for instance, in technology or economic system, is apt to produce a series of changes in other sectors, such as family structure, religious belief, and values. The studies also show that certain assortments of culture elements are more congenial than others and are most likely to be found together in a society; for instance, strong belief in witchcraft tends to occur in societies with poorly developed governmental systems of social control.

The statistical associations in such findings are not impressively high. However, the implication for psychiatry is that the folk definition of behavior disorder

der; the precise symptoms of that disorder; the stresses contributory to its development, onset, and course; and the methods of social response to the disorder are likely to be more or less direct functions of many cultural factors such as economic system, family structure, political organization, and religious belief and practice.

Several generalizations can be made about behavior in cultures. (1) There are always folk criteria for distinguishing behavior that is normal from that which is abnormal. (2) Abnormal (as distinct from merely wrong or criminal or even pathological) behavior is always explained as a result of interference, by disease or by supernatural agencies, with the normal functioning of the organism. (3) Conventional therapeutic or extrusive procedures are always available and believed to be effective to end any unwanted interference and thereby to restore the victim's behavior to normal, or at least to minimize its disrupting effect on the community. (4) There are no human societies in which mental disorders, of one sort or another, never occur. (5) In most human societies, both primitive and civilized, both Western and non-Western, the same major symptom clusters can be recognized: schizophrenias, depressions, conversion reactions, dissociative reactions, obsessions and compulsions, phobias, and psychosomatic ailments.

Similarities of Psychotic Processes

Despite the difficulty of securing adequate statistical data, societies do seem to differ markedly in preferred style of symptoms, in the incidence and prevalence of major types of disorder, and slightly, in total psychiatric census. Furthermore, societies exotic to Western eyes may display dramatically different "ethnic psychoses," whose symptoms may, at first glance, appear strange to Western eyes: *amok* in southeast Asia (a homicidal rampage), *latah* in Malaya (echopraxia), *piblokto* among the polar Eskimos (an endemic convulsive disorder).

For example, the windigo psychosis, repeatedly described among the Algonkian hunters of northeastern North America, is superficially unique. These people, although recurrently faced by starvation, do not condone cannibalism. The victim of the windigo psychosis, however, gradually becomes convinced that he is possessed by a supernatural monster, the windigo, whose taste for human flesh is notorious in mythology. He himself experiences an increasingly imperious urge to satisfy a cannibalistic appetite. He attempts to control it, to withdraw from tempting contacts with family and friends. Finally, he may attempt suicide or urge others to kill him, lest he actually become a cannibal. Indeed, he may be physically restrained or even killed by a terrified community when they learn of his fears.

However, these unique delusions and occasional accompanying hallucinations appear to follow the same sort of mental process that in Western society may

accompany fears of homosexuality (as in Freud's analysis of the Schreber case) or of heterosexuality (as in the panics among medieval nuns over seduction). In other words, the basic structure of a paranoid process involving fear, defense against the fear, and powerful but disallowed impulses in a progressively delusional set of defense mechanisms is apparent in the supposedly exotic windigo syndrome.

Varieties of Psychotic Causes

Etiologies, in fact, appear to be more diverse than the basic symptomatic structures. The variety of social structures displayed in the archives of ethnography provides a vast spectrum of possible emotional stresses to which individuals may respond with psychopathological behavior. In regard to the household in which the child lives, for instance, there is the Western European ideal model of the nuclear family, in which mother, father, and children live together in an apartment or house of their own. There are also polygynous societies in which each child lives with his mother and siblings, and the husband and father only occasionally, or never, spends the night with his wife and their offspring. There are societies in which a number of nuclear families live under the same roof, the affiliating genealogical connection being sometimes matrilineal, sometimes patrilineal. There are societies in which a woman has several husbands. There are societies in which the mother's brother plays some of the roles played by the natural father in our own culture. There are societies in which the infant is cared for by a large number of mature females. The list could go on and on. The patterns of identification, love, and hate that are most likely to arise in these different domestic arrangements are diverse.

Even the political structure provides different opportunities for stress and for particular kinds of symptomatic relief. Societies in which there are no political institutions that can maintain social control by invoking effective sanctions against wrongdoers are apt to be rife with fears and accusations of witchcraft. This is less apt to happen in those societies in which the individual can seek protection and legal recourse by appeal to human authority. The fear of witchcraft as a cause of illness or even death functions in politically weak communities as a principal deterrent to interpersonal aggression.

Religious beliefs, too, are notoriously variable from culture to culture. They condone, reward, or taboo human impulses in a remarkably irregular way.

National Character

Many observers, both anthropologists and psychiatrists, have suggested that each culture is associated with a common, or at least widely shared, national character (or basic or modal personality structure). This character is particularly adapted to the prevailing social structure and belief system and is, at the same time, particularly vulnerable to certain stresses.

From this point of view, the type of neuroticism (focusing on an Oedipus conflict involving a nuclear family in which the father holds the position of supreme authority and the mother is the nurturant figure) that Freud was able to define as common among his patients is by no means universal. On the contrary, it is specific to a few cultures, including that of central Europe at the end of the 19th century. Even if some sort of triangular libidinal relationship among child, adult male, and adult female is universal in mankind, it is argued that the course of character development and of neurosis will differ from culture to culture. Thus, where the father appears to the child as marginal or ineffectual in comparison with the mother, the growing male may find it difficult to identify with a male figure. The child may, therefore, have to accomplish a male identification by undergoing a dramatic puberty ritual (as among Australian aborigines) or by compulsive display of external symbols of masculinity (as among American Negroes).

In this connection it should be pointed out that large modern states like the United States are polycultural; they display a diversity of socioeconomic classes, geographic regions, and ethnic origins. The psychologist or psychiatrist cannot assume that a single American culture or American personality exists in a sense comparable to *the* culture and *the* national character of a small primitive tribe.

Institutionalized Symptoms

Most societies, even the most complex, have traditional means for accommodating themselves to episodes of disturbed behavior. In a sense, the task of the culture is to institutionalize and channelize the symptoms of an endemic disease in such a way that the symptoms are not disruptive of orderly community life. Such institutionalization minimizes the costs of extruding the sick person from the community by confinement or execution. It also minimizes the cost of maintaining the sick person in the company of his family and associates.

The means of institutionalization seems to be of three kinds: the denial of illness, special roles for the chronically ill, and therapeutic rituals for those (who may number most of the community) whose disturbances are occasional and episodic.

Denial of illness. There is a tendency in our own society for families to ignore or deny even gross symptoms in a member. Although this may be deplored where more effective means of treatment are available, such a procedure at least has the probable advantage of not adding to the sick person's difficulties the burden of being publicly branded as incompetent. Where the condition is widespread, where there is no reliable and inexpensive treatment, and when the symptoms are episodic and not severely threatening to community welfare, such a policy has even more merit.

In our own culture, the ignoring of emotional dis-

orders associated with menstrual periods seems to be dictated by such considerations. Among the Polar Eskimos, *piblokto* (fits of convulsive hysteria whose cause is not fully understood) is apparently treated with a similar indifference. On the other hand, in some other cultures, menstruating women (whether or not they suffer from premenstrual tension) are taboo and physically isolated because of beliefs concerning the dangerous nature of menstrual contamination. And, in our culture, episodic convulsive disorders are often regarded as serious, requiring heroic measures of treatment.

Special roles for the ill. In many societies, including sectors of our own, a person suffering from a chronic condition such as schizophrenia is allowed to take on or is even encouraged to take on the role of shaman. He is regarded as a person who has a special skill in communicating with or manipulating supernatural powers and beings and who performs for a fee such services as divining the location of missing objects, foretelling the future, curing illness, and persuading a divinity to bestow benefits on a client. The shaman's delusions and hallucinations are channeled and institutionalized in a definite pattern of behavior. He secures the support of the community in return for ritual services that the community believes will be helpful. Even in a person who has not undertaken the role of shaman, the occurrence of occasional or repeated hallucinations may give him a recognized role as prophet. His visions and voices are interpreted by the community as communications from the spiritual world. Whatever its impact on public policy or its consequence in the creation of new cults or social movements, the prophetic role has often been an important institutionalized niche for the delusional or hallucinating person in many societies.

Rituals for episodic illness. Religious rituals in almost all societies may give symptomatic relief in episodes of "acting out" to individuals suffering from chronic, but not necessarily grossly disabling, emotional conflicts. In many cultures, rituals are cathartic; impulses that cannot be readily satisfied in the workaday world may find expression in ritual. For instance, in some African Negro societies, voodoo rituals encourage individuals to become possessed by supernatural beings and to act out the variously gratifying roles associated with them. These roles, performed in a dissociated state, permit the dancer to satisfy impulses by temporarily assuming an alternate personality. Rituals under religious sanction may provide occasions for the satisfaction of sexual wishes disallowed under ordinary circumstances, such as incest and adultery. The Iroquois Indians believed that dreams were the language in which the soul expressed its unconscious wishes. They had an elaborate panel of procedures by which frustrated desires could be identified and satisfied.

Not all such rituals are cathartic; they may also be repressive, intended to strengthen the capacity of

the individual to reduce the anxiety of conflict by supporting defense mechanisms. For instance, rituals in which a scapegoat is condemned and destroyed have the effect of enabling the conflict-ridden person to say, "It is not I, but he, who is guilty of such and such wishes." Rituals of confession and absolution similarly permit the individual to feel, temporarily, at least, that guilt has been removed.

Therapeutic and Prophylactic Rituals

The line is thin between rituals intended generally to provide symptomatic relief for any and all members of a community who wish to take advantage of them and those rituals aimed at therapy and prevention for particular persons or classes of persons.

Therapeutic procedures. Specific treatment of mental disturbance in primitive societies very commonly involves one of four principles: exorcising a possessing spirit, recalling the victim's wandering soul, making reparations for the violation of taboo, or countering the spell cast by witchcraft.

The ritual procedures by which the shaman or the group undertake such a therapeutic task may indeed be based on a faulty conception of the nature and causes of mental illness, but such procedures are not necessarily inefficacious. Sharing a belief system with the shaman that defines his ritual as effective, the victim is apt to be relieved of the fear that his case is hopeless and must end in death or the destruction of his identity. Indeed, as Cannon has pointed out, this fear may itself be lethal if the physiological stress accompanying it is not relieved. Furthermore, some shamans interview the patient in order to discover the nature of the taboo violation or the possible occasion for witchcraft. In the interview, the shaman may directly encounter the patient's unconscious conflicts, help him to verbalize them, and thus, in the manner of any good psychotherapist, bring them into a state of consciousness, where the ego can begin to deal with them. To the extent that he is able to do this, the shaman may be able to accomplish real psychotherapy.

Gillin, for instance, describes a Maya Indian shaman in Guatemala who was treating a woman for presumably hysterical conversion symptoms. The native theory of the disease (*susto*) was soul loss, and the ritual treatment was arbitrary and, in a sense, irrelevant to the psychodynamics of the case. However, the shaman did spend a good deal of time talking with the patient in order to find out what emotional shock had frightened her soul away. This discourse rapidly converged on a discussion of precisely those matters a trained psychotherapist would have been attentive to: her unhappiness with an unfaithful husband; her poverty; her memories of her father, whom she loved.

Prophylactic rituals. In what may be called preventive psychotherapy, most primitive societies tend to rely on what are called rites of passage. These are the rituals, often supported by more or less elaborate

religious beliefs, in which a person is separated from an earlier social role and introduced to a new one. They are performed on occasions of life crisis: birth, puberty, marriage, military undertakings, bereavement, and so on. The particular pattern of occasions selected for ritual treatment and the content of the rituals vary, of course, with the culture.

Puberty ceremonies. The rites of passage most relevant to the interests of modern psychiatry are the puberty ceremonies performed on youths and girls, usually in the early stages of puberty, to mark the transition from childhood to adolescence or even adulthood. What is involved is usually more than a mere celebration of the change in social role. In the classic instances, such as the initiation rituals of the Australian aborigines and the bush schools of West Africa, a class of initiates, particularly males, is physically removed from the community and imprisoned in a special compound. There they are instructed in the secrets of manhood and are subjected for days or weeks to prolonged and various forms of hazing at the hands of elder males. The climax of the ritual is the public occasion on which genital mutilation—generally circumcision but among some Australian aborigines subincision also—is performed on the youth. This marks the completion of the process of transformation. The child is considered to have died, to have been reconceived and held in embryonic isolation, and finally, to have been reborn a man. Comparable ceremonies are, more rarely, also conducted for girls.

The unconscious meanings of the acts performed in such rituals are subject to multiple interpretations. The Australian circumcision and subincision ritual has been interpreted as a symbolic castration by jealous elders of young males who potentially compete for their women. It has also been interpreted as the satisfaction of an unconscious womb envy on the part of the males, who by the operation of subincision acquire the simulacrum of a vagina.

Functions of rituals. Every society has communal rituals when a major transformation of role in that society's terms is required of an individual or a class of individuals. It is a reasonable inference that a major function of such rituals is to minimize the duration and depth of internal psychic conflict accompanying major changes in social role by taking the matter out of the individual's hands and, as it were, ritually brainwashing him.

For instance, the primary function of the puberty rituals described above is to facilitate the transformation of children into adults by separating them physically from the parental household, encouraging appropriate changes in knowledge and motivation by a combination of stress and suggestion, and reintroducing them to the community in a new role. The community is expected to respond in complementary fashion. Just as it is obligatory for the child to forsake childish things and behave as an adult, so the adults

of the community are enjoined to respond to the initiate as an adult and no longer a child.

The agonizing conflicts concerning roles, values, motives, and responses commonly observed in many members of Western societies at times of life crisis seem to be, in part, a consequence of the unavailability of *effective* rites of passage. Granted, the price a society has to pay for the advantages of such rites is heavy. They exact a relatively high degree of uniformity. Perhaps the price is too heavy for large, complex societies that are organized for rapid and continuous change in both technology and social structure. If individuality, diversity, and creativeness are prized, then ritualization of psychic maturation may be so costly that it cannot be tolerated. Viewed in these terms, the various individualized psychotherapeutic and counseling techniques developed in industrial societies in the 19th and 20th centuries seem to be the necessary functional alternative to standardized rites of passage. And the continuous outcries against the demands of conformity and the threats to identity imposed by industrial urban society should not be regarded as a sign that modern society is becoming more and more ritualized and uniformitarian. Rather, they are a sign that more and more people are becoming aware that this kind of society cannot function successfully if conformity and uniformity are too highly emphasized.

Studies of Hospitals as Cultural Systems

In recent years, many social scientists, including anthropologists, have studied the social and cultural milieu of the mental hospital. Indeed, a number of psychiatric administrators have encouraged anthropologists to study the social system of the mental hospital, its customs and procedures, and their possible unintended effects on patients. The social scientists have worked on the assumption that the course, symptomatology, and outcome of psychotic and neurotic disorders are heavily influenced by the nature of the hospital environment.

Social conflicts. One result of such studies has been the demonstration of characteristic types of social conflict built into the social system of the hospital staff: the castelike division of the line staff into such hierarchically ranked categories as physician, nurse, attendant, and maintenance personnel, with mobility blocked between categories (a nurse, for example, cannot become a doctor without leaving the organization); the military-like pattern of authority, characterized particularly by the phenomenon of multiple subordination (a nurse, for example, is expected to respond to orders from a number of other nurses and also from physicians, who may or may not be in communication with the nurse supervisors); the tendency for the patient to be so effectively stripped of his outside identity as spouse, parent, worker, and citizen that the reconstruction of a new outside identity or the reassumption of the old one is made very difficult

(even if the patient's psychiatric condition permits it), and he comes instead to display the syndrome of hospitalism (his new identity becomes that of the good, passive, chronic patient).

It is difficult to estimate how much therapeutic benefit would accrue from instituting the changes in hospital organization and practice suggested by such observations. There is no clear understanding of the causes of the functional psychoses or of the relative efficacy of the various therapies available; therefore, the weighting of any one factor must be problematical. But, whatever method of treatment is undertaken, the patient's response must depend partly on his confidence in his physician and the physician's apparatus which in this case is the hospital itself, and partly on what confidence the physician and staff communicate to him.

Communication processes. Anthropologists doing research in psychiatric settings are also interested in the nature of the communication process between patient and staff and between patient and family. For instance, studies have used the techniques of linguistic and kinesic analysis in order to understand better the exchange of feelings and attitudes that goes on below the surface of the content of speech. Such studies tend to confirm clinical impressions that, however indispensable rational conversation may be to the therapeutic process at some points, much of the emotionally significant interchange between therapist and patient (and, for that matter, between healthy individuals) involves the mutual communication of affects by autonomic signs, culturally patterned gestures and postures (kinesic communication), and paralanguage (intonation, voice quality, and so forth). The availability of multiple modes of communication also facilitates those ambiguous and contradictory exchanges described by such terms as the double bind and the identity struggle, which some investigators have regarded as possibly pathogenic.

Alien cultures. The services of anthropology may be useful in clinical settings to evaluate the meaning of the patient's symptoms and his attitudes toward treatment. This is particularly likely where the psychiatrist and other psychiatric personnel are confronting persons from a cultural background alien to their own. To some extent, this may be true even when both patient and staff come from the same country or even the same region or metropolitan area. Marked differences in social class, education, and ethnic background may directly interfere with communication because the staff simply doesn't know what the patient is talking about and may more subtly block agreement on the goals and nature of treatment because the patient's tacit expectations are at variance with the physician's. Segregated ethnic minorities, such as some American Negroes and American Indians, may entertain a world view very different from the middle class psychiatrist's.

This cultural gap is even more obvious where the

psychiatrist is responsible for persons of sharply different cultural background. This may be the case when he is treating visitors from a foreign country or people in underdeveloped areas, such as African tribal societies or United States Trust Territory native populations. Even where there superficially appears to be a familiarity with Western technology and medical belief, certain values, attitudes, and beliefs may baffle the Western physician when he first encounters them in symptom formation or in the therapeutic negotiations. Beliefs about possession, witchcraft, the efficacy of rain-making ceremonies; values concerning the expression of pain, grief, or affection; the obligations of kinship and other social ties; attitudes toward white men and white medicine—all these may be difficult to accept or to interpret. A sensitive and intelligent physician can, of course, learn a great deal from his own patient, from casual association, and from reading the relevant social science literature. But it may sometimes be helpful to consult an anthropologist whose intensive study of the group enables him not only to answer particular queries but to provide a general framework that anticipates future dilemmas. Since anthropologists tend to specialize in particular culture areas, it is necessary to communicate with an expert on the particular group in question.

Evolution of Psychiatric Disorders

One of the traditional contributions of anthropology has been to disabuse modern man, in particular, modern Western man, of various popular ideas about human nature and the evolutionary development of human behavior.

"Happy primitive" misconception. One popular delusion is probably inherited from romantic Rousseauistic notions of the happy primitive. This, in turn, harks back to the ancient doctrine of the Golden, Silver, Bronze, and Iron Ages, with the Golden Age being an era of blissful simplicity, a Garden of Eden, and subsequent ages more and more sophisticated and also more and more evil. In such theories, mental disorder is regarded as a disease of civilization, one that regularly increases in frequency as the civilization progresses. Occasionally, remote tribal populations or isolated utopian communities are cited as places where, because of the uniformly high quality of mother love or the absence of contradictory role expectations or whatnot, functional mental disorders are rare or nonexistent. These psychiatric paradises regularly turn out to be, on closer examination, no more immune to mental disease than other human groups. The inference, of course, is that mental difficulties are not recent afflictions of mankind. They could probably be traced, if records were available, far back in the human phylogeny to a time when technological and social simplicity, comparable to that of modern primitives, was the general condition.

"Sick society" misconception. A related popular misconception is that whole societies can be diagnosed

as suffering from paranoid or other psychoses. This pseudoscientific attitude is apt to flourish most exuberantly when scientists feel the need to condemn their or their nation's enemies without seeming to exhibit unscientific prejudice.

"Inherited neurosis" misconception. In a similar vein, there is little to support the argument that neurotic guilt and the consequent Oedipus neurosis began with some primal parricide (as suggested by Freud) and that the nucleus of the Oedipus conflict is a genetically inherited constant in human nature. There are some startling uniformities in symbolism and mythology across otherwise widely differing cultures. But these can readily be interpreted as the consequences of common features of the human condition, such as prolonged infancy. Or they may be the results of the historical diffusion of culture content. They are far less likely to be the results of inherited modifications of the genetic material. Nor can one support the idea that in neurosis and psychosis the human mind regresses phylogenetically as well as ontogenetically, recapitulating the stages of barbarism and savagery through which our ancestors passed thousands and tens of thousands of years ago.

Vulnerability to emotional conflict seems to be as much a general characteristic of the human central nervous system as its vulnerability to physical and chemical insults. In view of the extraordinary complexity of experience and, therefore, of learning that the human brain is capable of, it is hardly remarkable that so many persons, in all cultures, at one time or another suffer more or less severe episodes of mental disorder. It is more remarkable, indeed, that so few remain chronically ill. There probably are no model cultures that immunize their members against emotional difficulty, either in the present or in the future.

Evolution of social reaction to the mentally ill. What is readily demonstrable is a long term change in the reaction of society to the disordered behavior of those who are mentally ill. Here, a general evolutionary trend is evident.

Hunting and gathering cultures have a work rhythm characterized by periods of days or weeks of intense, exacting effort alternating with similar periods of rest and relaxation. A person's contribution to the welfare of such groups is better measured by what he can do when he is at his best than by how constantly he remains at a standard level of performance. Thus, simple societies can and do tolerate episodic disorders more readily than the more complex societies do. Occasional episodes of hallucination, convulsive seizures, bursts of rage, or depression can be tolerated because the person can be expected to emerge and carry out his role effectively at the next period of intense activity.

Agricultural and, particularly, industrial societies depend far more heavily on continuous, reliable, day-after-day performance of routine tasks, frequently involving intricate machinery and complexly arranged

social relationships. Here, reliability of performance over long periods of time, even at a mediocre level, may be more important than the high peaks of efficiency during occasions of intense effort. The interruption of the routine by episodes of behavioral disorder in such societies may present serious problems and attract therapeutic efforts or sanctions far more intense than in the hunting and gathering societies. In complex societies, therefore, episodic illness is likely to be treated as a chronic problem because the threat it poses is chronic. This is true even where the differentiation of labor and the demand for innovation make uniformity less important as a social value.

Along with this change in the evaluation of episodic disorder, there has occurred the other major change in the response of society to mental disorder. This is the progressive removal of responsibility for prevention and treatment from the religious sphere to the secular sphere, particularly the scientific, medical sphere. So far, medical science has been able to do little more than chip away at the edges of the vast and recalcitrant conglomerate of disorders. Various organic conditions have been discovered that are responsible for behavior disorder. As these are discovered, they are separately classified and treated. But the poorly understood mass of functional neuroses and psychoses—a mysterious amalgam of biological, psychological, and social determinants—still awaits penetration by research. A milestone in cultural evolution will have been reached when valid understanding and quick, effective treatment of mental disorders are achieved.

Suggested Cross References

For more detailed information about the application of anthropological concepts and data to psychiatry, see Stewart and Levine's section on psychoanalysis and psychotherapy (Section 34.1) in Area G, on psychiatric treatment, and Section 36.1 on milieu therapy by Stainbrook in the same area. Also see Area I on community psychiatry, where the problems of treating different ethnic groups and the influences of cultural factors on psychiatric disorders and their treatment are considered in greater detail.

Theories of personality and psychopathology that rely heavily on concepts derived from sociology and cultural anthropology are presented in Chapter 7, in Area C, on current theories of personality and psychopathology.

More detailed descriptions of the various exotic psychiatric syndromes mentioned in this section are presented in Lehmann's section on miscellaneous psychotic reactions (Section 32.1) in Area F, on the nosology and the psychiatric clinical syndromes.

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4.2 SOCIOLOGY AND PSYCHIATRY

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That medicine involves social science as well as biological science is by now a widely accepted idea. The purpose of this section is to relate one of the social sciences, sociology, to one of the medical specialties, psychiatry. The exposition is in three main parts: first, what sociology is and how it fits in among the various social sciences; second, some of the main concepts of sociology and how they may apply to psychiatry; third, three major research projects as examples of empirical studies done at the intersections of sociology and psychiatry.

What Sociology Is

Sociology is an empirical science that studies human relations. Its domain of problems spans two levels of analysis among superorganic (behavioral) systems: the interactional level and the organization level.

The superorganic is the level of symbolic meaning. It is above the organic, the level of life, which, in turn, is above the suborganic, the level of matter and energy. These levels of analysis are logical housekeeping rules for handling concepts so that they may share a common degree of generality at a common level of abstraction. It would violate these rules, for example, to explain a war in terms of molecules or to explain a hurricane in terms of hostility.

Presumably, there are distinct emergent levels of organization in nature that underlie the need for distinct levels of analysis in discourse. But, as tools of analysis, levels are designated for their usefulness—and not without arbitrariness—especially in the division of main levels into subordinate levels (such as those of cell, tissue, and organ within the organic level). For purposes of this section, there are four subordinate superorganic levels: individual, interactional, organizational, and institutional.

Take this as an example of how these levels might emerge: Robinson Crusoe, alone on his island, presents behavior at the individual level. With the appearance of his man Friday, there are situations for behavior at the interactional level. From these interactions emerges a mutual recognition of differences in position—Crusoe as master and Friday as servant; and that is a rudimentary social structure which may be studied organizationally. Insofar as these two organized men come to institute ways of doing things—ways that are learned, shared, and transmittable to others—they could be studied institutionally, that is, culturologically.

Some confusion may exist between common usage and present sociological use of some terms. It is common for a particular place, such as a hospital, to be called an institution. Technically, a particular hospital, such as Bellevue, is an organization; but *the* hospital, that is, the generic idea of such a place as a way of doing things, is an institution—a part of our culture. And culture refers not only to high or highbrow pursuits (such as art, science, and philosophy), but to a society's way of life, including every mundane detail. Moreover, a social organization may be formal, like a school or a government, or it may be informal, like a friendship clique or a society.

The term "system" is familiar enough in such usages as "solar system," "heating system," and "digestive system." The general idea is that of a whole composed of parts (organs) that are interrelated (organized). When we refer to relations among things that we construe as parts of a whole, then we are thinking of that whole as a system.

The distinctive thing about a discipline is its area of problems. For an applied discipline, it is a substantive (content) area. For a basic discipline, such as sociology, it is a conceptual domain of problems. To identify a problem in science, one must have something to explain—taken as problematic—and something to explain it by—taken as given. One must be exempted from explaining the givens; otherwise, one would either go on explaining forever or end up in a circle.

Sociology, then, may be defined as the basic discipline for the study of superorganic systems in which two levels of organization are taken as problematic, that of social interaction and that of social organization. This straddling of at least two levels of problems, a source of manifold confusions, is usual among disciplines in the behavioral sciences. Psychology straddles

the organic and the individual sublevels of the superorganic. Social psychology straddles the individual and the interactional levels. Anthropology, in practice, extends over all levels.

Another source of confusion in the behavioral sciences that is related to the straddling of levels of organization is the duplicity of meanings among concepts. Many a single concept, such as "role," is useful for reference at each level of organization; but at each level, it must be invested with a somewhat different meaning, depending on the system reference that is intended. If the system reference is not clear, the term is ambiguous. Thus the role of mother may characterize the personality of an individual (motherliness) or the nature of an interaction (mothering someone) or a part in a social organization (mother in a family) or a set of cultural norms for a pattern of behavior ("like a mother to me").

Among the social sciences, sociology covers two superorganic sublevels as problematic, social interaction and social organization. The sociologist, of course, may concern himself with the relations between things sociological and many other types of things—individual, cultural, meteorological, etc. But the basic discipline of sociology builds its own distinctive propositions with its own distinctive concepts.

As a presentation device, we shall use some general ideas in introducing and organizing the material. Based on a rough definition of a system—a whole that consists of interrelated parts—the discussion is divided into four main sections. The first two sections focus on the organizational level, first from the standpoint of how the parts maintain the whole, and the second from the standpoint of how the whole maintains the parts. The remaining two sections focus on the level of interaction, on the guidance of each part and on complementarity between parts.

Social Organizations

A system is an instance of orderliness in the universe, a negation of randomness. In studying any system, one may ask, How did such order originate? How is it maintained? Questions of origination may be bypassed here. It is questions on system maintenance, on how a system works and endures, that will be considered. Some of the main concepts in systematic sociology, their meanings, and the ways in which they may be relevant to psychiatry will be explored. Many of the concepts that follow may be viewed as quite general ideas that have been adapted to sociology's particular domain of problems.

Large scale behavioral systems may be vastly complicated affairs of wheels within wheels, within wheels. A social organization, such as the Daughters of the American Revolution or Macy's department store, can do many of the things that a person does in society. It can join organizations, enter into contracts, pay and receive money, etc. These corporate individuals, like an individual person, can operate

with stability and reliability. How is that possible? Insofar as the answer lies within the boundaries of the system itself (apart from its external relations, foundations, or broader context), two analytic perspectives are useful: In what ways do the member parts maintain the system as a whole? In what ways does the whole maintain the parts?

Parts maintain the whole. Insofar as an organizational system "works," each of its parts must, in a patterned way, be somewhere to take its part in a structure, do something as its function, and develop somehow (for example, generate or degenerate) to bring about systemic change. Social systems, then, embody concepts applicable to social structure, social function, and social change.

Structure. The concept of social position is used to describe a social structure. A social position (often called a "social status") is defined by a set of rights and a set of duties. That is to say that the coordinates by which a position in social space may be located are rights, referring to what an incumbent of a position may expect of others, and duties, referring to what others may expect of him. These expectations are social norms or standards of conduct, based ultimately on moral values. The study of values per se belongs to philosophy and theology. But the study of valuations, the ways in which values are formed and held in the course of human behavior, is not merely allowed in scientific sociology but essential. It must be stressed that there is virtually unanimous agreement among sociologists today that a social order is distinctively a normative order.

If the structural parts of a social system are positions, where, then, does the individual come in? He comes in by taking various social positions. He may do so by ascription (if it is given to him, for example, his religious affiliation at birth) or by achievement (if he earns it, for example, a foremanship in a plant). There is, of course, no one-to-one correspondence between individuals and positions. One individual usually fills many types of positions, and each type of position is usually filled by many individuals. A specific position in an organization may be held by several people in succession, or by no one, when it is vacant.

What holds a position "in position" in a social structure is largely a matter of mutual support among positions, mutual recognition, and enforcement of rights and duties. Feelings of humiliation, for example, may be appreciated in psychological terms; but to humiliate means literally "to reduce to a lower position." There is some evidence that the upsets of everyday life, considered by many as an important concern for preventive psychiatry, are very often positional upsets, due to violations of vested expectations.

Function. A social role, as Linton puts it, "represents the dynamic aspect of a status." When a role is performed, the rights and duties of a social position are put into effect, and a social system functions.

Role strains for the individual may be patterned in various ways. One example is a high performance role, such as concert violinist or marathon runner, in which it is expected that the performer will go to marvelous extremes of taxing himself. Other types of strains are due to conflicts, in which two or more roles carried by one individual make too heavy a load or impose conflicting demands (such as home and career).

Illness itself, in its sociological aspect, has been conceptualized under the heading of "the social role of the sick person" or just "the sick role." It is a societal device for exempting an individual from his regular role demands, and it usually carries additional rights (secondary gains) to receive care and solicitude. But the sick role imposes the duties of wanting to get well, of seeking necessary help, and of cooperating in treatment. The physician plays a special part as the one who can formally pronounce that any particular taking of the sick role is legitimate or not legitimate (malingering). Failure to meet role demands would carry the stigma of deviant behavior, if the failure were not covered by the sick role; and the sick role must include the above-mentioned signs of good motivation, if it is to secure exemption for nonperformance.

Professional helpers also appreciate good motivation in their cases as a factor in eventual success, and they may often reject some types of cases, such as alcoholics or drug addicts, for apparent lack of motivation to get well.

The public stigma that attaches to mental illness in this culture is notorious, and it is a great detriment to afflicted individuals. People generally allow the sick role to mental patients but do not stop defining them as deviants. Indeed, many symptoms of mental disorders are acts that deviate from social norms; and many mental patients are not so earnest and cooperative as the sick role requires.

Compliance with social norms, however, is rarely demanded in absolute terms. There are various ways for allowing toleration of deviation, and there has been evidence of growing tolerance for and even acceptance of the mentally ill by the public at large.

Change. Socialization and social mobility are concepts that apply to ways in which individuals change and thereby contribute either to social stability or to social change.

Socialization is the process by which the individual learns to perform social roles. It applies not only to children but to recruits at any age. Anticipatory socialization refers to learning that goes on before a role is actually taken.

Social mobility refers to a change in social positions, usually the occupational position of the head of the household, taking occupation as the prime indicator of social rank for a family or single adult. It may be measured as intergenerational mobility (difference between parent and offspring) or as career mobility (the individual's own movement as an adult). Geographic

mobility refers to moving one's residence from one place to another.

Reference individuals and reference groups are two sources of orientation for learning content and style in new roles.

Each age cohort within a given group is socialized in a singular historic situation by a parental generation that was formed in another type of situation (such as a time of depression or of war). How do these shifting patterns affect the processes of child development and of adult adjustment in consequence? They seem to be a source of confusion and consternation for those who experience these processes and for those who study them.

The effects of social change on mental well being have been investigated. Findings by Leighton and his associates in the Stirling County study were consistent with their hypothesis on the ill effects of social deterioration in an area. Ruth Benedict's concept of cultural discontinuities postulates that the culturally normal life course may be costly to the individual's well being if it contains sharp breaks, as does the transition in this culture from adolescence to adulthood. Syme and his associates found associations between rates of coronary heart disease and four patterns of change: increasing urbanization of a stationary population and all three types of individual mobility—geographic, intergenerational, and career mobility. They postulate cultural mobility as the common factor, referring to external changes in the way of life to which the individual must adapt. In addition to the hypothesis that mobility induces illness, there is the "drift" hypothesis that illness induces movement of certain kinds. Both processes seem to occur, but it is usually hard to measure their respective contributions to observed rates of illness.

The whole maintains its parts. Structure, function, and change have been discussed as aspects of a system in which the whole depends on its parts—where they are, what they do, how they develop. A system thus dependent on its parts must somehow manage to maintain them in working order if it is to endure. Parts can go out of order in a number of ways, each way corresponding to a positive process (in parentheses, below) that keeps it from happening: The parts must not lose their distinctness, for instance, by fusing together (differentiation); they must not perish for lack of sustenance (allocation); they must not detach themselves from the whole (integration); and they must not underdo or overdo whatever they do, at least not beyond tolerable limits (regulation).

Differentiation. Social differentiation refers to the variety of positions that make up a social system. Leveling is a type of dedifferentiation in which individual rights tend to sameness, and role blurring refers to situations in which duties tend to sameness.

Dedifferentiation may occur suddenly in a situation where there is panic, such as in a fire in a crowded theatre. Role distinctions between house staff and au-

dience are lost, as are the distinctions among men, women, and children. Exits become blocked with masses of undifferentiated humanity.

Logically, dedifferentiation reduces variety among parts (social roles) and thereby sets limits on capacity to function. In practice, of course, society defends some differences more strongly than others. For example, we strongly control social differentiation by sex; transvestitism is made a crime and is considered a sign of illness.

Allocation. Social allocation refers to the socially patterned ways in which the needs and wants of an individual are met. Economics studies these processes insofar as they involve production, exchange, and consumption of goods and services by market mechanisms. Sociology projects these matters onto a wider screen. The kinds of rewards that can be had from a social system are placed under these main dimensional headings: class, status, and power.

Class is based on life chances in the market place. Status, here a synonym for prestige, is based on one's embodiment of the fulfillment of social values, as through a respected family name or by occupational attainment. Power is based on being in a position of control over events. These three dimensions are conceptually independent. Empirically, they can be discrepant, but they tend to be highly associated.

Differential allocation in these three dimensions produces social differentiation of an invidious kind, called social stratification. A stratum includes persons of roughly the same social rank. Social surveys often use a composite measure of over-all social rank called socioeconomic status, or SES, based on such indicators as education, occupation, income, rent, and area of residence. SES tends to be one of the strongest variables in social surveys on whatever topic; that is, it tends to show wide and strong empirical relationships.

For some empirical comparisons, it is valuable to consider the various indicators of SES separately. And for some conceptual comparisons, it is valuable to consider class, prestige, and power separately. Moreover, the concepts of class, status, and power can be used to distinguish not only types of rankings but also types of interactions. The ways of dealing for money or prestige or power tend to be distinctive. Also such dealings may blend in distinctive ways, as in the contrast between class politics and status politics.

Relations between social rank and mental disorder have been studied by various investigators in various ways. There is remarkable agreement on the finding that, the lower the social rank, the greater the risk in most nosological categories of mental disorder and in most symptomatic indicators. All three dimensions of social rank appear to contribute to the general finding, insofar as they can be separated by empirical indicators. Moreover, there seems to be an interaction effect from discrepancies in rankings among an individual's social positions, such as occupation of high

rank but an ethnic background of low rank or vice versa. Jackson found such departures from status consistency to be associated with psychosomatic symptoms.

Hollingshead and Redlich among others reported direct associations between quality of care received for mental disorders and social class rank of patients. There are many issues of measurement and interpretation on which such findings may be questioned, but if differences in quality (subtle or gross) are recognized in a thing, those differences will tend to affect the allocation of the thing. How that happens depends on how the dealings in that thing are organized. The allocation of care for the mentally ill may be organized along lines of one or another of the dimensions discussed—class, prestige, and power.

If care is organized predominantly on a fee-for-service basis, it is basically a market matter; and we may expect class differences in care. In the model used by the military services, access to care is a right of membership that applies to private soldiers and general officers alike; but generals do better than privates in that regard, not by issuing commands but because, by the value structure of the military, they have more prestige than privates. Finally, there are those who, viewing the care of mental health problems in a community context, see it as a matter of mobilizing the power of affected groups to win improvements in their conditions of life.

Integration and regulation. Integration refers to the act or process of making whole or entire. Social integration of an individual in a group refers to the extent to which he is joined (united, bound) to the group. It is a highly generalized conception that may be analyzed in many ways. Regulation refers to processes of keeping events within the limits set by some rule or standard. *Social regulation* of the individual by the group refers to the ways in which he is kept within the limits set by group norms.

The concepts of integration and regulation are discussed together to emphasize their conceptual distinctness while pointing to their closely intertwined empirical relations. A classic juxtaposition of these two concepts occurs in Emil Durkheim's study of suicide, in which he marshalled evidence to adduce four types of suicide in sociological terms: egoistic, due to underintegration; altruistic, due to overintegration; anomie, due to underregulation; and fatalistic, due to overregulation.

Acts of regulation by a group tend to foster the integration of the group; that is, the norms are strengthened by exercise. Thus, some deviant behavior is normal and perhaps necessary for group solidarity. Scapegoating and segregation of outgroups by ingroups are ways of activating these mechanisms.

Acts of regulation may be aimed to correct the malintegration of an individual. They may succeed, or they may boomerang by producing feelings of social alienation. Some degree of malintegration, as in a mar-

ginal member, may be of value to a group. Such members, because they are usually not so parochial or square as highly integrated members, can be valuable sources of innovation and criticism.

The concept of alienation and its correlates has been receiving much popular and scholarly attention. Seeman, in a much quoted article, has suggested five types of alienation: powerlessness, meaninglessness, normlessness, isolation, and self-estrangement. Dean has compiled the following suggested correlates from the literature: apathy, authoritarianism, conformity, cynicism, hoboism, political apathy, political hyperactivity or personalization in politics, prejudice, privatization, psychosis, regression, and suicide. In general, the concept of alienation appears in the thick of the efforts to study the processes by which the individual seeks a *modus vivendi* with society—his provocations, compensations, and decompensations—affected especially by processes of social integration and social regulation.

Empirical attitude measures have been devised for many aspects of alienation, notably the F (authoritarianism) scale from the seminal study of Adorno and his associates and Srole's A (anomia) scale.

Social Interactions

A social organization operates through the actions of its members with one another and outsiders. Saying that a firm or a group or a society does this or that summarizes the resultants of patterns of events at another level of analysis, that of social interaction. Interactions are more accessible than are organizations to everyday observation and common sense interpretation.

At the level of social interaction it is still the case that individuals take parts, but these are not necessarily parts in organizations, formal or informal. Interactional roles may be demarcated in terms of the structure of the situation in which they are played: the role of a stranger, a nonmember, a third party, a spoiler, a conciliator, an innocent, a clown.

Interactions between individuals are guided by each of the participants' definition of the situation. In the words of W. I. Thomas, "Things that people define as real, are real in their consequences." Inasmuch as definitions may be highly subjective, people may not know what to expect of each other in the absence of a common culture to establish the rules of the game. Moreover, because social processes sometimes operate perversely, prediction may be hazardous, even under a common cultural umbrella. Some things that otherwise would not have happened may happen because they were predicted (self-fulfilling prophecy); and some things may fail to happen because they were predicted (boomerang effect).

An interaction system is marked by complementarity of expectations, that is, some way in which the parts complete a whole; but the valence of com-

plementarity in any situation is not necessarily positive (cooperation). It may be negative (contention) or null (suspension).

Guidance of each part. A guidance mechanism may be analyzed for three kinds of functions: it must get relevant information (cognitive), match that information to an appropriate mode of response (affective), and check the response against governing standards (evaluative).

Cognitive. Social clues are guides to social positions. A married woman wears a wedding band on the third finger of her left hand (or of her right hand in the European fashion). A manual occupation is symbolized by a blue collar. An aristocrat is expected to distinguish himself by dress, bearing, and soft hands.

Social cues are guides to expected conduct. Our culture provides a clear signal for the ending of a formal interview: the person behind the desk stands up. If it is an informal visit, then the host must wait for the guest to decide to leave. There are tales of excruciatingly long visits by newly arrived Indian students, in whose culture it is the host who must say when a visit has ended.

Behavior problems of school children are often attributed to cognitive difficulties, such as a deficiency in sight or hearing, or cultural deprivation.

Affective and evaluative. An individual enters interaction situations with certain guidelines: beliefs, which are positions on questions of fact; affects, which are feelings pro or con toward things; and values, which are commitments to standards, especially moral standards.

Interaction may be considered the interplay of the set of wants (affects) and musts (values) of its several participants. But the structure of the game of interaction consists of more than the sum of such parts. This is illustrated by the story of the permissively managed nursery school children who asked, "Must we do what we want?"

The individual composes his guidelines and poises himself for interaction by his postures or attitudes toward things and issues.

Insight into the functions of attitudes and values in social interaction is gained by referring to two of the ways in which role performance may break down: embarrassment and scandalization.

Gross and Stone write: "Embarrassment occurs whenever some central assumption in a transaction has been unexpectedly and unqualifiedly discredited for at least one participant. The result is that he is incapacitated for continued role performance." They describe "role as consensual attitudes mobilized by an announced and ratified identity." In short, part of one's presentation of self for interaction is the projection of attitudes (perhaps not the same ones from situation to situation); if they are discredited, the interaction may suffer mortally.

Scandal occurs when someone is caught failing to

uphold the values for which his position stands. It is a violation of prestige that hurts the reputation of the individual who fills the position and also of the organization that contains it. If no one of high prestige can be assigned responsibility, then even very grave malefactions are not scandalous. Scandal is an alarm reaction at a failure of responsibility for social regulation. Because rank has its privileges, some may deliberately scandalize others as a way of asserting rank. But a scandal often severs role relations and, therefore, can make a position untenable.

The relations of expressed attitudes to actions, interactions, and organizational positions may be studied by social survey techniques. The concept of value homophily refers to the observed tendency of friends to see things in the same way (or stop being friends). Consensual validation refers to mutual confirmation of shared attitudes (sentiments) in a group. Cross-pressures arise when an individual finds that a conforming opinion for one of his major social positions contradicts that of another.

Expressed attitudes that are extremely rigid or extremely fluid may, of course, be indicators of personality dysfunction or breakdown. It is a vast area for the study of the interplay of psychodynamics and social dynamics.

Complementarity between parts. Personal relations between individuals may be, grossly speaking, positive, negative, or indifferent. That is to say that, in terms of their feelings, they may like or dislike each other or fail to do either one. The same gross possibilities apply to the nature of their interactions, independently of their feelings, depending on the complementarity of their role performances. Individuals may cooperate with or contend with or suspend their attentions to each other. These possibilities at the level of interaction are logically independent not only of the individual level of feelings but also of the organizational level of social eufunction or dysfunction. Competition, for example, may be required between some members of an organization in order to foster heightened performance among them. Empirically, however, there is usually a positive association between good personal feelings, cooperative role relations, and organizational eufunction.

Cooperation. Cooperative relations may serve mutual personal ends directly, as when one hand washes the other. Or, if their direct purpose is organizational, they may serve personal ends indirectly through the fostering of group morale. At its highest levels, morale seems to create conditions in which the individual accepts organizational interests as his own, and the various ways in which the whole maintains the parts—differentiation, allocation, integration, and regulation—seem to be taken for granted or ignored.

Juveniles and senior citizens are two social categories that have gained special psychiatric notice. In this social system, neither group normally has important roles to perform. Thus they are blocked from

chances for prestige (organizational) or esteem (interactional), with presumptive damage to self-esteem.

Contention. Many of the institutional spheres normally operate by an adversary system: competition in the economic sphere, opposing counsel in law courts, and opposing candidates for elective office. It is taxing to be a contender and dispiriting to be a loser. For the individual, contention may help to develop strength and stamina, but it may be costly through strain of effort, conflict of motives, and punishment from the opposition. It is very difficult, even in imagination, to engineer an optimal role for contention in a social system.

Suspension. In social life, one is expected to be his brother's keeper in many ways, but not limitlessly. There are some areas that, under most conditions, are subject to suspension of interaction. The individual is accorded rights of privacy and also duties of decency. An analysis of these complementary concepts turns on the concept of social visibility, which is a far more portentous matter than it may seem offhand. Visibility refers to exposure to public notice. For certain ends, like finding customers in a market or being appreciated for one's affluence (Veblen's conspicuous consumption), visibility is a necessary condition. But where freedom from attention is desired, invisibility is to be prized.

Privacy rights are analogous to property rights in that they extend to delimited areas, they allow of exceptions, and one may refer to their violation as invasion. *A right of privacy consists in the enjoyment of social invisibility.* It may be extended to things, like dandruff or a physical handicap, that are perfectly visible in a physical sense.

There are social norms governing the underexercise of privacy rights. In other words, the individual has obligations to keep certain things of his socially invisible. These norms come under the heading of decency. Things like billboards and sound systems in public places have been fought as invasions of privacy, on the grounds that privacy consists in the right to be left alone. But the latter is only one means of being accorded privacy, and not an essential means. A public nuisance violates decency by failing to keep things invisible that should be so. It invades one's attention, but not one's privacy, which is one's own right to invisibility.

Norms of privacy and decency are of extreme importance to psychiatry because the psychiatrist works with patients under conditions of extreme liberalization of these norms as they apply in other spheres, even that of the family. These liberties are legitimate yet somehow suspect. Part of the public stereotype of the psychiatrist is that he can penetrate privacy, seeing what was intended to be invisible and creating feelings of indecency. When a psychiatrist goes outside of the clinical setting to practice community mental health, he may have to overcome such

feelings in the people, such as community leaders, with whom he must deal on matters of policy.

Research in Sociology and Psychiatry

The following summaries of three research projects are meant to convey what sociological research in psychiatric problems has been like. These were chosen (omitting from consideration studies that are described elsewhere in this volume and seeking variety of subject matter) from among the best known work in the field.

Social class and mental illness. Hollingshead, Chairman of the Department of Sociology and Redlich, Chairman of the Department of Psychiatry at Yale, studied the urbanized community of New Haven, Connecticut, consisting of that city and five surrounding towns, during parts of 1950 and 1951.

Design. The research project was multiplex, consisting of five main parts: (1) a census of psychiatric patients, (2) a sample survey of the population at large, (3) a study of psychiatrists, (4) a study of the community, and (5) a controlled case study.

The psychiatric census, the heart of the project, aimed to identify all persons who, as residents of the study area, entered a course of psychiatric treatment anywhere and were in that course for any of the interval from June through November, 1950. To be included, a treatment facility had to be a private psychiatric practice, a psychiatric clinic, or a mental hospital; but it did not have to be in the study area. Thus, the private hospital search included all licensed institutions in seven contiguous states and some others farther afield.

Who escaped this net? Persons who may have been ill but received no treatment or else received some treatment that was under the auspices of a specialty other than psychiatry, such as social work, clinical psychology, or pastoral care, were omitted by design. Some others may have been omitted through clerical error or because they went to a remote facility. Finally, a large group was known to be missing because their agent of treatment refused cooperation. All the 22 hospitals and seven clinics that were approached did cooperate. Out of 66 private practitioners known to have eligible patients, 20 practitioners, who earlier had reported a total of 31 eligible patients, refused to share data. Of those 31 patients, 30 went to New York City for treatment. The researchers estimated that 40 to 50 patients from the intended target group were left out of the census; that amounts to about 2½ per cent of the total target group, the census having found 1,891 patients.

The instrument for data collection was a patient schedule. It was divided into a sociological part, focused on the patient's social and family history, and a psychiatric part that covered the therapeutic history, including the types of treatment the patient received and a diagnostic impression by his psychiatrist. A sociologist and a psychiatrist abstracted their re-

spective parts from the clinical records of the institutional patient. Each private practitioner gave the information on his patients in an interview with a project psychiatrist.

The sample survey described the composition of the entire population from which the patients came. It allowed comparisons between the patients and the rest of the population, and it provided denominator figures for calculating patient rates.

The study of psychiatrists allowed comparisons between aspects of psychiatric practice and characteristics of the practitioner. It also was relevant to the description of psychiatric facilities for the study area and to characterization of types of treatment that patients received.

The community study gathered historic and contemporary information on matters pertaining to psychiatric care for the community and on the social class structure of the community. The measure of social class status for the study was Hollingshead's index of social position, which is based on the individual's education, occupation, and area of residence. Each indicator is valued numerically, and the three are combined into a score by standard operations. A detailed knowledge of the particular community is needed to map and evaluate residence areas as indicators of social status. All the persons under study—patients, sample survey respondents, and psychiatrists—were placed in a scheme of five classes from class I, the highest, to class V, the lowest. (Because class I was relatively small, the two highest classes were often combined as class I–II in the presentation of findings.)

The controlled case study included 50 patients, selected by criteria of age (22 to 44), color (white), class (III and V only), and diagnostic category (25 psychoneurotics and 25 schizophrenics). These same criteria, when applied to the patient census, showed that the selected cases were not significantly different, with respect to such other variables as age and sex, from the pools from which they were drawn. The case study, the researchers said, "was designed to explore systematically interrelationships between sociocultural and psychological factors in the development of psychoneurosis and nuclear schizophrenia in two nonadjacent social classes."

What did the researchers want to accomplish by this battery of interrelated operations? In general, they wanted to bridge a gap between sociology and psychiatry. They chose social class status on the sociological side and treated mental illness on the psychiatric side as their focal variables. Their central interests were in the relation of social class to occurrence of mental illness treatment methods.

They formulated five major hypotheses, to be tested by their data: position in the class structure is related to (1) prevalence of treated mental illness, (2) types of diagnosed psychiatric disorders, (3) types of psychiatric treatment administered by psychiatrists, and

(4) social and psychodynamic factors in the development of psychiatric disorders. The final hypothesis was that (5) mobility in the class structure is a factor that is related to development of psychiatric difficulties.

Class status and cultural characteristics. The authors sketched the distinctive styles of life that they found in each class.

Class I, containing the community's business and professional leaders, has two segments: a long established core group of interrelated families and a smaller upward mobile group of new people. Members of the core group usually inherit money along with group values that stress tradition, stability, and social responsibility. Those in the newer group are highly educated, self-made, able, and aggressive. Their family relations often are not cohesive or stable. Socially, they are rejected by the core group, to whom they are, however, a threat by the vigor of their leadership in community affairs.

Class II is marked by at least some education beyond high school and occupations as managers or in the lesser ranking professions. Four out of five are upward mobile. They are joiners at all ages and tend to have stable families; but they have usually gone apart from parental families and often from their home communities. Tensions arise generally from striving for educational, economic, and social success.

Class III males for the most part are in salaried administrative and clerical jobs (51 per cent) or own small businesses (24 per cent); many of the women also have jobs. Typically, they are high school graduates. They usually have economic security but little opportunity for advancement. Families tend to be somewhat less stable than in class II. Family members of all ages tend to join organizations and to be active in them. There is less satisfaction with present living conditions and less optimism than in class II.

In class IV, 53 per cent say they belong to the working class. Seven out of 10 show no generational mobility. Most are content and make no sacrifices to get ahead. Most of the men are semiskilled (52 per cent) or skilled (35 per cent) manual employees. Practically all the women who are able to hold jobs do so. Education usually stops shortly after graduation from grammar school for both parents and children. Families are much different from those in class III: families are larger, and they are more likely to include three generations. Households are more likely to include boarders and roomers. Homes are more likely to be broken.

Class V adults usually have not completed elementary school. Most are semiskilled factory workers or unskilled laborers. They are concentrated in tenement and cold water flat areas of New Haven or in suburban slums. There are generally brittle family ties. Very few participate in organized community institutions. Leisure activities, in the household or on the street, are informal and spontaneous. Adolescent boys

frequently have contact with the law in their search for adventure. There is a struggle for existence. There is much resentment, expressed freely in primary groups, about how they are treated by those in authority. There is much acting out of hostility.

Paths to the psychiatrist. A person entering psychiatric treatment for the first time may be seen as passing through four stages: abnormal behavior occurs; it is appraised as a psychiatric matter; there is a decision that help is indicated; and the decision is implemented. The authors discussed class differences in all four stages. Their figures, on source of referral, apply only to the fourth stage, where they found clear and strong associations with social class. For example, among those classified as neurotics entering treatment for the first time, the referrals by private physicians were much greater in class I-II (52.5 per cent) than in class V (13.9 per cent). The police and the courts referred no one from class I-II, but they referred 13.9 per cent of class V patients. Social agencies referred 1.4 per cent of class I-II and 36.1 per cent of class V.

Class and prevalence of disorders. In confirmation of their first hypothesis, the researchers found "a distinct inverse relationship does exist between social class and mental illness." In terms of treated psychiatric illness per 100,000 of the population, the rates are 798 over-all, 556 for class I-II, 538 for class III, 642 for class IV, and 1,659 for class V. Thus, the really sharp dividing line is between class V and the classes above it.

The relationship between the two major variables—class and treated prevalence—was explored by the use of five social background variables as controls. These were age, sex, race, religion, and marital status. It was shown that these other social variables, either singly or in pairs, did not explain away the relationship of major interest in the study design. The analysis did not dwell on any social variables other than class (that is, the index of social position) as interesting in their own right in relation to the patient rates.

Class position and types of mental illness. The second hypothesis, relating social class to types of disorders, was also supported. A simplified diagnostic scheme drew a major distinction between neuroses, divided into seven subgroups, and psychoses, divided into five subgroups. The over-all prevalence rates for the neuroses were highest in class I-II and tended to fall as class level fell; but for the psychoses the rates rose sharply as class level fell; and they rose very sharply from class IV to class V (from 518 to 1,504 per 100,000). The analysis by class of the diagnostic subgroups, especially among the neuroses, shows considerable variety of patterns. The same applies to the division of the total prevalence rates into components of incidence, reentry, and continuous rates.

Treatment process. The researchers confirmed their third hypothesis by showing that social class was

related to where and for how long patients were treated and what kind of therapy they received.

The analysis of this material was relatively complex. It involved three previously discussed variables—social class, diagnostic group, and components of prevalence—and four new ones—type of facility, type of therapy, length of therapeutic sessions, and duration of treatment.

The facilities covered in the study were 42 private practitioners, 10 private hospitals, 7 public clinics, 6 state hospitals, and 5 veterans' hospitals. Two out of three patients were in the state hospitals and nearly one in five with private practitioners. Consider the relation of social class to type of facility among neurotic patients treated for the first time: with private practitioners were 85.7 per cent of class I-II and 9.8 per cent of class V; in state hospitals were 19.7 per cent of class V and none of class I-II.

The major treatment types distinguished were various types of psychotherapy, organic therapy, and custodial care. Looking again at neurotic patients; those in classical analysis or analytic psychotherapy were 46.9 per cent of class I-II versus 4.9 per cent of class V.

Length of sessions among neurotic patients treated by private practitioners varied greatly by class. In class I-II, 94.3 per cent had the longest session (50 to 60 minutes) versus 45.4 per cent of class V; and 36.4 per cent of the latter had the shortest session length (15 to 30 minutes), which was more than 10 times the percentage of any other class.

Median number of years in treatment varied by class directly and moderately among neurotics. It varied by class inversely and sharply among psychotics.

Expenditures on treatment. The researchers found that "expenditures on treatment are linked in highly significant ways with class status in each type of psychiatric facility." In private mental hospitals, the higher classes, with longer terms of hospitalization, spent more in toto but spent less per day, as a result of having better access to discounts. In clinics, on the other hand, fees tended to be equal, but total value of treatment rendered varied directly with class. "The clinics spend eight times as much treating each class II patient as they do each class V patient."

Psychiatrists. Psychiatrists were divided into two main classes: (1) those with an analytic and psychological orientation, called the A-P group, and (2) those with a directive and organic orientation, called the D-O group. The division was based on type of training for therapy and on types of therapy employed by the practitioner. Admittedly, it was a somewhat arbitrary distinction, allowing of considerable variations. And yet, empirically, it turned out to be a most powerful discriminator of broad clusters of traits of various kinds, amounting virtually to a division of psychiatry into two separate fields of practice.

In the study area, the university psychiatrists were

largely A-P and the public hospital psychiatrists largely D-O.

The D-O psychiatrist, in contrast to the A-P, wore a white coat, rather than a business suit, in a clinical setting. He did not use a couch. He made house calls, worked uneven hours, accepted emergencies as a daily occurrence, usually saw his patients for short periods (15 to 30 rather than 50 to 60 minutes), and saw them weekly or monthly rather than daily. He charged less per visit but averaged about \$25,000 a year to the A-P's \$22,000.

All the psychiatrists in the community were in class I, except for 5 per cent in class II. The A-P group tended to be much aware that social stratification existed, but the D-O group tended to deny it and to be embarrassed by questions about it. Only 8 per cent of A-P group were of old American stock, compared with 44 per cent of the D-O group; 58 per cent of the A-P group were first or second generation, compared with 38 per cent of the D-O group. A related finding was that 83 per cent of the A-P group were from Jewish homes, compared with 19 per cent of the D-O group; and 12 per cent were of Protestant background, compared with 75 per cent of the D-O group. The A-P group showed far more social mobility than the D-O group.

Conclusions. The researchers, focusing on relations between social class and mental illness, pointed out that Americans prefer to avoid the two facts of life they had chosen to study. Actually, they did not themselves encounter mental illness head on. They studied, by indirect observation, patients under the care of psychiatrists. Carefully stressing that limitation, they offered only tentative inferences.

The empirical findings of the study amply bore out the hypotheses on relations between class position and how many cases were treated, of what diagnostic types, and by what types of psychiatric treatment.

In a discussion of the neuroses, this terse generalization was offered: "The class V neurotic behaves badly, the class IV neurotic aches physically, the class III patient defends fearfully, and the class I-II patient is dissatisfied with himself."

On the phenomena of mental illness and social class, the authors offered these inferences: (1) "Each type of mental and emotional disorder occurs in all classes, but in different proportions." (2) The fact that psychiatric facilities differ in the status level to which they cater seems to be related to the differential distribution of disorders by class. Extremely regressed schizophrenics, for example, are rarely seen in good private hospitals. (3) The content of mental illness reflects social and cultural conditions. (4) Perceptions of mental health are class-related. (5) Observed relations between sociocultural variables and the prevalence of treated disorders do not establish that the former are the essential and necessary conditions in the etiology of mental disorders.

In suggesting some applications for their study, the

authors stressed the need for more knowledge of social factors in psychiatry, new treatment methods, new approaches to professional training, better public mental hospitals, evaluation of psychiatric care ("Class V needs help most—social and psychiatric—and gets it least"), and improved public health education in mental health.

Psychiatric hospital as a small society. William Caudill studied a small psychiatric hospital attached to the medical school of a large university. He gathered his data as a participant investigator during 1951 and 1952. Before that, in 1950, he had been a concealed observer in the same hospital, posing as a patient. That venture caused some shock to the hospital's members when the impersonation was made known.

Caudill, an anthropologist, sought to develop a distinctively sociological thesis in his book. He was "concerned with a search for an understanding of the broad context of the therapeutic process in a psychiatric hospital." He believed and sought to show by the evidence of multiple interrelationships that that broad context constitutes a social system. The functioning of that system, moreover, "affects the behavior of the people who make it up in many ways of which they are unaware."

Design. The research consisted of three interrelated studies: (1) A ward observational study, based on detailed daily observations in two 8-week periods, covering first the men's locked ward and then the open wards for both sexes. Each of these periods consisted of more than 300 hours of observation. (2) A small group study, covering the daily administrative conference, that began before and continued through the 16-week period of the ward studies. The data for this conference study consisted of an essentially verbatim record of more than 120 consecutive conferences. (3) An attitude survey, which began in the 4th month of the project and lasted for 7 months. The respondents were both patients and staff. The questions were based on a series of specially drawn sketches that depicted everyday situations of life in the hospital.

One type of data was missing from the project, much to the regret of the researcher. He was not able to get regular and reliable reports on what happened during the psychotherapeutic hours. He was especially interested in relative progress or regress in therapy as a variable that might show relations to events in the broad social context. Such data would have allowed a direct test of a ground swell theory, which posits that a majority of the patients on a ward do well or poorly at a particular time.

Small group findings. The daily administrative conferences were held each morning except Sunday, usually lasted some 20 minutes, and usually included 13 persons, divided among senior staff, residents, the supervisor of nurses, charge nurses, and other specialized personnel.

One of the findings of this study, though very sim-

ple, was remarkably consistent and strongly supportive of the main thesis of the book. It was found that the amount of talking each person did was a function of rank in the hospital. Everyone in a higher status group talked more than anyone in a lower status group, the most passive resident more than the most extroverted nurse. Within each role group, the amount of talk was in order of rank. Among the five residents, nominally of equal rank, there was a consistent order within each of three series of 21 conferences. When the senior staff members were asked to rate the five residents in order of clinical competence, it was found that the ratings corresponded almost perfectly with the rank order on amount of talk during the conferences.

Attitude findings. The attitude study, based on sketches of hospital life, showed many discrepancies in patterns of perceptions among role groups. Surprisingly, the senior staff and the patients showed very similar patterns. It was surprising in that it was found that the senior staff were often unfamiliar with physical aspects of the ward because they were so seldom there. Residents and nurses had different distinctive patterns. Nurses, for example, tended to be optimistic about patient contacts that were administrative but pessimistic about those that were therapeutic. Patients showed exactly the reverse pattern.

Ward findings. The findings from the ward observation study involved much narrative material. The findings pointed to such things as unintended consequences of administrative decisions, failure of communication, and conflicts between administrative and therapeutic objectives. One highlight was an account of a collective disturbance which centered about a television petition by the patients. It was marked by tension among patients and staff, mainly as a result of poor communication. The author was able to analyze the incident into a sequence of four phases, and he speculated that it may be possible to develop monitoring techniques to predict the tenor of events on the wards. The disturbance illustrated the author's conception of "a covert emotional structure underlying the overt formal and informal structure of the hospital."

Conclusions. The author pointed to some distinctive social-structural features of the psychiatric hospital as being especially relevant to its effectiveness. There is dual control, a division between administrative and therapeutic functions that has a high potential for causing conflicts. The author questioned the assumption that these two kinds of functions are incompatible and suggested that they may beneficially be combined in one person. Another similar source of conflict is multiple subordination, where several independent chiefs have authority over the same worker. Another feature, one that pertains to hospitals in general, is the use of mobility-blocked roles. The levels of personnel are marked off by lines, which personnel do not cross within the system. Attendants do not rise to become nurses, and nurses do not rise to become

physicians. This feature induces formalized relations and greatly affects the content and flow of communications.

The author called for greater openness among persons who operate existing psychiatric hospitals and greater self-examination, comparable to that demanded of the psychiatric patients, if the goal of a therapeutic community is to be reached. And he called for a willingness to consider new departures and new models for the physical and organizational structure of psychiatric hospitals.

Closed ranks. John Cumming is a psychiatrist, and Elaine Cumming, his wife, is a sociologist. In 1951, they conducted an intensive 6-month educational campaign in Blackfoot, a Canadian town with a population of 1,500, attempting to modify public attitudes toward mental illness. They used a variety of media, such as lectures, the press, radio, and films. Their presentations involved concepts and materials that were then generally available. They were very careful and hard working in their efforts to achieve good community relations.

Design. They employed an experimental design to evaluate the effectiveness of their campaign. That involved a second town, 150 miles from the first and similar to it, as a control community. In both towns, there was one wave of interviews before the educational campaign in Blackfoot and a second wave after it. The control community received no stimuli from the researchers other than the interviews. Two attitude scales, a social distance scale and a social responsibility scale, were the intended means of measuring before and after conditions in the two communities.

Results. Before the educational campaign, the scores in both communities tended to be low in both scales, indicating much prejudice against the mentally ill and little acceptance of responsibility toward them. After the campaign, the researchers found no trend of change. The two communities remained at about the same level as each other and unchanged from the first wave.

The researchers met an effect in the experimental community that compounded their chagrin. As the educational campaign went on, the community reacted with growing hostility and aggression that was, for the most part, aimed not at the educators but at the second wave interviewers. Some 6 years after the experiment, the authors published their report on what happened, giving their reflections on what it all may have meant.

Findings. The project was designed to allow not only an experimental test of the educational campaign but also an exploratory analysis of data on public attitudes toward mental illness. Some interesting findings emerged.

The researchers put together a series of attitude questions that they thought belonged to a single dimension of constructive versus nonconstructive attitudes. But they found that the items fell into two

dimensions: social distance (for example, "I would be willing to room with a former mental patient") and social responsibility (for example, "I would feel partially responsible if a member of my family had a serious mental breakdown"). Each dimension was measured by a scale that reflected responses to several questions. It was found, surprisingly, that these two scales were statistically independent of each other and bore different patterns of relations to other variables. Social distance (nonacceptance) scores varied directly with age and inversely with education. Social responsibility scores were unrelated to either age or education, but they did relate to the respondents' ideas about the causes of mental illness. Those who saw social or economic causes scored highest on social responsibility. Next came those who saw personality causes. Lowest were those who saw either moral or biological causes for mental illness.

Conclusions. Why were the research findings on the educational campaign negative? Was it, perhaps, simply a result of faulty research methods? The authors acknowledged that their campaign was uneven in its coverage and that their sample in Blackfoot (540 respondents, equal to 60 per cent of the adults in the community) was biased. Lower class persons were underrepresented. Also, the design allowed only trend measures of net change in the group and not turnover measures on actual changes by persons. Finally, the design did not include any measures of how much each person may have been exposed to educational material from the campaign or other sources. It seems hardly likely, however, that these or any other methodological points can explain away the experimental evidence of resistance to attitude change.

The authors tried to explain what happened by means of a theoretical discussion. They discussed "the patterned reaction to mental illness in our society." From a societal viewpoint, mental illness is a form of deviance from social norms. Any deviant behavior upsets the equilibrium of the social setting in which it occurs, and the way in which the deviant person is treated may be expected to serve the function of helping to restore social equilibrium. It is this societal function that lies behind the postulated patterns of values, beliefs, and actions. The pattern is characterized by themes of denial, isolation, and insulation of mental illness in this society. Confronted by irrational behavior due to mental illness, the citizen's first tendency is to normalize the behavior. When this denial of illness is no longer tenable, the next step is physical and social isolation of the deviant. Finally, there is insulation of the entire problem by additionally denying that these elements of the pattern may have posed any civic problem.

The project induced hostility, the authors believe, because of the intensiveness of their campaign. Theirs was a highly concentrated assault of high social visibility. It was not so much a matter of arousing anxiety

in individuals as of posing a threat to the equilibrium of the community. The community responded by asserting the solidarity of the sane. It closed ranks against the intruders.

Suggested Cross References

Further comments on the role of social and cultural determinants in normal and pathological behavior may be found in the chapter dealing with the various cultural and interpersonal psychoanalytic theories (Chapter 7) in Area C, on current theories of personality and psychopathology. Discussions of sociocultural influences on specific psychiatric problems, such as schizophrenia, alcoholism, suicide, delinquency, and mental retardation, may be found in the sections dealing with these topics in the clinical areas of this book. For an example of the application of sociological concepts to clinical psychiatry, see Section 36.1 on milieu therapy by Stainbrook in Area G, on psychiatric treatment.

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4.3 THE ROLE OF THE FAMILY IN PSYCHIATRY

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The family is the universal, primary social unit and, therefore, must occupy a central position in any consideration of social psychiatry. As current psychiatry and medicine encompass the study and understanding of the cell and its elements, of cellular organization and integration into organs and organ systems, and of their orchestration into a biopsychological whole that is the organism, so is that organism's behavior in and interaction with its environment important for the understanding of health and disease. Knowledge of the social elements and parameters of this environment is as essential to diagnosis and treatment as is reliance on laboratory data on body chemistry and the nature of food, water, and air supply.

The first social environment for every human being is his biological family or its substitute. If the latter, it will ideally be adoptive parents, who take over at the earliest possible time after birth. Usually, however, one family provides offspring with both his biological and cultural heritages.

The family is, therefore, an important sociocultural institution, the keystone of society, and every human group has devised traditional prescriptions and proscriptions to ensure that the family fulfills its biological and enculturating tasks. In this way, the family is both the link between generations that ensures the stability of the culture and also a crucial element in cultural change. The biological functions of the family are usually left to the nuclear family, especially to the mother, but the enculturating functions may be assigned to members of the extended family or even to nonrelated persons in the community. In Western society, both of these tasks have rested with the primary family, although not always with the primary nuclear family, as is most usual today.

History of Family Studies

Sociocultural studies. Scientific study and knowledge of the family have a rather recent history, especially in the context of psychiatry, but preoccupation with the family as a sociocultural institution is as ancient as human history. Three of the Ten Commandments specifically concern family relations, and every religious doctrine contains many specific rules and taboos about family structure and family duties. Equally ancient are concerns about family dysfunctions. Athenians deplored the alleged decline of family tradition and cohesion as endangering the state and society; the decline of the Roman Empire

has been attributed, among other causes, to the family's failure to inculcate the earlier moral standards and discipline. Throughout history major social upheavals have been examined in the light of changes in family life. Today this age-old thesis finds expression in more scientific endeavors, such as the current interest in cross-cultural comparisons, which seek precise correlations between national characteristics and family practices.

The causal relationships between family characteristics and social change or human history are circular and complex rather than unidirectional. Because of the family's central importance in human development, not only historians and social anthropologists, but also legal scholars, economists, philosophers, and sociologists have studied and written about the family. However, some of our most perceptive insights derive from literature, for instance, *Oedipus Rex*, *Hamlet*, Strindberg's *The Father*, and O'Neill's *Long Day's Journey Into Night*.

Psychiatric studies. Although the medical profession has prided itself on its family physician, this designation is based on his identical role with all members of a family and not, until recently, on any formal knowledge of family dynamics and their institutional characteristics. Historically, such endeavors in Western medicine can be measured in decades. Freud, although aware that his discoveries pertained primarily to family processes, chose to study and treat family pathology only in individuals. He concentrated on the investigation and conceptualization of his patient's psychic apparatus, isolated from its usual environment in the stark setting of the analyst's office. He thereby limited the social parameters to the analyst-patient dyad, a situation in which a person can relive family experiences through the phenomenon of transference.

Not until 25 years after Freud's first accounts of family-related unconscious processes, such as his rediscoveries of *Oedipus* and *Electra*, of the family romance and incest, did the first psychoanalytic effort to conceptualize family processes appear in print. At about the same time, investigation and clinical consideration of family members began in the American child guidance clinics. But, in clinical medicine and psychiatry, family histories have continued to focus mostly on familial incidence of disease and on hereditary patterns, not on family dynamics. In psychiatry some investigation of sociocultural constellations in families of patients according to diagnosis began in the 1930's, but direct clinical and research study of the family as a group did not begin until the 1940's. Despite the existence of an extensive sociological literature on family life, despite scholarly studies of family law, and despite anthropologists' preoccupations with non-Western family systems during this century, medicine and psychiatry continued to focus on the individual patient and the

doctor-patient relationship. Only in the last 20 years has there been rapidly increasing clinical scientific interest in and appreciation of the family as the most significant social force in human development, specifically in personality development, and hence as a potent agent in personality disorders. The family, therefore, is not only the keystone of society but also a key to understanding the humanness of the human being, including his failures as a human.

Marriage

Marriage is, of course, an integral part of and constitutes the basis for the family in most societies. But it needs to be considered also as an institution somewhat apart from the family, and it must be evaluated in each instance along a range of sociocultural and idiosyncratic contingencies.

Purposes of marriage. A universal biopsychosocial need for completion and fulfillment of oneself through the intimate life with another exists among humans and some other species, and two people may undertake marriage solely for their mutual satisfaction, without intent or capacity to establish a family. In Western society today, this definition of mutual satisfaction could be exclusively that of the two partners, although their definitions would necessarily reflect the cultural and psychological norms or deficiencies they have absorbed into their personalities during their respective developments. Western society would not interfere with such decisions or plans to produce no offspring, the needs or demands of spouses' parents or collateral relatives to the contrary notwithstanding. Other cultures may dictate in these matters. In extended family systems, parents may achieve neither full independence in these respects nor full authority over their own offspring, and failure to produce offspring can lead to dissolution of the marriage by either partner or by outsiders. On the other hand, marriage may also be undertaken in our society solely for the purpose of procreation, and in some religions it is indeed so prescribed, even if not always practiced.

Subconscious purposes. From the clinical vantage point, most marriages fall somewhere between these extremes of intent and purpose, one extreme being nonfamilial and the other 100 per cent family-oriented. It is most important for the clinician to appreciate that the spouses' respective explicit intents and beliefs may be at variance with the implicit or subconscious intents and wishes that lead them to marriage. For instance, one spouse may agree to marriage determined not to have children, and the other spouse may accede to this condition, quite prepared not to honor the agreement after marriage, or the other way around. Such behavior need not be a conscious or a designed betrayal; both spouses may intend to honor such agreements but later find that they cannot resist their own subconscious opposite desires or needs. For instance, Catholics may have

increasing guilt feelings over birth control, or one or more of their parents who aspire to the status of grandparents may exert pressure on the couple.

Depending on the partners' culture, they unite in marriage because they want to, because it has been arranged for them by their parental families, or because of a combination of these prescriptions. In the West, partners choose each other by and large on the basis of their feelings and hopes, be they realistic or not. Among the less conscious motivations and unrealistic factors that lead to marriage are many neurotic tendencies and needs. Most common among these is probably the use of marriage to achieve independence from the family of procreation which the young person cannot accomplish as an individual. This brings to the marriage certain dependency needs, which are likely to result in expecting parental care from the spouse. Another such factor is social pressure, especially on girls, from one's family or peers, that marriage at a certain age is an essential earmark of success.

Not all unconscious or external determinants need be unsound. The choice of a marital partner is a complex process, and a certain intuitive sense of personality fit between two people seems to operate effectively at times, even if neither spouse can account for it explicitly. There are many paths to marriage, sound and unsound foundations for family life, but spouses can build sound relationships even if they have united for ill considered reasons. One of the chief criteria for a successful marriage is that it furthers individual growth and growth as a unit.

Changes in industrialized societies. The personalities and the sociocultural values two individuals bring to marriage determine the nature of their relationship more than do their hopes, dreams, and intentions during courtship. This is particularly so now in industrialized societies, where marriage and offspring have shifted during this century from being economic advantages and even necessities, to being economic liabilities. The basis for marriage and for marital continuity has changed from tangible issues to the intangible necessities and requisites of companionship, encompassing physical, intellectual, affectional, and social facets. Although the partners can share the economic burdens, they rarely can do so side by side, as they would in dividing complementary tasks on the farm. Maintaining a house and household can be reduced to a minimum of labors, leaving as the major shared goal family life itself, together with the care of the offspring.

Sharing family responsibilities, however, has been made much more difficult by the absence of the husband from home during working hours, and, if he is ambitious, working hours may approach the entire waking hours of the family on many days. Hence, when there is concern in present day America about the husband's declining role in the family, these sociocultural givens of an industrial society are probably

more responsible and pertinent than speculative clichés about the decline of masculinity or the ascendancy of masculine strivings on the part of women. It must be appreciated that a boy of our age, after his school day with women teachers, does not return to a home where a father works. Such a youngster may hardly ever see his father at work, the nature of which may be very difficult for a young child to comprehend. The burden of making an absentee husband a live and appropriate image for the children often falls on the wife and depends, therefore, on the marital relationship.

Marital coalition. The marital coalition may be defined as those interactional patterns that the spouses evolve to provide, at first, for their mutual satisfaction. Later, in the structure and dynamics of the family, this coalition must serve the age-appropriate needs of the children and still maintain an area of exclusive relationship and mutuality between the parents. One of these parental sectors is sexual activity, interdicted to children in our society. Mutuality denotes the spouses' interactive patterns on implicit and explicit levels, the sharing of feelings, and the conveying of respect and appreciation of the spouses to each other as well as to others.

Sex-linked roles. An important function of this coalition in family life is the mutual reinforcement of the spouses' complementary sex-linked roles. As parents, they represent culture-determined masculinity and femininity, not only as individuals but also through the other spouse's support and approval. Another facet of the coalition is the conjugal role divisions and reciprocities the spouses establish for themselves. These role allocations and the decision-making methods vary with each socioeconomic class. According to Bott and to Rainwater, upper class spouses believe that their role divisions are equal and complementary but that husbands make more decisions. Lower class spouses, except for the lowest group, also state that their role allocations are joint and complementary but that wives make more decisions than husbands.

Effects of isolation. Industrialization and social and geographic mobility have isolated the nuclear family, adding to the critical importance of the marital coalition in the life of the family. Newlyweds may well seek isolation initially, but in the process of adjusting to married life, friends and relatives can be useful. Nowadays marriage is often followed by a move to new surroundings, strange for both partners. Whereas living apart from one's family of origin is considered desirable, letters are not the forum in which one inquires about a recipe for tonight's supper or in which one reports and gains perspective about the first marital altercation. These items may seem trivial, but professional experience with marital problems indicates otherwise; minor problems and disharmonies can easily accumulate and fester. Physicians can help as marriage counselors, but young

people have few occasions to seek out health resources until pregnancy occurs. Prenatal care, therefore, offers an important opportunity for remedial marital counseling and for the prevention of future marital and family disorders.

Because the marital partners usually become the sole or at least the major sources of identification for their young, the spouses' personalities and the marital coalition are much more critical today for the personality development of the children than in the past. In extended family systems a child has many adults of his sex to use for identification. This is still true to some extent in subcultures where grandparents and the parents' collaterals live nearby, albeit in separate households. Living isolated from close relatives deprives the spouses of the advantage of sharing parental functions with an extended family group and leaves each child with little alternative but to view his parents and their relationship as exemplary. Spouses must depend on each other in crises without ready availability of a relative to assume the tangible household or income-producing duties of a disabled partner. In this sense, the demand for individual adjustment and maturity and for effective role complementarity are more stringent than in earlier times. Moreover, most offspring will have no other adult models at home in a continuing way to compensate for model deficits in one or the other parent. Problems in the isolated nuclear family, therefore, tend to become circular: marital difficulties affect children adversely, and a difficult or ill child strains the marital coalition.

Individual adjustments. In a free society, spouses depend still more critically on their inner resources because, compared with other cultures, there are relatively few social rules or rituals concerning marriage. In the West, society and religion concern themselves primarily with the beginning of marriage and with death and divorce. Aside from registration of the newborn, society intervenes with a family only if gross undercare or mistreatment of the young is made evident. Otherwise, marital partners are on their own to mesh their personalities into the kind of bond and coalition they desire and are capable of, but their capabilities may fall short of their desires. If this happens, they may seek help through counseling, which is available only to a very limited extent, or they may live on in conflict and disharmony, or they may seek divorce.

Marital problems. Marriage in the United States now depends primarily on the personalities the spouses bring to it. Their personalities are shaped largely by their parents and by the marital modes to which they have been exposed, modes that often do not serve or suit a younger generation of newlyweds. From these circumstances, plus the greatly prolonged duration of the average marriage, derive some specific burdens of marriage in current industrial societies.

Whether the prevalence of marital maladjustment

is absolutely greater or only proportionally so compared to other periods is uncertain. Because the marriage now depends so greatly on the partners' personalities, the high prevalence of individual emotional maladjustment must be taken into account. If every 10th person spends some time in a mental hospital and if the prevalence of symptomatic personal maladjustment is still higher, marital adjustment, which depends so largely on personality factors, obviously carries a commensurate incidence of instability. Of course, marriage can also lend support and stability to an unstable partner. But the doubling of the marriage-life span also requires that the marital relationship be adaptable to more stages and to the challenges of longer lives.

Counseling. Because marital and familial maladjustment tends to be so encapsulated, the parents must seek help actively outside the family. In extended family systems, remedial influences may have arisen spontaneously from within the group through the efforts or the mere presence of one or more of the other adults. In this way the marital problem as such may have been contained and never have become quasipublic and statistical.

From the clinical standpoint, a marriage should be evaluated as a singular undertaking of two people. It should be examined in the contexts of their respective personalities and motivations for marriage and family and of the family they have already created. Their sociocultural milieu must be taken into account, and their coalition evaluated according to the class-specific modes of marital interaction.

Although a marriage between two disturbed partners can be satisfactory to them, this does not ensure a good prognosis for a healthy family. Furthermore, a marital coalition adequate for the nurturance of a few children may deteriorate if the family enlarges every year. Family planning through contraceptive control, to avoid offspring, to plan and space them, or to limit family size, is therefore an essential element of marital counseling and health care and of preventive psychiatry.

Premarital sexual activity. Premarital and extramarital sexual intercourse is difficult to assess statistically and cannot be discussed meaningfully as a single phenomenon. In particular, these practices must not be confused with morality, as societies that permit complete freedom of sexual activity after puberty are no less stable or less successful in living up to their cultural norms and preserving their continuity. The same is true of societies that condone extramarital sexual activity implicitly or explicitly.

The changes in premarital sexual activity in this society may be less marked in practice than are the attitudes toward such practice. Young people have gained freedom in recent decades to know and talk about sexual matters; they also expect tolerance with regard to their activities. This has led to the

present day demand of adolescents for their elders to take an open and nondefensive stand about rules and guidelines for sexual behavior outside marriage. There are serious advocates of complete license in this respect, and there are equally serious advocates of Victorian rules of behavior and thought.

The physician, however, should not take positions of generalities. When called on to advise or educate on matters of sex and marriage, it is incumbent upon him to inform about sexual matters and reproductive control, but it is also incumbent upon him to consider to whom he is talking and why. The patient's health needs, his or her life situation, and the capacity of the individual or couple for mature relationships, be the goal marriage or not, should concern the physician, who must be especially aware in this part of his work that the patient is apt to attribute to him a parental role. He must use such transference elements for the welfare of his patients in these emotionally charged instances just as skillfully as in any other facet of doctor-patient interactions.

Clinically, there is no evidence that premarital sexual relationships either promote or detract from successful marital adjustment. However, one reason for early marriage seems to be the desire for legitimate sexual union, even though emotional and socioeconomic independence may not have been achieved by the couple. This can create special problems if they become parents while still dependent upon others; also they may not be as mature and certain in their identities as they might be a few years later, when they might seek different partners.

Divorce. Divorce is popularly considered a kind of barometer of marital and societal stability, but divorce, too, must be understood in appropriate context. Divorce as a social phenomenon is susceptible to customs and legalistic vogues and to changes in the law, and it is also subject to religious codes. It is fashionable to point out that the divorce rate in this country has tripled in this century from 0.7 to 2.2 per 1,000 population and that the number of divorces has risen more than 7-fold. But these figures must be considered in the light of the changed basis for marriage, the modern risks to marital stability, and the freer attitudes toward the dissolution of marriages so beset by problems and suffering that present day counseling and therapeutic agencies find them beyond salvage.

In particular, the marriage counselor must examine critically a common rationalization designed to avoid divorce for the sake of the children. Children's needs and how they are served by a particular marital pair must be carefully assessed, without assuming a priori that two parents under the same roof are better than one. In the past a very disturbed marriage may have been continued because there was no avenue open to dissolve it (except through desertion), and economics often dictated its continu-

ance. Even today severe economic liabilities are usually imposed upon the divorcing parties by circumstances, or by the court, or by both.

The peak divorce rate in the United States of 3.5 per 1,000 occurred in 1945, when many hastily undertaken war marriages were dissolved, often by spouses whose life together could be counted in days or months. But, from the over-all statistical standpoint, the divorce risk time has doubled because, with an increased life expectancy in this century from 47 to 70 years, the duration of marriages (over 90 per cent of which take place before the age of 30) has more than doubled. The tripling of the divorce rate for the population represents an increment of between 30 per cent and 50 per cent if the rate is corrected for risk. The lowering of the average marriage age requires a further correction, so that the properly corrected rate increase is about one-third, which is quite different from the uncorrected figure of thrice the gross rate. Considering that 10 per cent of the population will require temporary psychiatric hospital care and that most but not all divorces involve one or two emotionally unstable partners, the present divorce rate is far from commensurate with the estimated prevalence of emotionally disturbed individuals.

Family Structure and Dynamics

In this and the following sections, the term "family" refers to the Western nuclear family, the isolated family of industrial society, unless otherwise specified.

From the sociodynamic standpoint, the family is a small group to which most small group dynamics apply, but it is also a very special group. The special group features pertain to the family's biosocial evolution in a particular culture and to its axial divisions into two generations and two sexes. These axes are important psychological and behavioral boundaries. The parents form the generation that leads, and they are implicitly obligated to relate sexually to each other. Sexual relations, however, are interdicted to all other members by the archetype of all taboos, that against incest. The generation of offspring follows and learns from the parents as gender-typical models.

As a group, the family moves from the parental dyad to a triad and larger group and later contracts again. Because the family is divided into two generations, each child's relationships to the parents is to some degree exclusive and unique and can be represented by an inverted triangle. The family consists of a series of overlapping triangles, each child forming a triangle with the parents, and these triangular relationships are not identical. It cannot be overemphasized that no child lives in the same family as his siblings in a dynamic sense, sometimes tangibly so because of changing family fortunes. Even identical

twins are ascribed different roles and characteristics by parents, by siblings, and eventually by themselves, so that each has different relationships with the parents and with the parental unit.

The family as a whole also constitutes a structural and functional unit. It has already been pointed out that one important task of the marriage consists in mastering the family's evolutionary transitions or crises. Besides the arrival of children, such critical phases include each child's oedipal phase, school beginnings, puberty, adolescence, and eventual emancipation as he leaves his family of origin physically and emotionally. Adversities, such as illnesses or economic or political misfortunes, may produce other crises and even temporary or permanent separations.

These evolutionary crises can also be viewed as a succession of separations, which all family members must learn to master. These separations can be tangible or intangible; that is, they may be on only an emotional plane, as when a child in early adolescence withdraws from closeness to parents. The evolutionary expansion of the family also involves issues of emotional separation and lessened dependency gratifications for the older members in the family. Family life, therefore, requires the capacity to forego individual gratifications for the sake of the group, whose cohesion depends on the example being set by the parents' foregoing some degree of their individuality and certain gratifications for the marital coalition and for the family. Each evolutionary step or crisis results in a new equilibrium and realignment of the family's emotional forces, and sometimes this leads to role changes and different task distributions.

Role divisions. The image of a strong authoritarian patriarchy of the Victorian age has been overdrawn, but it cannot work in modern democratic society. Compared to the Victorian prototype, the father in present day America has weakened, but more in appearance than in substance. Typically, the father's role is still that of the leader; his activities, his productivity, and his education determine the position of the family in the community and larger society, and these same factors also correlate with the character of the marital coalition. He provides the instrumental model of how things are done in society in matters of acquisition and survival. It is true that he can be pushed by his spouse's ambitions or even be overshadowed by her accomplishments in all these respects, but such a family may pay a price in suffering, disturbance, and pathology. The fact that the father's activities today occur mostly away from home, unshared and unobserved by the family, is a disadvantage.

The mother's primary role concerns the affective life of the family, and she also tends to its biological needs in health and sickness. Her role is expressive in that she not only tends to affective needs but identifies them and helps the children to learn about and

understand feelings and, therefore, is more responsible for their self-expressive communication. She also guides the child toward self-awareness. This is distinct from instrumental communication—how to get things done—which is more the father's domain.

These divisions are not absolute; they only indicate the dominant role of each parent. However, it must be appreciated that the mother's ability to help a child gain self-awareness and body consciousness and perceive and establish boundaries between himself and the world outside him is more crucial than the father's ability to do this, whereas the father's role as a leader and activator in matters of communal relationships is more important to the family than the mother's social competence and instrumental skills outside the home.

These role divisions are not only important for reasons of example but also essential in the children's acquisition of communicative skills. For instance, a father working away from home cannot be relied on to teach about intimate feelings in a detailed way, but he can bring to this and other family tasks a perspective that a mother, harassed by the demands of young children throughout the day, cannot maintain around the clock.

Parental role divisions should be flexible and complementary rather than fixed because, in crises, role complementarity may be essential, and temporary role reversal may even be necessary. Permanent role reversal of the spouses occurs, too. It may be mutually satisfactory to the parents, but it provides offspring with unsuitable models for their future life in society. Parental role reversals are particularly disadvantageous to the child if the reversal is covert but desired by both parents. Parents must provide gender-typical role models that are in harmony with the larger society in which they live, lest the child fail to acquire and incorporate role attributes and expectations of himself that have utility when he moves into the community.

Family structure and personality development.

Dynamically, the triangular structure of the family is epitomized by the oedipal phase of each child. Its adequate and appropriate resolution, which determines important salients of the child's psychic structure, depends more on the family structure and behavior than on biological determinants, as postulated by Freud. This appears to be true of all phases of psychosocial development, although parental attitudes and behavior are both reactive and interactive with the child, so that a child's equipment at birth, his temperament, and the parents' capacity to cope with infantile needs all coincide to establish the family's interactional patterns. From these patterns derive much of what the child sees and observes in terms of what kind of people his parents are—indeed, how they are human. Personality development, proceeding through identifications and imitations, depends as much on the parents' individual

characteristics as on their correlated marital and familial interactive behavior. The child observes and absorbs the defensive modes of those around him, and in this way secondary processes are acquired from familial examples and interaction.

After a child has learned body awareness and body management, including the correlated communicative facility, his relational learning begins. The task for the family is to help each child establish his place in the family and to make him feel sufficiently secure in it so that he can begin to move beyond the family circle without undue anxiety. To attain this place of nearly equal emotional distance from both parents, not only must he master body competence and competence in feeding, clothing, and toileting himself, but he has to master the oedipal issues of desexualizing his close primary object relations to his parents. Only then can he turn to peers as an increasingly important source of relationships. This step, in one sense the internalization of the incest taboo, the family must accomplish with him. The family accomplishes much of this not only nonverbally but almost unconsciously. The personalities, especially the degree of security in sexual identity that the parents bring to their union, and their coalition are more crucial to this task than in any other phase of family life, most of which can be more explicit and verbally directed.

Further personality development of the child will be less directly dependent on family structure and dynamics. But in subtle and not so subtle ways, the oedipal issues are relived in adolescence in terms of dependence-independence issues. These problems begin with the internal imbalances of puberty and continue into the prolonged path toward heterosexual competence and personal identity. The parental models play a role during this phase, often as an antipodal fulcrum for the offspring. To achieve a workable ego integration and identity, the offspring must be able to overcome his negativistic stances, which serve for separation from his elders but do not serve in themselves the reintegration of an independent and inwardly directed personality. If the antipodal position is very ambivalent and remains emotionally charged, it may become fixed. The child then remains partially identified with a parent he also rejects, a shaky foundation for ego integration and ego ideal.

Family Functions

Although it is artificial to separate structure, relationships, and functions, clarity may be served by the different emphasis of the sections. Indeed, the formation of a family structure is one of its inherent functions for its own sake, but it is also an implicit charge from the larger community. Society expects the family to prepare children for their lives as adults in the wider community, enabling them, in turn, to procreate and form their own families. Procreation is essential to the survival of any species, but the hu-

man species must also teach its heritage and thus ensure its continuity and future development. The family as the basic sociocultural unit is the embryo of social organization, and the parents are the sociocultural gametes.

The biological heritage demands a set of vital family tasks to be performed for the infant, such as feeding, sanitation, and teaching him body management and the utilization of survival tools. All this animals do for their young, and social organization is also a characteristic way of life of many species. For the human race, another dimension is added through the development of the culture-typical symbols and their utility, not only in the survival tasks but in planning for the future through an understanding of one's individual past and the group's collective past. Moreover, the symbolic communication among humans does not require physical proximity of the communicators in time or space, a prerequisite to communication among animals.

For the purpose of discussion, family functions will be separated as follows: (1) marital, (2) nurturant, (3) relational, (4) communicative, (5) emancipative, and (6) recuperative—keeping in mind that in vivo they all overlap and to some extent are continuous. Also, all except the marital interaction itself involve educational tasks, even though formal education is assigned to extrafamilial institutions in many industrial and other societies.

Marital functions. Marriage must serve the respective needs and satisfactions of the spouses and enable them to effect an appropriate family constellation in order to fulfill their tasks. Beyond the familial obligations, the marital partners must jointly prepare to renounce their close ties to their children when they are ready to emancipate themselves physically and emotionally from the family. The family ultimately becomes a dyad again and must turn its concerns from productive engagement in the community to issues of retirement and the concomitant aging processes.

Nurturant functions. The nurturant functions of the family encompass more than nursing and food supply, although these are basic at first. Beyond nursing, there are the other forms of physical care that the helpless infant needs. Their performance requires the mother's motivation and some degree of security on her part in performing these tasks. This security derives from her quasi-instinctual propensity for mothering, coupled with the almost symbiotic union with the newborn, such as the mutual and simultaneous relief of the baby's hunger and the mother's breast turgor, and from the support of her spouse and other family members, if any. The less specific nurturant activities of the mother continue throughout the life of the family. Eating together as a family at least once a day is not only a caloric ritual but a significant landmark in family life for communication, learning, interacting as a group, and relaxing together.

The psychological and symbolic aspects and overtones of nursing and feeding grow from, and with, the earliest mother-infant interaction. Here the infant acquires his initial trust in his human environment. Because the entire family is involved, their interaction with the mother-infant unit determines much of the nursing atmosphere. The broader nurturant tasks concern almost every aspect of the young child's development as he acquires body awareness and learns body management, sphincter competence, and self-care with regard to feeding and clothing. All these myriad activities—feeding with its symbolic significance, caring for the baby, helping the child to walk and to talk, getting things he cannot reach, supplying him with appropriate visual, auditory, and kinesthetic experiences—can at times be carried out by any family member or by other substitutes.

Relational functions

Weaning. Weaning is part of nurturing but implies more than withdrawing bottle or breast. The intricate physical closeness with the mother must be weaned, and an essentially nonphysical intimacy must be established with all family members. Weaning involves still more, in that both the process of weaning and its accomplishment are foundation stones in the acquisition of ego boundaries. In reverse, a mother may fail to wean a baby adequately and at the appropriate age because her ego boundaries are blurred and because she overidentifies with the infant. She also violates the generation boundary. In all these functions the mother plays the dominant role, but the entire family atmosphere and interaction are also crucial. For instance, parents already locked in an energy-consuming struggle with each other or with one child will necessarily neglect another child proportionally. It should be noted in passing that in terms of ultimate mental health, the underattended child may fare better than the overinvolved one.

Weaning, the cessation of sucking in the narrow sense, has important relational implications as the prototype of a succession of separation crises that characterize personal development and family life evolution. Nurturant competence on the part of the parents implies not only providing for needs and their satisfaction but also the capacity to frustrate and deny the child without provoking undue feelings of rejection and without undermining his natural propensity to grow and master problems, often painful problems. When frustrated or punished, the child may find his anger and hostility quite overwhelming, and he may lose faith in a parent temporarily. Nurturant and weaning competence in the family teaches the child that his temper tantrum does not overwhelm others in the family, and that he is separate but not alone. In reverse, a parent's anger and frustration with a child teaches him the limits of his provocative power and is another essential lesson in

grasping limits between himself and others and in establishing his own ego boundaries. Here the parental coalition counts: ideally, the uninvolved and nonangry spouse supports both the upset parent and the child.

Mastery of separation can be defined as the child's experiencing the pain of acute loss of good feeling toward, or of dissatisfaction with, another significant person, the parent, without losing faith and trust in the continuity of the relationship and the ultimate restoration of good feeling. Through these experiences he also learns and grows, becoming more able to avoid the same impasse and less vulnerable to and threatened by subsequent separations or emotional distance from others. This mastery must be facilitated by the opportunity to observe, imitate, and eventually internalize how other family members cope with frustration and this kind of separation anxiety.

The relational issues involved in the feeding and weaning experiences culminate in each child's oedipal phase. Its successful passage includes the central issue of effecting the incest taboo as a rather unconsciously directed inhibitory force within the child and within the family. Conscious incestuous preoccupations beyond the oedipal phase interfere with subsequent successful personality integration and growth, especially in adolescence. The child's omnipotent sense of exclusive relationship with the mother must be curbed and frustrated, enabling the child to wish to grow up like the same-sex parent and to relate to both parents as individuals and as a unit.

Peer group relationships. After the child has been helped to find his place in the family, permitting him to feel comfortable and safe in intrafamilial relationships, his relational learning turns to peer groups. Here the familial guidance becomes more distant and indirect, but familial facilitation and support of peer relationships are as essential as restraint against undue familial intrusion into peer activities. After 6 or 7, the child's relational learning depends increasingly on extrafamilial examples and on the family's social activities with relatives and friends.

Not only are the culture-typical distance and closeness to various people in differing situations learned that way, but extrafamilial persons are important as alternate figures for imitation and identification. Such experiences complement the parents' unique examples as members of their gender and their society and provide alternate or corrective models for parental shortcomings as people. Even if such shortcomings are not severe, teenagers often find their friends' parents or other adults superior and preferable as examples to follow in the service of emotional separation from the family.

Parents and the family as a whole must be able to tolerate such disloyalties, lest the emancipating adolescent bear an undue degree of guilt, burdening him with an intense conflict between his needs and

society's (that is, his peer group's) demands to be an individual on the one hand, and parental demands to conform to their standards on the other. Such an impasse may occur because of his inner needs or because of parental resistance to his independence, or both. The parents' respective values and expectations for their offspring must be in sufficient harmony so that the child can integrate parental objectives and standards and parents and children must reconcile these values and goals with the realities both of the child's capacities and of the community in which they live or wish to live.

Communicative functions. The central element in the family's educative mission concerns communicative competence. Talking with the child about his earliest internal and external experiences is essential to his beginning to talk and to communicate meaningfully. What he says and what is said to him must be meaningful to himself and to others so that through such sharing he comes to rely on the utility and consistency of language to express himself and to impress others. Only through language and the symbols basic to it does body awareness become body knowledge, and only through language can the basic trust of the mother-infant relationship be reinforced and broadened to include other family members and people outside the family. Without language (or equivalent symbols), prediction and a grasp of the future are almost impossible. For instance, only by very rigid timing could a child feel assured that he will be fed when hungry. Language allows for flexibility, such as, "supper will be late," or "after your bath tonight instead of before."

Familial communication must, of course, be related to the communication styles and symbol usages of the family's community. It must be appreciated that language plays a role in personality and concept formation beyond its communicative utility. Language reflects the culture's conceptual heritage and determines thought and concept organization across the generations.

The jargon of any younger generation combines elements of both the emancipating striving for separateness and of changes in language and culture. In some immigrant families special problems arise because school age children often surpass their parents in vocabulary and linguistic mastery, depriving both generations of certain communicative dimensions.

Emancipative functions. The ultimate goal for each child is to grow up and take his place as a full-fledged member in the society into which his family has placed him. In Western industrialized society this usually means that the offspring must attain physical, emotional, and economic independence from his family, being motivated and able to originate his own family.

In other societies the emancipative tasks may not be as stringent and extensive, but the family still

serves to guide the child toward the position society expects him to occupy as an adult. The process of emancipation of each child demands a compensatory reequilibration of the family after each departure, until the spouses return to a dyadic equilibrium, free to enjoy parental prerogatives as grandparents without the continuing responsibilities of the nuclear family. Obviously, each step toward emancipation poses the recurrent issue of separation, until it is final and definitive.

The degree of mastery of the earlier and more limited separations—beginning with weaning and later the beginning of school, separate vacations, and possible hospitalizations of members—indicates and to some extent determines the ease or difficulty experienced by the family when a child leaves for college, to get married, for military service, etc.

But geographic separation is only a part of the issues to be mastered; more important are the emotional components, the sense of loss experienced by all involved, and the inner capacity of each member and the capacity of the family as a group to do the work of mourning appropriately without becoming pathologically depressed. The departing member must accomplish this alone or with his spouse; the remaining family group can work it out together, the parents demonstrating appropriate mourning, faith in everybody's ability to master separation, and faith in the continuity of life.

The modern family is handicapped with regard to total separation experiences, as the death of a parent or child within the life span of the nuclear family is now rare, whereas it would have been rather usual only 50 years ago. Often now the four grandparents are still living at the time when a young adult emancipates himself from his family. And grandparents often live at a distance, so that the impact of their deaths on the nuclear family does not carry the immediacy and intensity of the permanent loss of a regular participant in family life. The time when the first child leaves may be the first occasion for all family members to mourn together, in contrast to the experience of a youngster of earlier generations, who usually would have shared mourning with his family incident to the death of a close relative.

Family bonds continue, of course, beyond the emancipation of the young. Rejoining one's family temporarily is a mutually enjoyable and relaxing experience, provided the family has done its tasks well. Opportunities for mutual support are also likely to arise after parents have become grandparents.

Recuperative functions. The family must provide for the relaxation of its members, relaxation of manners and behavior and even of defenses essential to interaction in the community. Most mothers are familiar with the need of an elementary school child for strenuous physical activity, even for a fight on his return from school, and the home must serve as a

controlling environment for such socially nonadaptive, possibly regressive, relaxation.

In the family circle parents shed formal attire, actually and symbolically. If a man's house is his castle, his family is the one group in which he can be king or at least president and in which he can also exhibit dependency needs. For such mundane reasons alone, the family might have to be invented if it did not exist, as no other living arrangements could provide for so many individuals these opportunities to forego formal behavior and recover energy for the work in the community which requires more formal and defensive interpersonal demeanor.

To some degree the family also permits its members to engage in creative or other activities that afford relief by contrast with the monotony of many jobs. By setting limits on relaxing activities, the family as a group also demands and teaches impulse control, in games, for instance, and all members may have to defer individual hobbies to family group activities at times. Children experience discipline in this way as with other frustrating experiences, first as outer control and eventually as inner restraint.

Finally, if the family is so burdened by its own tasks that relaxation and enjoyment as a group become jeopardized—either because of emotional conflicts and ill health or because its size overtaxes its emotional, nurtural, educational, or tangible resources and reserves—indications for family limitation and for outside assistance with family tasks are at hand.

Family Pathology

Psychiatric entities with a familial incidence based on chromosomal and inborn defects, whether hereditary or not, will not be considered here. Correlations between family pathology and psychiatric syndromes comprise all the many levels of human and social integration, and the conceptualization of these processes is difficult and complex. At this time there is much need for further clinical investigation and for standardization of conceptual terminology. Here, correlations among family disorders, psychopathology, and psychiatric syndromes will be outlined only in general terms, relating these phenomena to deficiencies and difficulties in the family's task performances, including the failure to evolve a workable structure.

Broken families. Broken families are the grossest but not necessarily the psychiatrically most devastating form of family pathology. Broken families are disproportionately frequent in the backgrounds of sociopaths, unmarried mothers, and schizophrenics, regardless of whether the fracture is through death, desertion, or divorce.

Family deficiencies

Parental psychoses and neuroses. Family deficiencies cover a wide range. Intrapersonal parental inadequacies form one large category. For instance,

severe immaturity may lead one spouse to seek a dependent position in the family, akin to that of an offspring. Such a spouse expects a parent role of the partner or even of a child. Beyond this, almost any form of neurosis or psychosis in one parent is apt to produce a defective parental coalition, which in turn will handicap the nurturant and enculturating tasks on which the children depend. Parents with severe hysterical or obsessional or other neurotic characteristics are apt to produce offspring with like defensive structure if not symptoms.

Mental inadequacies. Mental subnormality tends to run in families, apart from genetic factors. Below certain intelligence levels, parental functioning, especially the communicative performance, does not suffice to accomplish the enculturation of offspring. Educational inadequacies and inferior social position in a given subculture can also result in ineffectual family structure and dynamics, especially if the family belongs to a group against which the surrounding community discriminates actively.

Inadequate gender models. Inability or failure of a parent to serve adequately as a gender model appropriate to the larger society leads to increased developmental vicissitudes, especially for the child of the same sex. This is even more true if, as is often the case, the posture of such a parent is further weakened and undermined by the mate's critical and even contemptuous attitudes. The insecure gender identity of a parent predisposes the same-sex child to gender uncertainty and confusion, leading to social ineptness or the development of perversions or schizophrenia.

Need for an extended family. Another form of family pathology peculiar to the nuclear family can be viewed as a surreptitious need for an extended family system. This occurs overtly or covertly when one parent or both remain primarily attached to and dependent on their parents or a parental substitute, and the center of gravity for authority, decision making, and emotional investment rests outside the nuclear family group. This distorts family structure and functions, especially if both parents feel primarily beholden to their respective families of origin, and no workable coalition for the younger family becomes established. An extended family system is quite workable with differential role assignments across three generations, but it is damaging to a nuclear family that intends or aspires to such designation and that geographically lives as a nuclear family.

Overinvestment in children. Parental overinvestment in the achievement of children, especially the parents' social prestige aspirations, is related to the development of depression in offspring. Such parental attitudes are introjected, and they predispose the child to intense ambivalence and a sense of being loved and worthy only on the basis of superior performance and achievement. Punitive attitudes toward the self supervene when failure in terms of the internalized overstringent expectations occurs.

Schismatic and skewed families. Probably more pathogenic than actual parental separation is family schism. Here, the family is divided overtly or covertly into warring camps, usually because of chronic conflict and strife between the parents. The children are forced to take sides, to the detriment of their personality development and integration. This type of family pathology is found in the background of schizophrenic patients.

Another form of family pathology related to schizophrenia is the skewed family, when a dyad other than the parental one dominates the group emotionally and often tangibly. A skewed marital relationship is different; here, one spouse expects the other to be a parent to him or her, or one disturbed parent dominates the other and family life absolutely and rigidly. Such a marital coalition preempts parental functions and emotional resources, and the children's affective and psychological needs are neglected.

In both schismatic and skewed families, violations of the generation boundary abound, and in both, the intense relationship between one parent and one child may have seductive and incestuous components, an additional violation of sex-role requisites if not of the incest taboo.

Overt incest is evidence of gross parental psychopathology and of defective family structure. Father-daughter incest is commonest, but both parents are psychologically involved, since incest often bespeaks a tenuous equilibrium in a family that seeks to avoid overt disintegration. The involved daughter has often assumed many parental functions, while the parents maintain a facade of role competence. The family often breaks up after incest is brought out into the open, usually by the involved child.

Faulty communication. Aberrant communication in the family is a common psychiatric finding. Although usually secondary to parental psychopathology, notably thought disorders, faulty communication also builds up a pathogenic autonomy of its own. Young children learn the defective communication modes, distorting their linguistic development, perception, and concept formation. If communication is confusing within the family and ineffectual as expressive or instrumental tools, children are deprived of a critical socializing instrument outside the family. They may never gain basic faith in and reliance on the utility of communication. The seeds of autism may be sown in this way. Severely amorphous or fragmented methods of communicating have been found among families of schizophrenic patients.

Learned aberrations. Parental examples of paralogic thinking and of fear and mistrust of their social environment affect offspring by creating confusion and anxiety, and children may internalize the faulty ideation and the mistrust of the world. This is the familial counterpart of Cameron's pseudocommunity, and paranoidal suspiciousness can be learned in this way.

Johnson and Szurek delineated another form of family pathology among sociopaths who carry out covert or overt needs or wishes of parents. The child's asocial behavior may express directly such propensities of a parent in exaggerated form; in other instances, the child behaves like a sociopathic parental collateral whom one parent secretly, or not so secretly, admires.

Clinical Evaluation

Besides the history of psychiatric disorders in the family, clinical assessment concerns family functions, but function and structure cannot be separated as neatly by the clinician as by the textbook writer. The observation of functioning and coping forces inferences about structure and vice versa. Just as the clinician can draw inferences about lung structure or pathology from breathing patterns, so also can he deduce on a statistical basis that chronic sociopathic behavior in an offspring, for instance, is related to structural and functional family defects.

Symptoms aside, the clinician seeks information about the basic elements of family structure, notably the maintenance of the generation boundary and the gender-linked role divisions and complementarities, and about the manner in which the family copes with its major tasks and functions. He pays special attention to their communication modes.

Diagnostic investigation and therapeutic influences overlap in the establishment of family diagnosis, as they do in psychiatry generally. This section will not deal with techniques of assessment but will only outline the referential framework for evaluation through family history and direct observation.

Information sources. Ideally, the individual histories and statements of all family members are combined and examined for congruent and contradictory data. These individual records are complemented by participant observation of the family as a group. There are many methods available for this, ranging from open-ended family interviews to more or less structured formats, including the possibility of having the family do specific tasks or tests together while being observed and, preferably, recorded.

The spouses. The referential framework begins with an examination of the marital relationships, the pertinent data concerning the spouses' respective backgrounds, their personal developments, educational levels, socioeconomic class positions, and the cultural and ideological value patterns of their respective families of origin. Significant discrepancies in these parameters should alert the examiner to potential conflict areas, and he should investigate the resolution of such discrepancies. For instance, he should investigate discrepancies with regard to religion, social class ambitions, desired family size, and rearing methods of and goals for the children.

Family structure. Data about family structure can be obtained through inquiries about living and

sleeping arrangements, activities of the family as a group and as part groups, role divisions incident to various family tasks, and the decision-making processes. As far as possible, these items should also be examined directly through group observations, as should the possible existence and nature of dominant dyads other than that of the parents. In observing the family as a group, the diagnostician gains impressions about the extent and methods of parental leadership, and whether it is united or not, that is, criteria about the effectiveness of the parental coalition and the integrity of generational division. Gender appropriateness in manners and in conversational content can be established impressionistically in family interviews, or inappropriate seductiveness can be documented, for example.

Family coping. This can be assessed by learning about crisis behavior. The normal crises of family evolution are important sources of understanding about the family's coping patterns, coping reserves, and coping deficiencies. Among such crises are possible resistance or reservation of the spouses' families to the marriage and how this was resolved; the first pregnancy; the original triad formation; subsequent pregnancies and births; economic misfortunes; deaths of relatives or friends. In psychiatric practice the examination often takes place in a crisis situation, such as that incident to the hospitalization of a family member as a mental patient.

Social network. The nature of the family's social network should be examined to establish social isolation or the nature of family relatedness within the community. The network must fit to some degree the class position and the patterns of the community and subculture of which the family is a part. The involvement with the spouses' families of origin and collaterals also must fit to some degree their cultural pattern, or conflict should be presumed and the resolution of it examined. A parent's intense attachment to either family of origin should alert the examiner to the possibility that a truly nuclear family has not been established.

The children. Evaluation of the children depends on their respective ages. Pediatric histories, including well child care data, may be the only source of information available outside the family. For older children, kindergarten and school adjustments, records from recreational agencies, and, when indicated, information from neighbors and friends as to the socialization of a child can be utilized. School phobias are a classic manifestation of deficient separation mastery in the family.

In families with older children, attention must be paid to their emancipating efforts and the parents' reactions to these. Adolescence, notoriously a family stage of uneasy truce in many respects, should be just that, a family dissolution process, at least on an emotional plane. Adolescents must experiment with greater independence, and each step carries a poten-

tial for disagreement and conflict for all concerned. Also, the adolescent's dissatisfaction with and opposition to parental standards are an intermittently necessary stance for him in his strivings for emotional distance and independence. Examining and evaluating the family with adolescent offspring are, therefore, especially difficult because of this evolutionary state of imbalance.

Intrafamilial communication. Here, recordings or films are essential if detailed analysis is to be attempted. But grossly or impressionistically, the clarity of communication or lack of it can also be seen and heard. Contradictory statements in the same verbal passage or discrepancies between verbal content and nonverbal communication may confuse rather than convey meaning or may have a double bind effect. Scapegoating of a member becomes readily apparent, as do ambivalences, such as the more or less covert condoning of a member's behavior that also constitutes the family's complaint. Careful analysis of verbal passages or special tests given singly or to the group will disclose thought disorders and ideational defects.

Tools. Questionnaires and schedules of family process items are available or can be composed for specific assessment modes, but in general they are ancillary diagnostic tools. They are most useful for the examiner who wants to standardize examinations for data-retrieving purposes, for research, or for didactic purposes. Their major value, therefore, rests with the organization of data and not with the information-gathering segment of clinical evaluation, which rests primarily with the clinician's skill and art.

Suggested Cross References

Additional material on normal sexual functioning can be found in Lief and Reed's section (Section 5.7) in this area. Family therapy is discussed by Ackerman and Kempster (Section 34.8) in Area G, on psychiatric treatment. For a further discussion of communication see Ruesch's section (Section 3.6). Family interaction as a determinant of psychopathology is also discussed in the sections that deal with specific psychi-

atric disorders such as Section 26.3 on homosexuality and Section 15.3 on the etiology of schizophrenia.

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Chapter 5

Other Fundamental Topics

5.1 EPIDEMIOLOGY

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Definition

Epidemiology is the study of health conditions in a population in relation to any conceivable factors existing in or affecting that population which may influence the origin of the health state or affect its distribution in that population. The object of such study is to ameliorate any factors that contribute to ill health, to enhance any that contribute to health, and to draw generalizations from studies that can be applied to other populations to contribute to health in general. From the point of view of pure or basic science, the objective of the promotion of health is not essential to epidemiology. But, as a derivative of the public health movement, epidemiology has always had a large element of applied science in its conceptual base. In practice, the promotion of health and the alleviation of disease states are accepted as parts of its logic.

History

The origins of the science of epidemiology are very ancient. Probably the first discovery was the fact that disease tends to be a greater threat when the wastes of human living accumulate. The importance of human feces in the spread of disease probably followed this general but vague notion and led, as much as esthetic reasons, to the invention of sewers and other methods of waste disposal.

Mosaic laws. Certainly by the time it was possible to encode the Mosaic laws (about 1200 B. C.), a great deal of epidemiology was already known. Not all the Mosaic laws are interpretable in the light of modern medical science, and it is impossible to know what sort of logic, superstition, or magic underlay many of the dietary and other laws. Yet it is clear that the interdiction of pork could have had to do with a fear of trichinosis and other diseases and that the inter-

diction of shell fish may have had to do with gastrointestinal diseases or induced reactions to products of decomposition.

The rules regarding the handling of the sick and of corpses are easily seen to be related to the recognition of the contact transmission of disease and of the importance of fomites. Similarly, the laws regarding the management of lepers, whatever disease or diseases the Biblical term leprosy may have included, show a recognition of the transmissibility of disease from the sick to the healthy. Such notions were considered important enough to be incorporated into the highest level of law in the theocratic organization patterns of the Israelites of that time. Indeed, in almost all civilizations prior to the Renaissance, health and disease were very closely bound to the religious systems of the people.

Epidemic constitution. In addition to the more or less specific relationships implied in the Mosaic laws, used here as one of the earliest examples of applied epidemiology, there was much thought given to why waves of disease struck at particular times and intervals. These rather vague thoughts found expression in such terms as "epidemic constitution" into which were woven at different times and by different people ideas of the influence of climate and other cosmological factors. The name "malaria" (*mala aria* or bad air) is evidence of this, as is the propensity for keeping out the night air in malarious regions or the avoidance of low lying land in favor of higher areas for the building of summer homes.

This sort of nonspecific but nevertheless effective action based on epidemiological concepts perhaps reached its highest point in the famous Broad Street pump incident in London in 1854. At that time John Snow realized that cholera was being spread by water from a particular pump and prevented the use of that water by dismantling the pump, thereby retarding the epidemic.

Incidents that involved no recognition of any specific etiological factor but were nevertheless effective—Jenner's discovery of cowpox vaccination to prevent smallpox, for example—were accompanied by a great many ineffective actions. These are often forgotten in the congratulatory history of the successful ventures.

But during the same period useless fires were built in the streets to arrest plague, and as late as the 1950's swimming pools were emptied and public assemblies forbidden to prevent the spread of poliomyelitis, though both actions were ineffective.

Specificity. The next step in epidemiology came with improvement in diagnosis. The most important figure in this was Sydenham, who distinguished many illnesses in the 17th century. He recognized that such broad generalizations as the epidemic constitution could not deal equally well with all questions of disease spread; each disease might well have its own laws of spread and, by implication, of control. This is a concept too late applied to mental diseases. There is still tendency to talk of the prevention of mental illness, as though the prevention of paresis, pellagrous psychosis, various postencephalitic states, alcoholism, mongolism, depression, and schizophrenia were all the same.

Sydenham's work led to the recognition that specific illnesses required specific preventive measures and that the concepts "infectious disease" or "exanthems" were useless in prevention for the most part. The same lesson of specificity is only now being learned in psychiatry. Too often, prevention is dealt with in terms of broad generalizations, as though there were some panacea to be found that would deal with all the variety of mental diseases. In every case in which a mental illness has been prevented, a clear cut etiological factor related to a definable syndrome had been discovered. Witness the decline of syphilitic psychosis with the emergence of effective treatment for syphilis, the decline of pellagra with improvement in knowledge of nutrition, the decline in frequency of toxic delirium with the introduction of the sulfonamides and the antibiotics.

The discovery of the importance of bacteria in disease led to the development of the modern epidemiology, and this phase in the development of the science is only a few decades past its zenith. With the discovery of obligatory etiological agents—first bacteria and then viruses, Rickettsia, mycobacteria, and others—the development of the epidemiology of the "one overwhelming cause" took place. For a number of years concern was almost exclusively on etiology and the control of etiological agents, either directly or through immunological reactions. This era is still underway and is still of outstanding importance; witness the control of poliomyelitis in 1955 and the still more recent immunizing procedures against measles. From the psychiatric point of view, a good deal remains to be done in this branch of epidemiology; there are unsolved problems in encephalitis and rubella, for example, the solutions to which will contribute much to the prevention of some psychiatric syndromes.

Multifactorial etiology. The golden age of epidemiology just discussed did not solve all of the problems of epidemiology, however, and a new era of epidemiological study began with a familiar term in psychiatry,

"multifactorial etiology." During the golden age just described, epidemiology was mostly concerned with obligatory factors in disease, that is, the etiological agent in the absence of which no specific disease could occur. There could be no pneumococcal pneumonia without pneumococci, no leprosy without *Mycobacterium leprae*, no measles without the measles virus, no schistosomiasis without flukes, no syphilis without the spirochetes. These etiological agents, however, were not enough to explain all problems. There were always individuals in the population who were known to be infected but who did not become ill. There were always those who recovered while others died. And there were many diseases in which the model of infection did not fit the cases, notable among them being some arthritic conditions, arteriosclerosis, and, among the mental diseases, schizophrenia, depression, neurosis, alcoholism, and the character disorders.

These unsolved problems led, under the leadership of Dubos and others, to a renewed consideration of the host factors in disease, those factors within the individual that determined his vulnerability. The disease that precipitated much of this thinking was tuberculosis. In this disease, the obligatory cause, the mycobacterium, constitutes a smaller proportion of the total etiology than is the case in more acute diseases. But the other diseases listed above were also important in the development of this phase of epidemiological development. For the most part they are diseases for which no obligatory factor is as yet known. It is a matter, at present, of looking for all possible factors associated with the diseased state. Felix expressed the concept very economically by saying that schizophrenia was like tuberculosis without the mycobacterium entering the picture. Except for those mental illnesses known to have obligatory causes—and they are numerically small in proportion to the others—the epidemiology of the mental illnesses falls in the same category as the epidemiology of arthritis, coronary thrombosis, and arteriosclerosis.

Too often the accomplishments of the golden era of epidemiology for psychiatry are overlooked. The conquering of syphilis led to a decrease in psychiatric illness considerably greater than that in physical disease contributed by the prevention of poliomyelitis or measles. The antibiotics have tremendously reduced the psychiatric problem of toxic delirium. Furthermore, the control of infectious diseases has relieved much occasion for the emotional stress of grief in parents. The control of childhood fever has allowed a much higher proportion of children to be raised by their mothers than was the case earlier in human societies. The golden era of epidemiology contributed both directly and indirectly to mental health.

Study Methods

Diseases with obligatory causes. Epidemiological theory has been concerned in part with the way epidemics rise and fall and the periodicity of these waves

of illness. This part of epidemiological theory is concerned primarily with diseases with one overwhelming, obligatory cause.

The shape of the ascending epidemic curve depicting the proportion of a population affected by a disease over a period of time appears to depend primarily on such factors as the length of time between exposure and onset of disease for the particular illness under question and upon the method of transmission of the disease. The descending arm of the epidemiological curve depends on the exhaustion of the supply of susceptible persons in the population. Both ends of the curve depend, also, on the prior history of the disease in the population, the type of immunity resulting from having the disease, and any immunizing measures that may have been used. It is relatively easy to study the shape of epidemic curves by animal experiments, and it is also helpful to express the various possible shapes of curves in mathematical form. Particular shapes of curves are typical for certain groups of illnesses, and the epidemic curve may lead to the determination of the diagnosis in some epidemics and can lead to information useful in identifying the obligatory etiological agent. Statistical devices are most useful in determining the significance of epidemiological data; that is, statistical tools allow estimation as to whether changes are due to chance or are related to a patterned sequence of events.

These experimental and mathematical methods have been useful in diseases that occur in waves and then disappear or reach a low ebb of sporadic occurrence. They have thus far been less helpful in the study of diseases that vary little in their rates over time or that do not result in death or recovery within a relatively short period.

Chronic diseases. Chronic diseases require other methods of study, particularly when no obligatory etiological factor is known. Changes in rate of occurrence are likely to be rather slow, making them hard to interpret, particularly since medical science is likely to have changed in quality of diagnosis and treatment while any change in rate has been occurring. This is particularly true when the causative factor has to act over a long period of time to produce its effect.

The best example of this kind of problem is the association between cigarette smoking and lung cancer. Such an association could not be found until the diagnosis of lung cancer could be made quickly and accurately and until sociological methods to determine who smoked in the population had also become available. Etiology of lung cancer as related to tobacco tars probably could not have been discovered without the development of surgery that offered the possibility for cure; it is hard to arouse interest in a disease for which there is no cure. The epidemiological success had to await developments in several other areas of medicine.

Life table. The tool most useful in studies of chronic illnesses for which no obligatory cause is known is the

life table. Essentially the life table is a composite of the experience of a group of people who share certain common factors considered to be related to a pathological process, in contrast to a group without these factors.

For many diseases the end point of the life table is death; in other diseases the end is a form of disability. In psychiatry the measure is often hospitalization, considered to be a measure of behavior disorder in that society will no longer tolerate the sick person in its midst. Some have termed this measure the point of social or productive death of the individual. Although the concept has certain advantages for dealing with psychiatric illnesses, the tolerance of societies does not stay constant, and advances in treatment may result in improved behavior without affecting the underlying disease process. Nevertheless, the life table method presents many still unexploited possibilities for the study of psychiatric illnesses and of factors in mental health.

Many mathematical tools have been developed for the interpretation of life table information. A modern and as yet uncompleted experiment dealing with what is essentially life table methods is the work on the relationship between diet and arteriosclerosis.

Diseases without known etiological factors. The life table method is also applicable in studying illness states in which no etiological factor can be postulated. Various sorts of events occurring in peoples' lives can be used as the basis for forming contrasting groups, which can then be followed to some other event, such as the appearance of disease, social or productive death, or death itself. The method can be applied with some greater risks to retrospective data. Plummer and Hinkle used it, for example, in the study of the relation of ill health to certain social situations in female telephone employees and in relating ill health to events in the lives of migratory students. The studies of the types of families producing schizophrenic children are essentially life table studies, though the numbers reported are far too small to allow the use of the available mathematical tools for tests of significance. Although the life table method has not been applied rigorously enough to allow genuine evaluation, it is the concept that underlies most of the thinking relating childhood behavior disorder to later disease or health. At the present time the most rigorous studies tend toward a negative relationship, though the end of the story is not yet clear.

Diseases with multiple etiology. It is clear that the life table method allows the testing of a very wide range of possible relationships between events and what follows them. In individual cases, the method was introduced by Adolf Meyer as the life chart. Lorr and others have worked out various ways of evaluating behavior at successive points in time so that intervening events may be related to later behavior. From this sort of study of the lives of individuals, hypotheses arise that can then be tested by life table methods.

How to quantify experiential events and the status of illness and health remains a persistent problem greatly deterring the testing of hypotheses in the area of psychiatry but at the same time offering inviting vistas for research.

Mental diseases. Reed has voiced many of the problems in the application of epidemiological methods to mental diseases. His conclusion is that the methods of epidemiology are applicable to psychiatric diseases, provided the data can be properly quantified. By this he means that diagnosis must be replicable, if not valid, and that life events involved in hypothesis testing must be somewhat quantifiable.

These desiderata are important, but helpful concepts may be developed through work done before they are fully met. Snow controlled cholera before he knew why the action he took worked, and he did it in the absence of any mathematical controls. Psychiatry has an equal basis for hoping that its studies may lead to serendipitous discoveries of a helpful sort before it is able to reach the level of excellence of data that will allow the application of the most highly developed epidemiological theory and methodology. Along with mistakenly building fires in the streets, some other kind of removal of the handle of the Broad Street pump may be encountered.

Action cannot be delayed at many points. The clear cut proof that a kind of retardation is associated with the absence of an enzyme necessary in the metabolism of phenylalanine logically leads to the testing of all infants and the inauguration of special diets for those lacking the essential enzyme. Meanwhile, the as yet unproved assumption that children deprived of a broad preschool experience contribute a high proportion of the mildly mentally retarded cannot be neglected. Preschool education for underprivileged children like that going forward under the antipoverty program in the United States, may prove to be as ill founded as building fires in the streets was for controlling plague. Yet there must be an effort to control the apparent deficiency in mental health, and preschool education is the best way presently known to accomplish the task. Epidemiology does not insist on absolute proof of relationship. But it does help place some responsibilities for selection of methods and for marshaling available facts concerning actions taken to relieve the problems of the various mental illnesses.

Epidemiology of the Mental Illnesses

For the most part, the epidemiology of the mental illnesses is at a quite primitive level, particularly in regard to its most important problems—schizophrenia, depression, and the various neuroses. Depression and schizophrenia are better studied than the neuroses, probably largely because they are more reliably diagnosable, though they leave much to be desired in this area. Diagnosis of neuroses is far from reliable, that is, reproducible by equally qualified diagnosticians.

Studies of schizophrenia and depression have been largely descriptions of the prevalence of the illnesses in various populations and the comparison of the sick, by various characteristics, to the total population. Hypotheses have been based on such findings, but exceedingly few, if any, studies have been directed toward the testing of hypotheses. Leighton is in the process now of testing whether changing the social organization of a community will change its rate of symptoms of mental illnesses. This study is based on his earlier finding that less socially organized communities have a higher rate of symptomatology than better organized ones. This is one of the first attempts to test an hypothesis after formulating it on the basis of prior research into the distribution of symptoms. It is similar to the preschool education program already mentioned except that the etiological concepts involved are much better supported by data in the Leighton research than in the necessarily far broader test of a less well documented hypothesis in the Head Start program.

Epidemics. The earliest publications on epidemiology of mental symptomatology had to do with reactions sweeping through populations in ways familiar from the study of epidemics of infectious diseases. In Italy around the 17th century an epidemic of very fast dancing ran through the country. The reaction was supposed to follow the bite of the tarantula, but it is clear that the need for this stimulus soon faded out, the reaction becoming psychogenic. The epidemic left its permanent mark in music, the tarantella form being that of a very fast dance.

William Sargant has continued the study of such epidemic psychological reactions, linking the tarantella with trance-like states appearing in every period of civilization, depicted on Greek vases and seen today in many religious sects, such as the dervishes and, in the United States, the snake handlers. Such reactions have not been well studied epidemiologically. It is not known, for example, what proportion of populations are actually involved or how many consciously put on an act while others are carried away by the various kinds of reactions. One of the best studied of such epidemics is one reported from Louisiana in 1939 (Schuler and Parenton, 1943). An excellent bibliography on ancient psychological epidemics appears in The Milbank Memorial Fund publication on epidemiology (Jastak and Whiteman, 1957).

Genetic illnesses. Perhaps the earliest modern studies of the epidemiology of mental illness were those of Luxenberger and Brugger in Germany, published about 1928. These studies were primarily designed to test hypotheses in the genetic area. A case of an illness was selected as a starting point, and all relatives of this case were then investigated as to the presence or absence of psychiatric illness. Another person who was not ill was also selected and matched with the case for certain characteristics. His rela-

tives were similarly traced and examined. The results of such studies gave not only the differential rates between the two basic groups but rates in specific, defined populations as well, the first such rates in the literature. Studies allowing similar conclusions were done in other places as well. The genetic aspects of these studies form a legitimate subject for epidemiological research, and they have continued, largely as twin studies, under the leadership of Kallmann.

Direct research in total populations. The next step in epidemiological studies was direct research in total populations to see what illness they had produced. Fairbank and Lemkau were leaders of groups in Baltimore and were probably the first to have skilled biostatisticians associated with them in such studies. Their group worked in the urban Eastern Health District of Baltimore; a companion group was working at the same time in a rural area of Williamson County, Tennessee.

The Baltimore group searched all available sources to find cases of psychiatric illness, from the mental hospitals to the police records to the records of social agencies. The cases were analyzed by geographic location, race, age, sex, and economic status. The Williamson County study was obliged to establish a diagnostic and treatment center in order to find and obtain diagnoses on cases, a technique later used by Leighton and his colleagues as well. The actual rates obtained in these various studies and others appear in this volume where the various illnesses are discussed (Area F).

Defined populations. Strömberg in Denmark began the study of defined populations. He used the total populations of relatively isolated islands for study, populations in which individuals who were ill could be traced. This research design was also used by Bremer in the study of an isolated fishing village in northern Norway. This study indicated for the first time that psychiatric symptomatology was actually exceedingly common. His figure was 25 per cent of the population, of which he studied each member personally.

Ødegaard defined his population for study in another manner—by whether or not they had carried out a certain action. He studied the rates of mental illnesses among Norwegians who had migrated to the United States as compared to family members who had remained in Norway, coming to the conclusion that those who migrated were at greater risk of mental illnesses than those who remained behind. In general, this conclusion has stood up rather well in the light of later findings, though other patterns of migration may provide different findings.

Eaton and Weil studied the Hutterites, a group defined by their religious beliefs and a kind of communal social organization. The group lives in northwestern United States and southwestern Canada and is highly inbred. The legend that this group had no mental dis-

ease was exploded by the study: the rates for schizophrenia were not markedly dissimilar from those in other populations, and depressions seemed more common among the Hutterites than in other populations.

Another method of defining a population was used by Gruenberg in his studies in New York State. He used an age limit, interviewing all people over 65 and establishing rates according to certain social and economic parameters.

Mental retardation. The epidemiological study of mental retardation began with a Scottish study of the early 1900's. The intelligence of a large number of children was evaluated by psychological tests; the state of mental retardation in adults was judged by social characteristics. The study probably missed very severely retarded cases, and its criteria for diagnoses left something to be desired. Nevertheless, this study represented a large step forward in methodology, and its main findings have often been replicated by others.

A more thorough, census type of study was attempted by Jastak in the 1950's but unfortunately resulted in few publications. It did tend to show that Lewis's finding of high rates of mental retardation in rural as compared to urban areas was less marked in the 1950's than it was earlier in England. Studies by others have thrown light on many technical problems in the study of the epidemiology of mental retardation. Imre is conducting a very thorough study of a rural area, profiting from the improved methodology now available.

Gruenberg surveyed a New York county, using teachers as case reporters. He found that, using this technique, his reporters tended to include a wide variety of behavior disorders as retarded cases, even though their psychological test scores were quite high indeed.

Problems encountered. In all these studies there are problems of definition of the illnesses counted, of severity of symptoms reached before a case is counted, of whose judgment is to be used if the case is not seen personally, and many others. There is also a problem of how to present the data. This matter has now reached a rather stable point; data are presented as incidence rates and prevalence rates. Incidence rate is that proportion of a population that becomes ill for the first time during a specified time interval, usually a year. Prevalence rate refers to the proportion of a population ill at any one period of time, regardless of time of onset. Prevalence rates may be given as of a single day or as the total number ill during a specified time, regardless of whether they were continuously sick throughout the period. In some studies it is assumed to be important to the future of the individual if he has ever been ill, and the figures are presented as cumulative, so that a prevalence rate not only includes those sick during a specific period but all those in the population who have been ill with a mental illness at any time and are still alive. Although these

conventions are often violated by workers reporting studies, strict adherence to them allows comparisons between studies that are otherwise impossible.

Studies of groups of patients. The analysis of groups of patients to find their characteristics was apparently begun by Esquirol about 1830, when he found a need to know what sort of people he was taking care of in his hospital. Studies of this sort are generally based on data gathered for official administrative reports, although more recently some have been done primarily for scientific purposes. Malzberg in New York and Dayton in Massachusetts have been most influential in the early period, and Kramer et al. represent more recent studies. The earlier types of studies are conveniently gathered in the books by Landis and Page and by Dayton as well as in Malzberg's numerous papers and books.

These studies have brought out such facts as the very high rate for senile psychosis in the 7th, 8th, and 9th decades of life; the variation in risk of the two sexes in the different mental illnesses; and the differences in rates of illnesses of various sorts in groups when analyzed by national origin, race, and so on.

Data on hospitalized patients have also been used to attempt to answer the question of whether the mental illnesses are increasing or decreasing in populations. For the most part, the results remain equivocal. Goldhamer and Marshall were, however, able to present data extending over the century from 1840 to 1940 and reached the conclusion that there had been no increase in severe mental illnesses in the young adult age group during that period. Their data suggest that there may have been an increase in psychoses of the senium, though they were unable to separate disease from social factors influencing hospitalization in this group to their own satisfaction.

Kramer introduced studies of cohorts of patients into psychiatric epidemiology. Patients of a particular age group are admitted during a particular period selected, and their fate over a period of years is determined. He has shown the outstanding differences in mental hospital retention rates for different mental illnesses and, perhaps more than any other worker, has demonstrated that there is a high rate of turnover of patients in psychiatric hospitals, even though there is at the same time a large residual population in which there is minimal movement.

Bahn, Gorwitz, and Miles have recently added statistics regarding out-patient services to those on in-patients. It is too early yet to have come to any secure findings in relation to the new source of patient service data. Thus far, the data indicate that services vary in amount furnished to various segments of the population, with the elderly and those of the lower social status groups receiving disproportionately low amounts of service. As the data collection methods mature, firmer as well as more detailed conclusions will undoubtedly be reached.

Hollingshead and Redlich have studied the type and

amount of psychiatric service available to persons of various socioeconomic groups. Their data tend to show that psychotherapy is offered far more often to more advantaged groups and that the low socioeconomic groups tend to be treated by means of physical methods—electroshock, drugs, and other forms of direct management. Furman, Sweat, and Crocetti found similar relationships in a study of out-patient services. Jaco, in a study of treatment practices in Texas, reached somewhat similar conclusions and dealt also with differences in availability of treatment in different racial groups—the “Anglos,” the Spanish Americans, and the Negroes of that society.

Psychiatric register. Material on in-patients and out-patients is presently being combined by means of a new technical device, the psychiatric register. It will not only allow much more prompt and accurate reporting of a far larger variety of cases receiving services by a variety of service units but will also allow, for the first time, the study of the psychiatric management of behavior disorders over long periods of time. This will solve one of the most vexing problems of longitudinal studies—the Scylla of the danger of retrospective studies being influenced by the state of the patient when the study is made and the Charybdis of having to wait a very long time to see how cases mature. While a relatively small amount of data can be preserved for each patient at each contact with a service, the register can be used as an index to existing case histories. With computer techniques, information can be very quickly analyzed and groups compared in an almost infinite variety of ways. The register technique will greatly facilitate some kinds of epidemiological research in the future.

The pattern on which registers are being developed has come to a considerable extent from the United Kingdom, where Brooke et al. have exploited the National Health Service's statistical data. Their interest has been, to a considerable extent, administrative. It is from their work that the United Kingdom projects a rate of psychiatric hospital beds of 1.8 per 1,000 for the future.

Lin's exhaustive and thorough studies in Taiwan have provided data for his review of psychiatric epidemiology, from which he concluded that approximately 1 per cent of populations are actively psychotic but that beds need be provided, at least in developing countries, for only one tenth of these. These figures stand in contrast to those of Pasamanick and Lemkau, who found approximately 10 per cent of the population seriously impaired by psychiatric symptomatology at any one time.

Studies based on symptom recording by patients. Alexander Leighton et al. conducted studies in a semi-rural agricultural, lumbering and fishing area known as Stirling County. Thomas Rennie et al. conducted similar studies in a defined area on the east side of Manhattan. In both studies, although the methods were different in detail, the basis of the data was inter-

views with a relatively small sample of the total population. Questions asked were usually designed to ascertain whether or not patients had symptoms that might be regarded as psychiatric or psychosomatic. The interviews were scored by psychiatrists as to whether or not the patient was ill and to what extent illness impaired his functioning. In general, the Leighton group exercised somewhat greater care in the scoring process than did the New York group. In neither study was any attempt made to establish specific psychiatric diagnoses.

Both studies reported high rates of symptoms in their populations, and the results of the two are so nearly alike that they can be presented together for the purpose here. Over-all, both found about 30 per cent of the population to be rather seriously bothered by symptoms, another 30 per cent to be moderately symptomatic, and about 25 per cent to have mild and relatively inconsequential symptoms. Around 15 per cent were found to be symptom-free. The severity and extent of symptoms were found to vary among different groups within the population.

Neither study implies that the presence of symptoms indicates a disorder. However, both suggest that, of the three groups of symptomatic persons found, the group with the largest number of symptoms would undoubtedly receive a diagnosis of mental disorder if seen by a psychiatrist, with the probability decreasing as the frequency and severity of symptoms become less.

Leighton has used the presence of symptoms not as an indicator of psychiatric disease, but rather as an index of the reciprocal of a state of health; that is, the fewer the number of symptomatic people, the healthier the population is. He then hypothesized that there is a relationship between the health of a population and the type of life in the communities in which it lives. Upon investigation of the communities his people came from, he found a number of parameters on which they could be graded, including the extent of social organization. He found that communities with a low state of organization—few and badly supported school and church groups, for example—tended to produce higher rates of symptomatic people than did communities that were well organized. This technique has also been applied by the Leighton group to an African society, the Yoruba. The findings appear to support the hypothesis.

The Leighton group is now embarking on an experiment to test whether it will be possible to change the pattern of social organization of some of the communities studied and whether, when such changes are accomplished, the rates for frequency and severity of symptoms will fall. It is clear that these studies are of critical importance to the whole structure of the theory of sociodynamics in psychiatric illness. They open the way for the testing of a great many hypotheses presently being acted on rather uncritically—such as the relationship between psychiatric illness and industrial-

ization, poverty, mobility, and education. They have not yielded significant results in previous investigations because sampling tended to be warped very strongly by differential availability of service.

Suggested Cross References

The epidemiology of psychiatric disorders is discussed in this chapter from a general perspective. For information regarding the incidence and prevalence of the various specific disorders, such as schizophrenia, mental deficiency, and psychosomatic disorders, the reader is referred to those sections in Area F which deal with the respective disorders.

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computers with relevance to psychiatry are in information retrieval and dissemination, automated clinical laboratory testing, and hospital and financial record keeping.

Many of the present day applications of electronic computers to psychiatric problems are extensions of techniques developed in other fields. As their use has been made more practical and shown to be related to psychiatric practice, the applications have rapidly increased. Some of the more promising directions are listed here, but the most rewarding aspect of the use of computers in psychiatry is in the need for the scientist to modify his mode of thinking. The clinical impression is augmented by definitions of terms, by measurement, and by quantification. Processes, as well as terms, require exact definition, and computers are catalyzing a change in attitude from an impressionistic art to a quantitative science. Although little that is novel in modern psychiatry has yet been ascribed to computers, their use and the opportunities they represent herald significant changes in the clinical practice of psychiatry during the next score of years.

Description of Computers

Computers are direct descendants of rapid calculating devices, with the additional facility for sequential operations (programming) and for retention of intermediate outputs (memory), thereby extending the range of possible calculations.

Types of computers. Modern computers are electronic instruments capable of performing numerical and logical operations. These are usually classed as analog, digital, or hybrid. Analog computers utilize physical, electrical, or mechanical models corresponding to some aspect of the original object for measurement or calculation. Digital computers perform operations on numeric representations of objects. Hybrid computers perform operations in both analog and digital modes.

In the application of digital computers, the operations may be controlled by program instructions stored in the console. Programs are sequential machine instructions written in special languages detailing each logical step of the required operations. The languages vary for each machine, and among the most common are Fortran, Cobol, and Algol. The operations are carried out with speed and accuracy and without fatigue. It is the combination of memory, variety of instructions, speed, accuracy, and indefatigability that provides the basis for the many and varied applications of digital computers.

Hardware. Configurations of digital computers include a central processor, a memory, and input and output devices. The central processor is the control instrument for all operations. The memory stores both instructions and data and may be core (directly accessible to the processor for operations) or peripheral (indirectly accessible), as in magnetic tapes and random access disks.

5.2 COMPUTERS AND PSYCHIATRY

MAX FINK, M.D.

Despite the novelty, complexity, and expense of modern high speed computers, numerous applications have been developed in psychiatric research, teaching, and even clinical practice. An impetus for this interest rises from the increasing application of quantitative analytic methods in medical and biological investigations. Quantification has supplemented clinical impression and has stimulated increasing use of systematic tests of significance. The demand in computer usage for explicit instructions has forced physicians to increase the precision of their data and to prepare it in standardized, easily retrievable forms.

Applications of specific psychiatric interest are in information processing, data analysis and statistical operations, studies of language and the simulation of interviews, and model testing. General applications of



FIGURE 1. Digital computer, IBM 1800. Pictured is the central processor with control switches. In the background are two magnetic tape memory storage units. The typewriter and the card reader (to the left of the processor) are the principal input devices. In the left foreground is the high speed printer. Analog to-digital conversion is provided by the processor. (Courtesy of the I.B.M. Corporation.)

Input devices—punch card and mark-sense card readers, punch paper tape, magnetic tape, or typewriter—bring data and instructions into the processor. Output devices express the results of operations, and these may be either intermediate or final. Intermediate outputs include magnetic and punch paper tape, punch cards, disks, and digital oscilloscopes. Final output devices are printers, typewriters, plotters, and photographic cameras.

Data for digital computers may be derived from input devices located at the computer center or from devices at remote locations with communication from the input device to the processor via telephone networks. Data may also be provided from specialized input devices, such as analog-to-digital converters, optical page readers, light pens, and digital oscilloscopes. The multiplicity of input devices is increasing rapidly, and many new devices have greatly extended the range of applications to psychiatry.

Computer hardware may also be classified as to location—within a single laboratory and devoted primarily to one application or centralized for many users. Laboratory computers are frequently small, highly specialized in their input-output modes, and hybrid. Their operations are often defined by the structural configuration of the instrument. The operations are usually modified by switches and dials in the console. These computers are operated by the individual investigator with short intervals (minutes to hours)

between data collection and data processing. These include the average response computers, the LINC (Laboratory Instrument Computer), and the small, general purpose computers located within one laboratory (as in the studies of electroencephalographic (EEG) quantification using an IBM 1710-1620 system).

Centralized units are often large and varied in their peripheral components and usually operate in batch mode—that is, various programs for different investigators are serviced sequentially. In such units the time between data collection and data processing is apt to be long, perhaps days to weeks.

The varieties of equipment or hardware are great, but recent electronic developments in transistors, integrated circuits, and modular design have made the capacity and characteristics of the equipment of different manufacturers very similar.

“Software.” The great range of computer operations depends largely on the programs that are written, the “software,” rather than the type of computer. The sequential instructions that must be written accurately and in complete detail and the facility and flexibility of the machine languages are the heart of every computer operation. As almost any design or picture can be printed or reproduced on film by combining many dots of different colors, so almost any set of mathematical or logical operations can be reproduced by combinations of program instructions in a digital computer. The limits of the operations are defined by

FORTRAN statement						76	80
1	2	5	6	7			
1	C				JOHN JONES PROGRAMER		
2	C				PROGRAM TO CALCULATE THE MEAN,		
3	C		1		VARIANCE, AND STANDARD DEVIATION		
4	*				FORTRAN		
5					DIMENSION DATA (1000)		
6		900			FORMAT (I 5)		
7		901			FORMAT (5F 10.2)		
8		902			FORMAT (3F 20.2)		
9					READ INPUT TAPE 5, 900, N		
10					READ INPUT TAPE 5, 901 (DATA (I), I = 1, N)		
11					SUMX = 0.0		
12					SUMXX = 0.0		
13					FLN = N		
14					DO 10 I = 1, N		
15					SUMX = SUMX + DATA (I)		
16		010			SUMXX = SUMXX + DATA (I) ** 2		
17					AV = SUMX/FLN		
18					VAR = (FLN * SUMXX - SUMX ** 2)/		
					FLN ** 2		
19					STD = SQRTF (VAR)		
20					WRITE OUTPUT TAPE 6, 902, AV, VAR, STD		
21					CALL EXIT		
22					END		

FIGURE 2. Computer program written in Fortran. The sequential instructions are entered into the processor from card or typewriter and provide the basis for interpreting the data, processing, and the form of the output. (From *Computer Applications in the Behavioral Sciences*, H. Borko, editor. Prentice-Hall, Englewood Cliffs, N. J., 1962.)

the imagination of the scientist in picturing the problem, the ability of the programmer to translate these visions into instructions, and the capacity of the memory of the machines. It is in these instructions, the programs, that the greatest energies and bottlenecks are now found.

Applications in Psychiatry

Statistical studies. The early extensive use of electronic computers has been in statistical calculations and demographic studies. With their high speed and large memory for intermediate calculations and for complex programs, computers have made possible the general application of multivariate statistics. In demographic studies, the need for adequate definitions of illness, symptoms, and psychopathological signs has led to studies of psychiatric terms, classifications of illnesses, and an enhanced interest in symptom-rating scales. The data of population studies lend themselves to simple statistical tests.

It is in clinical trials and in the development of psychiatric typologies that the computer has had signal applications. The rapid success of clinical psychopharmacology in the treatment of psychosis stimulated interest in the early verification of clinical claims. Scientists examined the prevailing methods for therapy evaluation and found them based largely on unverified, unquantified, and uncontrolled clinical impressions. Concepts of target symptoms and psychopathological profiles were suggested to supplant general clinical descriptions. Double blind trials, placebo controls, and random assignment of populations laid the basis for more sophisticated statistical

techniques for evaluation of results and the definition of predictors. In this environment, computer techniques have been most useful in statistical *t*-tests; covariance and variance analyses; discriminant and canonical functions; and cluster, profile, and factor analyses. These techniques have been applied usefully in determination of the relative therapeutic efficacy of specified drugs for defined populations in interhospital collaborative studies; in the identification of drug-responsive and non-drug-responsive psychopathological symptoms; and in the development of rating scales with therapy-responsive items.

Other applications of these demographic and statistical approaches are seen in the classification of subpopulations of the mentally ill, in the training of staff members in identification of clinical symptoms, and in the trials of cluster analysis in the diagnosis of mental illnesses. Many studies of the diagnostic process in clinical medicine are providing the experience in programming for application to clinical psychiatry.

Information processing. The facility of electronic devices to transmit, shuffle (reorder), and retrieve information is great. With bulk storage memory devices, computers scan large amounts of data, select specific examples, process sequential operations, and transmit the results rapidly. Specific applications are found in the maintenance of patient records, documentation of interview data, demographic summaries, retrieval and selective dissemination of information, and establishment of laboratory standards.

Behavioral records. Essential to the evaluation of behavioral change in patients are descriptions by staff, family, and the patients themselves. Such descriptions are generally narrative in form and are read only with difficulty. They are frequently incomplete. Various digital applications have been developed to improve this type of data collection.

Questionnaires and rating scales are widely used. The items are scored on prepared forms, and the scores are transferred to Hollerith (key punch) cards; or the items may be printed on prepared key punched cards, and the rater simply places the individual cards into sorting bins. The clusters of cards in each bin are then scored by computer methods.

Rating scales may be completed by the examining physician, nurse, aide, or social worker; or there may be self-ratings by the patient. Many different scales have been developed, including those for the classification of the mentally ill, the evaluation of psychopathology in schizophrenia and depression, and the identification of elements of the mental status responding to treatment or useful as predictors of treatment response.

Measures of change. With many different scales as inputs, computer operations are as varied as the investigators. The items and individual scores may be sorted and listed, or the cards may be used to determine score means before and after treatment. Changes in nonhomogeneous groups may be deter-

Man Drug Butaperazine Dosage 40mg
 Add. Drug Prochlorperazine 5mg

Name Carol A. Age 27 Sex F Wt 161 Ht 5'9"

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		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		10	20	30									
		1	2	3	4	5	6	7	8	9			
		66	67	68	69	70	71	72	73	74	75		
Rater		1	2	3	4	5	6	7	8	9			
Form		1	2	3	4	5	6	7	8	9			

PSYCHOPATHOLOGY

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
AFFECT & EMOTION - MOOD	blunt - indifferent								
	stiff								
	ambivalent								
	inappropriate								
	depressed								
	dysphoric								
	angry								
	agitated								
	sluggish								
	anxious								
THOUGHT - CONTENT	euphoric								
	labile								
	outbursts								
PERSONALITY	autistic								
	depersonalized								
	split personality								
	passivity phenomena								
THOUGHT - PROCESS and ASSOCIATION	dissociated								
	flight of ideas								
	rigid								
	slowed								
	perseverating								
	thought pressure								
	thought poverty								
	blocking								
	ambivalent								
	circumstantial								
VOLITION and DRIVE	irrelevant								
	disorganized								
	apathetic								
	disinterested								
COMMUNICATION	ambivalent								
	sexual disturbances								
	obsessive-compulsive								
GENERAL	lacks contact								
	poor								
	mute								
	overtalkative								

Use reverse for additional remarks

ORIENTATION

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
disoriented									
consciousness lapses									
confused, delirious									

THOUGHT - CONTENT

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
preoccupied									
ideas of influence									
ideas of reference									
unsystematized delusions									
systematized delusions									
encapsulated delusions									

PERCEPTION

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
illusions									
auditory hallucinations									
visual hallucinations									
other hallucinations									

INDICATOR BEHAVIOR

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
stupor									
hypoactive									
hyperactive									
posturing									
impulsivity									
stereotypy									
mannerisms									

HIGHER MENTAL FUNCTIONS (disturbances)

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
attention - concentration									
comprehension									
memory									
insight									
judgment									

ATTITUDE

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
unkempt									
aggressive									
demanding									
withdrawn									

GENERAL

	U.S.	Rar	Smt	Ust	Abs	Sus	Sgt	Mod	Mrk
asocial									
negativistic									
uncooperative									

Ill - Keskiner, in collaboration with Fink, Shapiro
 MIP - RPR
 1966

FIGURE 3 Psychopathology rating form, prepared for optical page reading. Items are rated by the examiner for incidence (rarely, sometimes, usually, only under stress) and for severity (absent, suspicious, slight, moderate, and marked). The form is completed as used in a case of hebephrenic schizophrenia. (With permission of M. Fink, T. Ill, A. Keskiner, and D. Shapiro, University of Missouri.)

turned by covariance and variance analyses, or more complex multivariate statistics may be used to measure score changes with various treatments. Items have been studied by factor analytic and clustering techniques to determine which elements of psychopathology vary together. Populations have been identified by the similarity of their ratings, and much recent study has been devoted to identifying the subgroups of depression and of schizophrenia.

It has become possible to bypass the stage of key-

punching by the use of special rating forms that are read directly by an optical page reader and that reproduce the data in machine assimilable form (see Figure 3, for example). Such rating scales have been translated into multiple languages, and the results of the analyses have been provided in the original language of the form and in other languages for which translation programs have been written. Such instruments have recently found special utility in international collaborative evaluation studies.

In another application, an essay type of description of a patient has been produced from his responses to a self-rating inquiry form. Such machine-programmed essay reports and their questionnaires have also been translated into different formats to provide essay descriptions of the history and mental status in different languages.

Ward management. Hospital nurses' ratings, describing each patient's status each day, are completed on the ward and are immediately transferred to the computer console. Programs are of two types—comparison of the items with the patient's own record and averaging the data for the patients in one ward unit. By defining limits for changes in specified items, a computer program can rapidly determine if the subject has changed from earlier reports or, for group data, if the ward has undergone a change in scores for such items of interest as excitement, depression, or episodic impulsivity.

In another hospital application, doctors' orders, nurses' notes, measures of patient change, and laboratory data are transferred to the computer from peripheral and remote input-output units located on the wards. As the data are entered, each item is checked against established standards, providing a monitoring of doctors' orders and checking their accuracy, flagging nurses and pharmacy for the necessary supplies, scheduling treatment administration, and maintaining financial and supply records. An even more specialized use is in monitoring the physiological state of the patient and notifying the physician and the nurse when the measurements exceed predetermined limits, thus requiring immediate attention.

Information retrieval. The proliferation of large numbers of reports and studies is a special burden for the active scientist. Abstracting services have been available for decades, but only in the past few years have the storage capacity and rapid review of digital computers made large scale retrieval and dissemination systems plausible. Present information systems use documents identified by descriptors—either allotted by specialists or derived naturally by computer programs from title, abstract, and text. Retrieval follows a scientist's inquiry for those descriptors of interest to him that have been included in the memory of the system. In the dissemination problem, the scientist is notified or sent a copy of each article that comes into the system bearing descriptors included in his individual profile of interests. These systems are, unfortunately, still unsophisticated and expensive.

With the recording and storage of psychiatrically relevant data, numerous special studies have been proposed. The demographic characteristics of populations and subpopulations may be readily defined, and members of subgroups of the mentally ill can be identified for specialized studies.

As sequential clinical studies develop large banks of data for each subject, summaries of the range and variability of individual test data provide standards

specifically relevant to the subpopulations investigated. Such standards have recently been defined for the clinical laboratory test data in placebo-treated patients as comparisons for those treated with novel psychoactive drugs.

Analog signal analyses. Changes in physiological indices are important in the study of emotions and ideation. Blood pressure, heart rate, pupillary size, and the electroencephalogram are continuously changing measures. Determination of their value requires the division of the signal into discrete samples. Such conversion from a continuous analog signal to a digital value is done by direct measurement by hand or by electronic devices.

The electronic analog-to-digital converters are voltage-measuring instruments, and any signal that is naturally electrical (EEG, electrocardiogram (EKG)) or convertible to an electrical measure (galvanic skin response, heart rate) can be sampled and its value determined. The rate of sampling is selected to provide as accurate an index of the rate of change as required by the problem. The converted signals provide the basis for subsequent analyses. Computer programs have been developed for a variety of analog signals of psychiatric interest. Thus, for the EKG, programs for pattern recognition and for frequency and variability of heart rate are available. For the EEG, many measures have been programmed, including amplitude and amplitude variability, frequency and frequency variability, power spectral density and pattern (Figure 4).

The converted signals and their analyses provide numerical data that may be further analyzed by statistical methods. These measures have found special applications in psychopharmacology, where the EEG changes induced by psychoactive drugs have been related to the clinical efficacy of the compounds and to the type of behavioral response. The quantitative EEG measures have been suggested as a device for screening and classifying psychotropic drugs, for classifying psychiatric patients, and for measuring dose-response curves.

Such measures have recently had extensive application in the automatic classification of sleep stages and the determination of differences in sleep patterns in mental illnesses and in response to psychoactive drugs.

A special computer application in psychophysiology has been the averaging of cortical responses evoked by sensory stimuli. Such measures have been related to the psychological mechanisms of attention and anticipation and have been studied as a means of classifying the mentally ill.

These are specific applications to psychiatry today, and the instruments are also receiving extensive use in the analysis of models of neural functions, including the operations of nerve nets, firing patterns, and the interrelations of different cerebral structures. The simulation possibilities and large memory functions are useful in testing proposed models of cerebral ac-

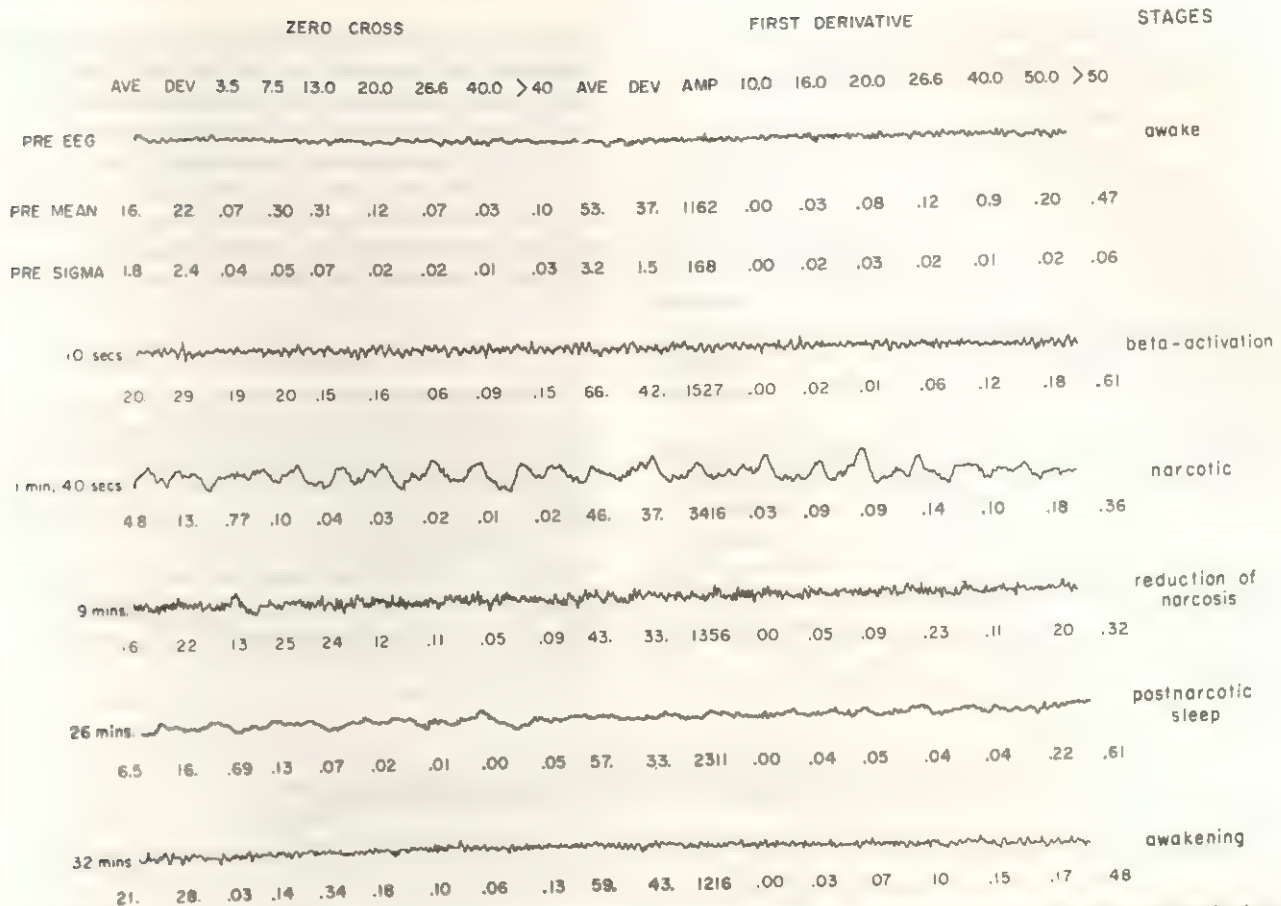


FIGURE 1. Digital computer analysis of electroencephalogram. Output of base line, first derivative and amplitude analysis using period analysis program. Samples of EEG and measures during narcosis (intravenous Thiopental, 4 mg per kilogram per 2 min.). Subject was a 38 year old schizophrenic. Zero cross bands are average (AVE), variability of average (DEV), and seven frequency bands. First derivative bands are average (AVE), variability (DEV), amplitude (AMP), and seven frequency bands. AVE and DEV in cycles per second; bands in percentage of time of sample; amplitude in units relative to calibration. Sampling rate, 320 samples per second; 30-second epochs. (Courtesy of M. Fink.)

tivity and in testing neural analogs of such epistemological processes as perception, learning, calculation, and cognition. Such models of information processing are subsumed by the term "perceptrons."

Automatic personality assessment. The need for a rapid and concise personality description in clinical medicine and interest in psychological tests prompted various studies of digital computer uses. The Minnesota Multiphasic Personality Inventory was selected for study, for it is a simple, "yes-no" response inventory with extensive trial as a personality measure. Its simplicity and the availability of a set of defined rules for interpretation based on configural analysis of the responses led to the preparation of a mark-sense self-scoring form for use by patients. The programs developed included those for machine key punching and the analysis of responses, and for the production of a clinical report both as numerical scores for each scale and in a simplified narrative personality description. Similar systems for the Clyde Mood Scale and Glueck Q-Sort have also been developed.

In the analysis of other psychological tests, the problems are more formidable, since operational rules

for interpretation are not available. For example, in the Rorschach test, programs for the narrative interpretation of previously scored data have been described but are of limited application.

The "on-line" analysis of reaction time performance tasks is yet another computer application to experimental psychology. An advantage of on-line analysis is the modification in the rate or type of stimulus presented as the responses of the subject are analyzed in real time. Concurrent analysis of the EEG provides a measure of a neurophysiological response varying with the changes in performance.

Psycholinguistics. Among the numerous problems of interest to language specialists for which computer methods have been programmed are those of automatic translation, the development of dictionaries and concordances, automatic indexing and abstracting, and the rules of natural languages. These studies have engendered special programming languages that allow the manipulation of words as symbols according to rules that parallel the manipulations of alphanumeric symbols.

For the past 2 decades, the use of magnetic tape re-

orders of high fidelity has permitted the recording of psychiatric interviews for study. Some students have developed specialized instruments to study the formal aspects of dyadic interaction as the rate of speech, time of utterances, and pause length; others have depended on highly accurate transcriptions. These have been studied both for such formal aspects as variations in person and tense and for the more common interpretation of content. An interesting application has been the measurement of the dyadic type-token ratio (TTR)—an index of variability and repetitiveness in speech. The TTR has been shown to vary with mood and in response to the administration of psychoactive drugs.

Content analyses, although tedious and still highly subjective, provide a useful test of changes in therapist-patient interaction in psychotherapy. The need for validation and demonstration studies in psychotherapy is great, and much effort is expended in studies of the application of statistical methods to linguistic data.

A special application has been in the simulation of

interviews. In an elementary form, the computer asks questions, and the responses are entered into the console via a typewriter by the subject. As programs become more sophisticated, the computer's responses simulate the responses of the therapist. In addition to some practical demonstrations and their use as teaching devices, such programs are receiving intensive study to develop rules for various types of verbal interchange, including psychotherapy.

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Experimental Psychopathology

5.3 EXPERIMENTAL NEUROSIS

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(Experimental psychopathology attempts to investigate abnormal behavior systematically under conditions that are more or less known or controlled. Controlling conditions may be introduced in many ways, such as manipulating the physical or psychological aspects of the environment, giving drugs, or ablating tissues by surgery. We shall here deal mainly with states produced by psychological forms of experimental manipulation.)

(Psychiatry's most urgent need is for new information about the chronic functional disorders—neuroses, personality disorders, psychoses, and psychophysiological reactions. With the possible exception of psychophysiological reactions, the symptomatic manifestations of these disorders in man are of such complexity that they cannot be reproduced in convincing detail in any other species. In studies with animal subjects, the investigator is limited to detection of behavioral changes that *appear* similar to those occurring in human disorders. His goal is to derive laws governing the animal behavior that are applicable to man in an explanatory or predictive manner. The ob-

vious advantage of animal experiments is that they can use procedures not permissible in humans. Even though experimentation in man promises a more convincing identification of the experimental and natural abnormal conditions, it is ethically restricted to induction of acute and reversible psychopathological states. Since the duration of mental disorders may be of crucial importance in determining their manifestations, the relevance of most human experiments is also open to question. Workers in the field of experimental psychopathology must accept these limitations, and those who study their findings must be aware of them.

Experimental Neuroses in Animals

Abnormal animal behavior. Criteria of abnormality may be defined in many ways, and no attempt will be made here to distinguish between neurosis and psychosis in the discussion of abnormal behavioral states in animals. Although some manifestations, waxy flexibility, for example, may appear to fall more clearly into one category than the other, there are no certain criteria for making the distinction.

From a psychiatric point of view, Hebb's approach seems highly relevant. Hebb begins by defining human neurosis in behavioral terms, without use of verbal report of the subjective state, so that the definition can be used at the animal level. He distinguishes between *neurotic behavior* and *neurosis*: the former

constitutes the signs of neurosis, the means by which it is recognized; the latter is the concept of a central state. Proceeding in this way, Hebb's definition is: "Neurosis is in practice an undesirable emotional condition which is generalized and persistent; it occurs in a minority of the population and has no origin in a gross neural lesion." (The six essential elements in this definition are as follows: (1) undesirable, evaluationally abnormal, (2) emotional, involving emotion activity, (3) generalized, implies manifestation in a number of ways, (4) persistent, chronic to some degree, (5) occurring in a minority of the population, statistically abnormal, and (6) having no origin in a gross neural lesion.)

Hebb lists three additional criteria that seem invalid to him but that have had some influence in determining what is called neurosis: (1) neurosis has no physiological basis, (2) it produces a marked change of behavior from an earlier base line, and (3) it follows some theoretically traumatic experience, such as conflict or frustration. He regards these criteria as "not essentially true." For example, to reject physiological causes of neurosis is to deny the possibility of anything but a psychological cause. It is conceivable that neurosis may be of life-long duration, thus rendering the second criterion unessential. The third is considered unessential from the fact that neurotic behavior can result from nutritional or metabolic processes.

In his paper Hebb described spontaneously occurring neuroses in two chimpanzees that appeared to meet his criteria.

Pavlov and his school. The term "experimental neurosis" was introduced by the great Russian physiologist, Pavlov, to describe abnormal behavior of a more or less chronic nature that is produced experimentally.

The best known of Pavlov's experimental neuroses occurred in a dog that had been conditioned to differentiate between a circle associated with feeding (positive stimulus for salivation) and an ellipse not associated with feeding (negative or inhibitory stimulus). The original ratio of the semi-axes of the ellipse was 2:1. Further differentiation was attempted by approximating the shape of the ellipse to that of the circle. Differentiation progressed as desired until an ellipse with 9:8 semi-axes was used. After 3 weeks of training with this ratio, the discrimination failed to improve and even became considerably worse, finally disappearing altogether.

Simultaneously, the general behavior of the animal changed abruptly. The previously quiet dog began to squeal in its stand, he kept wriggling about, with his teeth he tore off the apparatus attached to his skin, and he bit through tubes connecting his room with the observer's room. This behavior had never previously occurred. Also new was the violent barking of the dog on being taken into the experimental room. Pavlov interpreted the behavioral changes as symptoms of acute neurosis.

Pavlov formulated three possible causes for experimental neurosis. (1) Excessive stimulation of inhibitory processes. This occurred in the experiment just described. (2) Overstrain of the excitatory process by extraordinarily strong or unusual stimuli. This is illustrated by the natural experiment occasioned by the Leningrad flood of 1924. All the animals had to swim for their lives through a storm. All their conditioned reflexes disappeared, and one of them developed a chronic neurotic condition. (3) Conflict between cortical inhibitory and excitatory processes. This mechanism is described in a dog that was able to discriminate between a positive tactile stimulus at the rate of 24 a minute and a negative one at the rate of 12 a minute. When one type of stimulus followed the other without a pause, the animal developed signs of a neurosis that lasted several weeks.

Pavlov's recognition of the potential significance of these observations for understanding abnormal human behavior was to have a profound influence on the focus of investigation in his own laboratory and in conditioning laboratories elsewhere. However, Broadhurst, who recently attempted to evaluate the Russian research in the light of Hebb's criteria, was forced to conclude that the Russian findings provided insufficient information about the responses of the animal outside the experimental chamber. Because of this, the results on experimental neurosis originating in Pavlov's laboratory do not convincingly meet Hebb's criterion of generalization of the abnormal behavior. It is also not clear that the behavior was statistically abnormal.

Gantt and his school. The Pavlovian laboratory at The Johns Hopkins Medical School, directed by W. Horsley Gantt, has been a principal American contributor to the study of experimental neurosis. An outstanding feature of the work is the provision of detailed case histories.

Case history of Nick. One mongrel dog, Nick, was studied for 12 years. In 1932 he was about 3 years old, active and playful. He appeared normal then but was more restless than most dogs during adaptation to feeding in the experimental room and slow in showing conditioned salivary response. When auditory differentiation was introduced (learning to respond to one tone and not to another), he refused food and showed a defense reaction. A rest restored food acceptance, but, with an increase in difficulty of the discrimination, he again refused food and continued to do so in the laboratory for most of his life.

In the following year, all conditioned responses failed, and Nick ate more readily the farther he was away from the experimental room. In the room he showed a stereotyped restlessness whenever he was released from the apparatus. He rushed about, jumped up on the table and off it again, fumbled the uneaten food in his mouth and dropped it.

As time went on, fresh abnormalities were observed. Disturbed respiration took the form of loud, forced

breathing whenever he was excited, especially when approaching the experimental room or people connected with the experiment. Gantt repeatedly noted that Nick was friendlier toward strangers than toward anyone associated with the experiment.

From the end of 1936, Nick began urinating when brought to the experimental room, with a frequency as high as 25 times in 30 minutes. This could not be inhibited by punishment. Concurrently, abnormal sexual excitation, as judged by penile erection, was observed during conditioning stimulation. These persistent sexual erections contrasted with the occasional short erections normally seen in young male dogs. It is noteworthy that both the urinary and sexual abnormalities occurred after a bitch in estrus had been used in the experimental situation in order to test the effect of normal sexual excitation on Nick's other abnormal signs.

Gantt observed wide generalization outside the experimental situation. He kept Nick on his farm in the country and found that the particular food given as reinforcement in the experimental situation was consistently refused there and that the signs of sexual erection, frequent urination, disturbed respiration, and a marked increase in heart rate were sometimes observed when people associated with the experiment, or even members of their families, approached the animal.

In relation to Hebb's criteria, Nick's behavior was frequently undesirable, for example, his refusal of food when hungry. It was markedly emotional, judging by overt signs. An autopsy report showed that he had no gross neural lesions. The persistence of the behavior pattern was strikingly well established, as was the generalization of the behavior to situations other than the experimental. The question of statistical abnormality is difficult to assess.

Schizokinesis and autokinesis. Gantt has introduced two fundamental theoretical concepts: schizokinesis and autokinesis.

Schizokinesis implies a cleavage in response between the emotional and visceral systems and the skeletal musculature. The concept originated in observations suggesting that cardiac conditioned responses are formed more quickly than motor responses, are of comparatively greater intensity, and are more resistant to extinction. Gantt considers schizokinesis to be a built-in unacquired mechanism, the function of the normal organism.

Autokinesis refers to the internal development of responses on the basis of old excitations. This is seen in the spontaneous restoration of extinguished conditioned responses and the appearance of signs of experimental neurosis long after the causal conflict has been removed. For example, new symptoms arose in Nick months or years after he was removed from the stressful laboratory environment. Moreover, although occurring much later than the original stress, the new symptoms were related to that stress, as could be seen

by their ready evocation by the original environment or its elements. Gantt also distinguishes between negative and positive autokinesis. The development of new symptoms in a neurotic animal is negative, whereas improvement occurring some time after a specific therapeutic procedure such as a drug has been administered may be considered positive.

These concepts are primarily descriptive and rather broad; however, they draw attention to phenomena that may be of considerable importance to psychopathology.

Liddell and the Cornell group. The Cornell University group, led by H. S. Liddell, succeeded in producing chronic abnormal states in several animal species, using conditioned reflex techniques. Single animals were observed for as long as 12 years.

Anderson and Parmenter described three types of procedure: (1) difficult differentiations, (2) experimental distinctions, and (3) rigid time schedules. The first procedure is similar to that used by Pavlov in the circle-ellipse differentiation. The second consists of following the positive (food) stimulus with an exceedingly long series of negative (no food) stimuli. The third involves the use of a monotonous, lengthy routine of alternating positive and negative stimuli.

Manifestations of experimental neurosis. The many manifestations of experimental neurosis included hyperirritability, tenseness, and restlessness during the experiment; inhibitory motor reactions; change in diurnal activity cycle; respiratory and cardiac changes; recorded in the barn as well as in the laboratory; changes in micturition and defecation patterns in the laboratory; social and emotional changes.

(Some of these are of particular interest. The inhibitory motor reaction in some animals involved rigidity of limbs; they could be placed in various abnormal positions, reminiscent of catatonia with waxy flexibility. Motor activity was measured by a pedometer; the daily total in neurotic animals was not significantly different from normal animals, but neurotic animals showed about as much activity during the night as during the day, whereas normal animals showed little or no activity during the night. This seems parallel to insomnia in man.)

(With respect to social behavior, neurotic dogs and sheep exhibited shyness, tending to remain alone and lacking normal gregariousness. They went hungry when it was necessary for them to get their food from a common source. When cornered, the shy, neurotic animals became aggressive and would bite, struggle, or kick.) Neurotic sheep and goats also appeared handicapped in their ability to cope with real danger. On several occasions, dogs invaded the pasture, and each time their victim was invariably one of the neurotic animals.

Causes of abnormal behavior. Liddell did not agree with Pavlov's hypothesis that the cause of the abnormal behavior is a clash between intense cortical excitations and inhibitions. He assigned considerable

importance to the factor of restraint, introduced by negative conditioned stimuli, and showed that animals allowed to run at will in a maze while attempting to solve extremely difficult problems never developed disturbances. He thought the experimental neurosis was caused by the equivalent of a human conflict situation. The animal must decide whether or not to respond, and if the decision is too difficult, there is a drastic change in nervous system functioning, resulting in signs of neurosis. Other workers also found that restraint facilitated neurotic disturbances in the pig, cat, and rat.

Liddell also emphasized the importance of vigilance in experimental neurosis. The trained sheep or goat had initially struggled to escape from its restraining harness but had learned to restrict its movements to a precise limited response of the foreleg to electric shock. Its autonomic functioning, however, suggested a strong emotional undertow. On one occasion, a trained sheep was placed in the harness with electrodes attached to the foreleg and kept there for the customary hour without being given the usual signals or shocks. By the end of the hour, its breathing had become labored, and the respiratory rate had risen from 41 to 135 a minute.

Observations such as these forced Liddell to conclude that the conditioned reflex described by Pavlov was not an example of ordinary learning. He saw it as an emotionally charged episode of behavior bracketed between two primitive stereotyped reactions, the vigilance reaction and the unconditioned reaction to the reinforcement of the conditioned stimulus by food, electric shock, etc. He equated the conditioned reflex with the emergency reaction in response to danger, interpreting the waiting for the stimulus as a persisting apprehensive watchfulness in the animal.

Relation to criteria of abnormality. How well do the results obtained by Liddell's group meet Hebb's criteria of abnormality? It seems clear that many examples of behavior were undesirable, emotional, and persistent, and there is no evidence that they may be attributed to a gross neural lesion. However, the criterion of generalization from the laboratory to other situations is not so easily met. The fact that change in pulse and respiratory rates could be recorded from the barn can be interpreted as a conditioned response to the apparatus used for measurement. The apparently decreased capacity to cope with actual danger seems more convincing, but the finding is derived from incidental and uncontrolled observation. The issue of statistical abnormality is also difficult to decide; apparently about 25 per cent of the animals developed experimental neuroses. The Cornell animal data thus approach, but do not fully satisfy Hebb's criteria.

Masserman's experiments. Masserman's biodynamic approach is associated with a long series of experiments in which experimental behavior disturbances were produced in conditioning situations. The basic experiment requires learning to open a food box

in response to a sensory signal. Various complexities were introduced into the experiments; for example, to obtain food, animals learned to press a series of switches a definite number of times in a required order or to differentiate between printed signs. The usual technique of inducing neurotic behavior in cats, dogs, or monkeys was to present a traumatically deterrent stimulus during the execution of the well learned response. Stimuli were electric shock, a startling air blast across the food box, or, even more effective in the case of monkeys, the sudden appearance of the head of a toy snake when the food reward was about to be taken. If the traumatic stimulus was repeated several times (two to seven in cats or dogs, generally more in monkeys), behavioral aberrations appeared.

Some of the symptoms of disturbance may be described under the interpretive headings used by Masserman.

Pervasive anxiety was indicated by low threshold of startle, persistent hyperirritability, muscular tension, body postures, mydriasis, irregularly accelerated pulse rate, raised blood pressure, and increased coagulability of the blood.

Psychosomatic symptomatology included, in some animals, recurrent asthmatic breathing, genitourinary dysfunction, anorexia, flatulence, and diarrhea.

Defensive reactions included inhibition of feeding, even outside the experimental apparatus, to the point of self-starvation and serious cachexia.

Phobic aversions were observed, first to stimuli directly associated with the traumatic experiences, then spreading to other situations.

Sexual deviations included diminished heterosexual interests and accentuated homosexual activity.

Sensorial disturbances were considered present on the basis of behavior ranging from extreme sensitivity to minor changes in the surroundings to recurrent episodes of apparent disorientation and confusion. Hallucinations were thought to be present in monkeys who, although refusing food readily available in their food-box, could be observed picking up nonexistent pellets and appearing to chew and swallow these.

Masserman was particularly interested in procedures for ameliorating the manifestations of the disturbances induced in his animals. He found a number effective to some degree. They ranged from petting by the experimenter to neurosurgical operations.

From the point of view of Hebb's criteria, the behavioral disturbances produced by Masserman do not easily qualify as neuroses. The behavior was not statistically abnormal, and neither its persistence nor its generalization was satisfactorily demonstrated. With respect to the animal's adjustment, it is also not clear that the behavior was abnormal.

Conditioned emotional response versus specific state. It has been suggested that experiments of the Masserman type, involving inhibition of feeding responses by the introduction of fear-arousing stimuli, should be regarded as eliciting conditioned emotional

responses. Such responses carry no implication of a specific abnormal state. Masserman has argued against this interpretation, contending that the generalization of anxiety reactions to many other situations only remotely or symbolically associated with the original one is characteristic of *human* neurosis and not of a simple conditioned response.

The crucial issue appears to be whether the experimental neurosis can be understood in terms of general laws of learning or whether it represents a specific state requiring special conditions, such as conflict and restraint, for its production and implying some form of constitutional susceptibility to breakdown. The view that experimental neurosis is learned behavior is favored by Wolpe and is supported by the results of his experiments. These were carried out on cats in a situation like that used by Masserman but were distinguished by use of a control group, which received no initial training to feed on hearing a signal. Nevertheless, electric shock produced behavioral disturbances in all animals. These disturbances could be ameliorated by placing the hungry animal in a room enough unlike the experimental room to allow feeding and then gradually making the feeding environment more like the experimental room. Wolpe's animal studies led him to work out related procedures for treatment of human neuroses.

One striking difference between the results of Pavlov, Gantt, and Liddell on one hand and Masserman and Wolpe on the other is that all animals were made neurotic by the latter workers and only some by the former. If one scrutinizes the experimental situations for a reason, the clearly traumatic stimuli used in the Masserman procedure present an obvious difference. Pavlov and Liddell had to postulate that the apparently innocuous demands of their experimental situation for perceptual discrimination or delay of response generated conflict and strained the capacity of the nervous system. Masserman's and Wolpe's animals fed normally until exposed to stimuli universally disturbing to that species. It would appear that the need for inhibition or restraint brings out much greater individual differences in susceptibility of animals to experimental neurosis than does exposure to traumatic stimuli. One may speculate about possible parallel differences between the spontaneous neuroses of human civilian life and those that occur under war combat conditions.

Personality types. If susceptibility to experimental neurosis could be shown to depend upon constitutional factors, this would reinforce the hypothesis that they reflect a specific central state. In his writings, Pavlov paid considerable attention to possible constitutional differences between dogs. He applied the humoral classification of Hippocrates to his experimental animals, describing them as sanguine, phlegmatic, choleric, and melancholic. He noted the appearance of neurotic behavior only in dogs of the melancholic

type—timid and docile with predominance of inhibitory process—or of the choleric type—aggressive and excitable with excitatory predominance. Initially well balanced animals (the phlegmatic or sanguine types) did not develop chronic disturbances in behavior. The specific state issue might be resolved if other workers could confirm these observations with more exact methods of characterizing animal personality.

Pavlov did discover a pharmacological correlate of his neurotic types. He found that temporary administration of bromides resulted in apparently permanent improvement of dogs with neuroses of the excitatory type. Treatment of the inhibitory type of neuroses was unsuccessful until he used a very small dose, only a fraction of that beneficial to the excitatory type. These observations indicate that the manifestations of a disorder are related to drug reactivity, and they favor Pavlov's theory of types, since it is easy to consider drug reactivity as an aspect of constitutional makeup. Of further interest is the fact that there are some consistent parallels between Pavlov's findings on reactivity to bromide in neurotic dogs and reactivity to amobarbital in psychiatric patients, as has been shown by Shagass.

Psychosomatic Disorders in Animals

Throughout the experimental neuroses tests, various physiological disturbances were frequent accompaniments of the behavioral manifestations. Often they were the most convincing signs of disturbance, as in the case of Liddell's sheep, whose respiratory rate rose to 135 a minute. It seems clear the psychophysiological reactions form an integral part of the picture of experimental neurosis. One could also argue that the experimental neurosis is a psychophysiological reaction, since the experimental methods are essentially similar.

Gastrointestinal disorders. There has been considerable work on experimental induction of functional and structural changes in the stomach. Mahl carried out a series of studies on the effects of chronic fear in dogs and monkeys and added some observations in man.

Dogs were stimulated under control conditions day and night by a 20-second buzzer that occurred unpredictably at intervals of 5, 10, or 15 minutes. In the chronic fear condition, the buzzer stimulation continued, and some buzzers were accompanied by a brief but painful electric shock, delivered to the animals through the grid floor of the cages. The animals developed conditioned fear to the buzzer and the cage; this was manifested by motor withdrawal activity, paralysis, trembling, widespread autonomic changes, and intense vocalization. Measurements of free hydrochloric acid (HCl) and total acidity showed significant increases in both. The dogs were then allowed a recovery period, being removed to different cages in a rest room, with no buzzer or shock stimuli. Later

they were returned to the experimental cages and were stimulated for 5 hours with only the buzzer. During this conditioned fear phase, there was an increase in gastric acidity. Results were similar in monkeys.

Mahl concluded that sustained fear is accompanied by increased HCl secretion in dogs, monkeys, and humans and that conditioned fear stimuli evoked increased HCl secretion in the absence of pain stimulation. By contrast, HCl secretion is inhibited during episodic fear stimulation. Mahl found no evidence of stomach lesions in his animals.

Other investigators have been able to produce lesions and to study the relevant conditions. Weisz divided 90 rats into six split litter groups of equal size and placed each of these in a different experimental situation. Two situations involved an approach-avoidance type of conflict; two were fear-producing, with food and water deprivation present in one but not in the other; two were control situations, involving only food and water deprivation or food and water deprivation plus the facility to see and smell food and water. Significantly more animals in the two conflict situations and in one fear-producing situation developed ulcers in the rumen of the stomach than the comparable animals in control situations.

The data suggested that severe food and water deprivation was a necessary prerequisite for the occurrence of the stomach lesions, although not sufficient in itself. Thus, this experiment showed that both conflict and chronic fear result in gastric lesions. Prolonged immobilization will also produce gastric erosions in the rat, as shown in the experiments of Ader et al. The postulated chain of events is that these various stresses cause prolonged gastric hypersecretion, with increased acidity, resulting in an excessive volume of unbuffered gastric juice coming into contact with the upper portion of the stomach, which is not as well protected by mucosa as the remainder.

Porter et al. have demonstrated that experimental psychological stress may produce gastrointestinal lesions in the monkey. In 11 of 19 animals subjected to conditioning programs directed toward a study of emotional behavior, there were lesions, which included gastric hemorrhage and erosion, duodenal ulceration, enteric intussusception, and chronic colitis. The conditioning programs differed for each animal, so comparisons for the group as a whole were not possible.

However, in two pairs of monkeys a controlled study was carried out on avoidance behavior. Two monkeys were strapped to a restraining chair, and one member of each pair was reinforced in such a way that an avoidance response was developed, while the other member of the pair received just as many shocks but no specific reinforcement. The member of each pair learning the avoidance response died first and showed duodenal ulceration at autopsy; the control animals, which were killed at the same time, showed no abnormality. French et al. produced similar lesions by

electric stimulation to the hypothalamic region over a prolonged period of time; this suggests that the avoidance conditioning situation may involve chronic high level excitation of the visceral brain stem.

Asthma. It is possible to induce asthma experimentally in the guinea pig by sensitizing the animal to egg white; asthmatic attacks will then occur in response to a spray of homologous antigen. The reactivity to antigen varies, but Ottenberg et al. found that consistently reactive guinea pigs displayed attacks when placed in the experimental chamber in the absence of the egg white spray. The asthmatic attacks of these animals appeared to be a conditioned response to the chamber.

The respiratory pattern associated with pain-fear response to electric shock resembles that found in experimental allergic asthma but actually involves different mechanisms. Schiavi et al. determined this by measuring several respiratory characteristics and the mechanical properties of the lungs. Under both conditions, inspiration was shortened, and expiration was prolonged. However, there was evidence of bronchiolar obstruction in experimental allergic asthma, whereas no increased airway resistance was found in the animals exposed to electric shock. This study provides an excellent example of the fact that detailed measurement and analysis of physiological functions can demonstrate that different mechanisms can be involved in an apparently similar bodily reaction pattern.

Various other physiological reactions that may be taken as representative of psychosomatic disorders have been studied in animals. The examples cited here are among the most sophisticated and give some idea of the methods and problems.

Studies of Neuroses in Man

A number of experimental strategies have been used to obtain observations relevant to the problems of neurosis and psychophysiological dysfunction in man. One obvious approach is to compare individuals who clearly suffer from the condition under examination with controls not so afflicted. However, although functional difference between sickness and health may be ascertained by this approach, the findings leave uncertain the antecedents of illness. For example, to show that neurotic patients have higher heart rates than healthy controls does not reveal much about the genesis of neurosis, although it may help clarify a symptom mechanism. Another approach is to attempt to reproduce the manifestations of illness in healthy subjects in a temporary and fully reversible fashion. Techniques such as hypnotic induction of conflict and emotion and the application of controlled stressful stimuli have been used for this purpose. Conditioning techniques have also been applied. In addition, a number of investigators have availed themselves of naturally occurring stress or conflict situations, such as the time preceding college final examinations, to

make observations of temporary disturbances in ordinarily healthy subjects.

Hypnotically induced conflicts and emotions. Prior to considering the use of hypnosis in various experimental procedures, attention should be drawn to the fact that the status of the hypnotic trance as a special state is currently under active investigation and remains uncertain. The major difficulty arises from the fact that virtually all objectively observable changes that may be recorded during the trance state may also be elicited by verbal instructions or suggestions in un hypnotized subjects. However, the controversial and uncertain status of hypnosis need not prevent us from accepting the results of experiments using hypnotic methods if these methods are regarded merely as effective ways of instructing the subject.

Luria method. The Russian psychologist Luria employed hypnotic induction, together with a special method of recording motor effects, for the study of human conflicts. In a typical experiment, a story was told to the hypnotized subject; according to the story, he had committed a reproachable act, one that was contrary to his usual personality trend. A number of critical words were taken from this story and placed in a list of control words not specifically related to the story. The list was then presented as an association experiment. With each verbal response, the subject was required to press on a tambour with his preferred hand. Control sessions were carried out before and after the hypnotic experiment in which the conflict was induced and later removed. In addition to the voluntary pressure curves, verbal reaction time to the words and, in some cases, involuntary movements from the nonpreferred hand and respiration were recorded. The signs of conflict consisted of irregular hand pressures, lengthened reaction times, and, when recorded, irregular respiration.

Luria derived several laws from his numerous experiments. He used concepts reminiscent of Pavlov. For example, in his "law of the decreased action of the functional barrier," the functional barrier (a cortical property involving regulation of motor activities by inhibition) was weakened by excessive emotional excitation.

Huston et al. repeated one of Luria's experiments. They used hypnosis to induce a conflict in 12 normal subjects. The story used for this purpose in one subject follows. The young man met an attractive girl who was wearing a new, brown silk dress that was very important to her. He accidentally burned a cigarette hole in her dress and allowed her to believe that she had done it herself. Words such as silk, dress, brown, cigarette, burn, and hole were selected as critical and placed in a long list of noncritical words. Apart from test responses, there appeared to be good evidence that strong emotional conflict was produced by the procedure. The conflict was not removed in this subject for 24 hours after the hypnotic session. That night he slept poorly, awakened with a headache that

persisted until the removal of the conflicts in the afternoon, had poor appetite, was resentful and antagonistic toward the hypnotist, and was somewhat uncooperative. He was unable to give any reason for these manifestations. Throughout the day he gave away his cigarettes and apparently could not enjoy smoking. He rationalized this behavior by saying that he was giving up the habit.

In the group of 12 subjects, 9 appeared to accept the story told to them as something they had done, and it produced a profound reaction in them. In 6 of these 9 subjects, some motor aspect of the Luria technique revealed the presence of the conflict in either the hypnotic or waking states. In the hypnotic state, they tended to give verbal responses definitely related to conflict, with few nonverbal disturbances; the reverse was found in the waking state, in which there was a relative increase of nonverbal disturbances over the verbal. This suggests that if the excitation created by the conflict is not discharged verbally, there is a spread to the voluntary and involuntary motor levels.

Wittkower's experiments. The wide range of bodily functions that may be altered when hypnosis is used to produce emotional reactions is well illustrated in the monumental report by Wittkower. He was able to produce x-ray evidence of fluctuations in the size of the heart, with both enlargement and diminution of heart shadow occurring in different subjects. Salivary secretions were altered both in quantity and in chemical constitution. Gastric motility and acidity were either increased or decreased; the nature of the gastric reaction was characteristic for the individual, even with different emotions, but differed from one subject to another. Wittkower demonstrated changes in the amount of bile and the chemical constitution of bile, alterations of leukocyte counts, and changes in the serum calcium, potassium, and chloride content. He also observed changes in the urine, in the blood iodine content, and in the galvanic skin response (GSR). Wittkower's main purpose was to demonstrate the profound bodily effects of psychological states. He drew attention to the need for integrating observations of multiple reaction systems if one is to understand the total emotional reaction. Although he considered his findings to be in accord with Cannon's emergency theory, he felt that it was necessary to go beyond it and to pay attention to constitutional and experimental factors that could influence the direction and quality of the organ reaction.

The basic technique used by Wittkower has been employed in a large number of experiments with various types of physiological recording. A recent example is a study of respiratory responses by Dudley et al., which showed that increased ventilation and oxygen consumption followed meaningful hypnotic suggestions of situations eliciting anxiety, anger, exercise, and head pain. Anger, anxiety, and exercise, all of which involve an orientation toward action, were contrasted with depression, the suggestion of which resulted in no

respiratory changes. Depression does not involve an action orientation. These results with respiration seem to parallel those obtained by Kehoe et al. in relation to secretion of gastric acid; the highest gastric secretory rate was associated with suggested anger and the lowest with helplessness-hopelessness. There is also some similarity to the findings with plasma hydrocortisone level, which Persky has shown to be increased by hypnotically induced anxiety.

Specificity of attitudes in psychosomatic disease.

Hypnotic techniques have also been used to provide evidence bearing on the specificity of attitude hypothesis in psychosomatic disease, which was proposed by Grace and Graham. The hypothesis states that each attitude toward a disturbing situation is associated with its own specific disease or set of physiological changes. In one study, Graham et al. hypnotized normal subjects, who were told to assume attitudes that the original study had found to be associated with hives and Raynaud's disease. With the hives attitude, the person sees himself as being mistreated and receiving injury, without developing even a wish to take any action himself. With the Raynaud's attitude, on the other hand, the person wishes to take some direct hostile action. Warming of the skin is part of the physiology of hives, whereas cooling is characteristic of Raynaud's disease. Skin temperatures, recorded during hypnotically induced attitudes, showed an average tendency for increase with the hives attitude and a tendency for decrease with the Raynaud's attitude. The results were taken to support the specificity of attitude hypothesis. Recent evidence indicates that similar effects can be obtained without hypnosis.

Conditioning. Application of the method of conditioning to studies of children began in 1907. In 1925, Krasnogorski reported observations in children that seemed to be analogous to the experimental neurosis in dogs. In one child, under conditions requiring a difficult discrimination between different rates of a metronome, latent periods of the positive conditioned reflexes first increased in length. At the same time, the child, who had always been easy to deal with and quiet during the experiments, became irritable and refused to go to the laboratory. The ward reported that his behavior had changed, that he had become rude, fought with other children, insisted upon being discharged, and was disobedient. In the laboratory, previously accomplished differentiations were then lost, the negative stimulus was associated with yawning and sleepiness, and the child went to sleep for the first time in a period of 5 months of conditioning study. This child, presumably behaviorally healthy when the experiments began, thus became emotionally disturbed.

One may, of course, criticize interpretation of this reaction as experimental neurosis. It may be normal for a child required to undergo repeated exposure to a difficult laboratory situation to become upset. Furthermore, the generalization to the ward situation could

have been determined mainly by anticipation of further exposure to the unpleasant laboratory situation.

More recent research in the Soviet Union, notably that of Bykov, has provided experimental demonstrations that a large number of bodily functions obey Pavlovian laws of conditioning. These experiments provide a basis for relating visceral dysfunctions to symbolic cues that have acquired meaning on the basis of previous experience. Furthermore, Razran's experiments on semantic conditioning indicate that bodily reactions may be elicited in response to verbal cues that are different in form from the initial stimuli but that have a similar meaning or a strong, previously formed, associational bond.

For example, after establishing conditioned salivation to the word "black," just as much response will be obtained from its antonym, "white," whereas another color name that has low associational relationship, such as "ochre," elicits much less response. Psychotherapeutic exploration is often concerned with working out specific examples of this phenomenon, for example, when the patient reports an attack of dyspnea under particular circumstances that have only an associational relationship to symbols of previous conflict or trauma.

Mention should be made of the recent upsurge of interest in the application of conditioning techniques to comparative study of psychiatric patients and normal subjects. A detailed account of the various differences found between particular kinds of psychiatric patients and normal subjects is beyond our scope, but several books, of which Ban's is an example, have appeared recently.

Experimental stress. The idea that disturbed behavior and bodily reactions occur in response to severely taxing environmental conditions is in accord with general human experience and is widely accepted. Since environmental demands or stimuli that place strain on reserve capacities of the organism are relatively easy to produce in the laboratory, much experimental work has employed this method. Unfortunately, investigators have used the word "stress" to characterize a wide variety of experimental demands, from performing mental arithmetic tasks to exposure to severe temperature conditions or physical injury. Such indiscriminate use tends to deprive the term of its meaning.

Partial starvation. Among the most biologically meaningful procedures for studying stress are those that involve complete or partial frustration of basic organismic needs for food, sleep, or environmental stimulation. The effects of sensory and sleep deprivation are given special consideration in other sections of this textbook.

Partial starvation over a prolonged period of time may result in various psychoneurotic manifestations. The most systematic data come from the Minnesota studies conducted by Keys et al. Thirty-six apparently normal young men, after 3 months of control on

a good diet, were subjected to 6 months of semistarvation, with provision of only half of their required caloric intake. Although tests of intellectual functioning and the Rorschach projective test demonstrated no significant changes, the subjects became depressed, moody, and apathetic, felt that they were not alert mentally, and reported that they had lost ambition. The scores on the Minnesota Multiphasic Personality Inventory were in accord with these reports.

Nine of the subjects were thought to develop specific neurotic behavior and ideas. Four of these showed character disturbances, with inability to maintain their former standards of morals and honesty. One man had sensory and motor disturbances of hysterical character. One man mutilated himself twice. Bizarre behavior in connection with food was almost universal and often took the form of compulsive rituals. The subjects reported irritability and anger, which they were unable to express because of the effort involved. The disturbances were reversible with restoration of an adequate diet.

Brief laboratory stresses. The more commonly employed laboratory stress procedures are probably less biologically significant because of their brief duration. Variants of pain stimulation have been employed in several ways. Pain has proven particularly useful as a standardized stimulus to elicit differential physiological reactions in different types of psychiatric patients and healthy subjects.

In general, it appears that individuals with already established illness or proneness to anxiety tend to react to moderate pain stimulation with greater physiological disturbance in various organ systems than individuals who are free of illness. Similar differentiations may be obtained by nonpainful stresses, such as those requiring the execution of difficult tasks. Furthermore, it has been demonstrated that the physiological system that is particularly responsive to experimental stress is more likely to be one habitually involved in the patient's illness, that is, one that produces symptoms. For example, headaches frequently result from sustained contraction of head and neck muscles, whereas symptoms such as palpitations, dyspnea, and precordial pain involve altered functioning of the cardiorespiratory system. By subdividing psychiatric patients, according to their complaint history, into head and heart complaint groups and subjecting them to a standard pain-stress test, it was possible to show significant differences in the affected response systems. Increased neck muscle contractions were more often elicited in head complaint group, and changes in pulse rate and respiration were more often found in the heart complaint group, even though very few of the subjects reported actual symptoms during the stress procedure. Interesting as they are, findings such as these leave unanswered the important questions concerning the events leading to symptom choice, that is, the reason for localization of dysfunction in particular organ systems.

A laboratory stress technique that has been gaining increasing favor involves the use of motion picture films, selected as being likely to induce particular kinds of emotional reactions. For example, Lazarus et al. showed subjects films of puberty rites in primitive tribes, involving incisions made in the genital area, and recorded their physiologic reactions. The powerful effects of the films were reflected in the recordings. The investigators were able to relate the nature of the reactions to some personality variables and to the kind of psychological mechanisms employed to deal with emotionally disturbing stimuli.

A further technique has been the deliberate manipulation of events in a laboratory situation in order to arouse emotions the investigator wanted to study. For example, Funkenstein et al. deliberately created a situation in which the subject was required to carry out computational problems at a very rapid rate while the experimenter became critical and demanding. The subject's behavioral reaction to this was classified as reflecting either "anger in," "anger out," or anxiety. Significant differences in various cardiovascular measures were found between the "anger in" and "anger out" groups.

Probing interviews. Interviews that deliberately focus on emotionally charged material so that related bodily reactions may be studied represent another variant of experimental stress. This is generally not standard, although it can be made so. After a baseline interval, the topics considered emotionally relevant are introduced, and discussion centers about these. Usually there is a phase of reassurance following the emotional arousal. At times the material may be introduced after the subject has been hypnotized. Behavioral observations and physiologic recordings are made, and the various responses are correlated with the ongoing stimuli. Although this procedure involves numerous methodological difficulties, it has yielded valuable data concerning the participation of physiological response systems in symptom mechanisms.

Current perspective. It will be apparent to the reader that psychiatry still lacks truly satisfactory experimental techniques for study of neurotic and psychosomatic disorders. However, the available methods do permit some insights concerning relevant mechanisms, and their use has been associated in recent years with a rather remarkable development of objective techniques for measuring numerous kinds of responses. Thus, although we are constantly working with data of limited significance, these are becoming more reliable and will provide a firm basis for future synthesis.

Suggested Cross References

Neurotic disorders are described more fully in Area F, which deals with the psychiatric syndromes. In that same area, there are chapters on psychosomatic medicine, where that topic is discussed in greater detail.

For more material on hypnosis, see Spiegel's section (Section 34.4) in Area G, on psychiatric treatment.

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5.4 HALLUCINOGENS

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Hallucinogens can be defined as substances that, administered in pharmacological doses (not toxic overdoses), create gross distortions in perception without significantly obtunding consciousness. These distortions frequently include hallucinations. Such compounds usually exert profound effects on mood, thought, and behavior. Such effects resemble the disturbances seen in naturally occurring psychoses. Thus, some hallucinogens have been termed "psychotomimetic" or "psychogenic" drugs.

The psychological changes effected by these chemicals have sometimes been described as a "loosening of ego structure," "dissolving of ego boundaries," or "disrupting of ego defenses." Such changes may include the experiencing of thoughts, feelings, and perceptions that are usually outside the individual's awareness ("unconscious" or "repressed"). Persons undergoing a psychedelic experience have also been described as being unusually suggestible, emotionally labile, and unusually aware of their own reactions and the reactions of others. Feelings of transcendence of ordinary experience and distortions in time perception have also been reported.

Hallucinogenic agents have been of growing interest to psychiatrists during recent years for several reasons: (1) Some scientists and clinicians have deliberately taken these compounds to produce psychotic-like symptoms as a means of enabling themselves to empathize better with severely ill psychiatric patients. (2) In experimental psychopathology it has been hoped that the study of chemically induced model

psychoses would lead to a better understanding of those found in clinical practice. (3) Certain therapists have defined psychotogens as psychedelic or mind-realizing substances, useful to expand perceptual and experiential horizons in the treatment of a variety of patients with alcoholism, rigid personality patterns, frigidity, etc.

An increasing number of people are taking various psychotogenic substances (marihuana, lysergic acid diethylamide (LSD), psilocybin, dimethyltryptamine), frequently acquired through illegal channels and employed without medical supervision, in order to participate in special group experiences having cultlike characteristics.

Occasionally, persistent psychotic reactions and prolonged delirious reactions have followed the administration of these substances, and psychiatrists have then been called on for help.

Pharmacology

There are four major chemical classes of hallucinogens: the indole alkaloid derivatives, the piperidine derivatives, the phenylethylenamines, and the cannabinoids.

Indole alkaloids

Tryptamine derivatives. The simplest of these substances is tryptamine, which has no hallucinogenic effect. Its *N,N*-disubstituted derivatives, perhaps having easier access to the brain, comprise several active members of the series.

N,N-Dimethyltryptamine is found, together with bufotenine, in the Caribbean cahobe bean, chewed by certain natives to produce religious visions, and in the

seeds of the domestic morning glory plant, used for hallucinatory experiences in the United States.

Various homologues have been synthesized, including *N,N*-diethyl-; *N,N*-dipropyl-; and *N,N*-diallyl tryptamine.

The *hydroxylated N,N*-dimethyltryptamines are also active. Among these are the 4-hydroxy (psilocin) and its phosphorylated derivative (psilocybin, found in the ritually employed hallucinogenic mushroom *Psilocybe mexicana* of southern Mexico); the 5-hydroxy (bufotenine, originally isolated from the skin of toads) and its more active 5-methoxy derivative; and the 6-hydroxy-*N,N*-dimethyltryptamine.

Dimethyltryptamine is psychotogenic at 1 mg. per kilogram levels (administered intramuscularly); effective dosages of the others vary. Psilocybin and psilocin produce effects at 4 to 8 mg. in man. A recent addition to the tryptamine family is α -methyltryptamine, which has been shown to be effective at a dosage level of 20 mg. in man.

Harmine, harmaline, and ibogaine. A drug with a three-ring aromatic system (harmine) and its related dihydro derivative (harmaline) are isolated from shrubs and used by South American Indians to produce hallucinatory states. The indole alkaloids with a larger ring structure include ibogaine, used by African natives to remain motionless for as long as 2 days while stalking, but producing confusion, drunkenness, and hallucinations if taken in large doses.

Lysergic acid diethylamide (LSD). The ergot alkaloids were originally isolated from a grass and rye fungus and were thought to be responsible for the convulsions, mental confusion, and gangrenous changes in the lower limbs associated with the periodic outbreaks of St. Anthony's fire caused by infected rye in the Middle Ages. All ergot alkaloids can be hydrolyzed to lysergic acid, and various derivatives of this compound have been developed. The diethylamide was synthesized by Stoll and Hofmann in 1938; in 1943 it was discovered by Hofmann to be a potent hallucinogen.

LSD is more than 8,000 times more potent on a dosage basis than mescaline. Less than 0.3 gm. has caused death in status epilepticus of a 7,000-pound elephant. This remarkable substance is by far the most powerful psychotogenic agent known, effective at levels as low as 1 μ gm. (0.000001 gm.) per kilogram of body weight in man. Originally used experimentally to produce an artificial psychosis resembling an acute schizophrenic reaction lasting several hours, it has rapidly become widely employed as a psychedelic agent by a variety of practitioners, and the basis for a growing cult of sorts.

The temporary psychosis caused by a dose of 100 to 500 μ gm. of LSD may be accompanied by almost any type of psychopathology. Suicidal attempts have been known to occur if panic or depression is predominant. Many individuals manifest some degree of subjective euphoria and a sense of great mental clarity

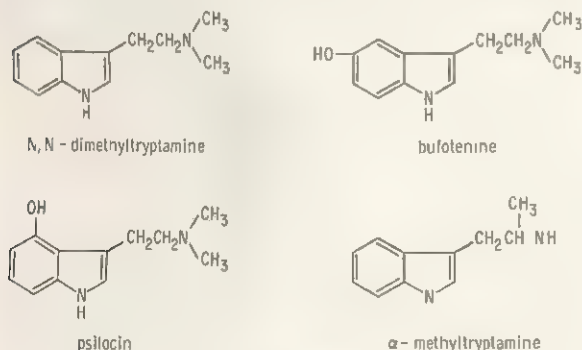


FIGURE 1. Some hallucinogenic indole amines.

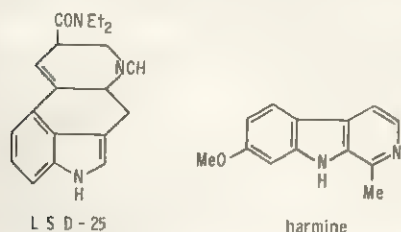


FIGURE 2. More complex hallucinogenic indole alkaloids.

or comprehension following the initial marked sympathomimetic effects of the drug, although objectively they may be confused, uncoordinated, hallucinating, and disoriented. Upon recovery, there is often a feeling of being reborn after a profoundly moving and significant experience, and there is often a sense of deep camaraderie with others who were present and participating in the ceremony.

Overdoses of substances like LSD may produce delirium or (rarely) convulsions. The phenothiazines, especially the high dosage group (promazine, chlorpromazine, chlorprothixine, thioridazine) are quite effective antidotes to the effects of these drugs and are preferable to the barbiturates and minor tranquilizers. Thioridazine may be the medication of choice if convulsions are feared in a given case.

Prolonged psychopathological reactions to LSD (that is, lasting more than 24 to 48 hours) are best viewed as latent psychiatric disorders precipitated or exacerbated by the drug experience. Such an illness should be treated basically the same way as in regular clinical practice.

Piperidine derivatives. Both belladonna- and stramonium-containing anticholinergic compounds, such as atropine, scopolamine, and hyoscyamine, have been known for centuries to produce organic psychoses with hallucinations. Cocaine, belonging to this same family, produces hallucinations and thought disorders if taken in toxic doses. These agents are perhaps not properly termed hallucinogens (as previously defined) because the effects depend on overdosage. However, a number of compounds have been synthesized and tested recently by Abood and others in which the substituted glycolic acid side chains are *meta* instead of *para* to the nitrogen of the piperidine ring. These changes have resulted in a large series of psychotogens, including 1-methyl-3-piperidyleclopentylphenylglycolate (the most powerful) and Di-tran (the best known). These compounds can cause delusional thinking, disorientation, and hallucinations.

Another recently synthesized piperidine derivative that has generated much interest is Sernyl. Originally it was thought to be an analgesic or an agent which prevented sensory impulses from reaching nerve centers. Various research groups subsequently described its effects in lower doses as mimicking the primary (Bleulerian) signs of schizophrenia, including flattened affect, thought disorder, and emotional withdrawal, without the secondary signs, such as delusions and hallucinations. This was considered to be due to a peculiar effect on the sensory synapses.

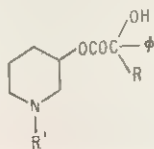


FIGURE 3. A model of the piperidine-derived glycolate series.

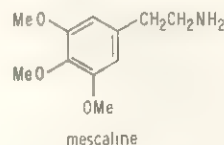


FIGURE 4. The major phenylethylamine hallucinogen.

More recent work has led to other reports of behavioral aberrations induced by Sernyl, including phenomena resembling those resulting from sensory deprivation.

Phenylethylamines

Mescaline. The most significant member of this group is the trimethoxyphenylethylamine, mescaline, named after the Mescalero Apaches, who developed the cult of peyotism. Mescaline is the major active component of the buttons from the peyote cactus *Lophophora williamsii*. Today these peyote buttons are chewed by Indians of a number of tribes in the southwestern United States to induce hallucinatory states in their religious rituals. The standard employment of peyote buttons in ceremonies of the Native American Church makes control of their distribution difficult, since freedom of religion is involved.

Mescaline must be administered in high dosage to achieve a full effect, usually 0.5 to 0.6 gm. orally. The experience is usually ushered in by 1 to 3 hours of flushing, vomiting, cramps, sweating, and other autonomic phenomena, followed by several hours (to days in some cases) of visual hallucinations (often colorful), depersonalization, and distortions of time.

The remarkable sensory and introspective effects of mescaline have long fascinated psychopathologists: both S. Weir Mitchell and Havelock Ellis reported personal experiences with it more than 70 years ago. Aldous Huxley, in his *Doors of Perception*, described mescaline intoxication as providing a voyage to the antipodes of the mind.

Amphetamines. Another phenylethylamine group, the amphetamines, should be mentioned in passing, although the therapeutic and addictive properties of these sympathomimetic amines are properly discussed more extensively elsewhere. Chronic administration of large amounts of amphetamine may result in a psychosis with delusions, hallucinations, and dangerous behavior, accompanied by distortions in reality testing. Sleep deprivation, due to the drug's analeptic effects, may contribute to the syndrome. Such reactions usually remit promptly upon withdrawal of the amphetamine, although treatment (including phenothiazine medication) may be required.

Adrenochrome. A trihydroxyindole called adrenochrome (an oxidation product of adrenaline), has been reported by some workers to be hallucinogenic in intravenous dosages of 0.5 mg. Based on these reports (including the supposed discovery of the presence of increased amounts of this and related metabolites in

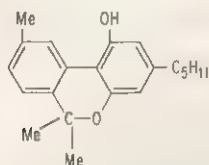


FIGURE 5. Cannabinol.

body fluids of psychiatric patients), an adrenochrome theory of schizophrenia was advanced by Hoffer and Osmond. More recent studies have failed to confirm the proposition that adrenochrome is an autogenous psychotogenic substance. However, other, more elaborate work on the role of biogenic amines in the human brain may yet prove to be of significance in the search for hallucinogenic or psychotogenic substances related to errors of metabolism in man.

Cannabinols. Although they have been well known since ancient times as perceptual distorters, the members of this psychically active drug family are perhaps not properly defined as hallucinogens. Called hashish, bhang, kif, marihuana, and various other names, these hemp-derived alkaloids produce excitation, vivid imagery, euphoria, and occasionally depression and social withdrawal. More major effects, such as disorientation and true hallucinations, usually occur only with overdosage or prolonged use. The smoking of marihuana (the active agent of which is tetrahydrocannabinol) in cigarette form ("sticks" or "joints") has become quite common in the United States among many groups ranging from criminals to professional musicians to college students (who call it "weed," "pot," "tea," or "Mary Jane"). A recent survey at a major university indicated that perhaps 20 per cent of the student body had used marihuana at least once during the year of the study.

Mechanisms of Action

Electrophysiological. Electrophysiological changes associated with the administration of psychotogens may be useful in understanding their mechanisms of action. Whether recorded from the cortex or the depths of the brain, most of the hallucinogens move spontaneous electrical activity of the central nervous system toward an alert or arousal pattern. Himwich, in a large series of studies of psychotogens, found consistent cortical alerting patterns with active congeners, but these were apparently dependent on intact lower brain stem cortical connections. The nonpsychotogenic congeners could produce an alerting effect even with these connections severed, thus suggesting action at the level of midbrain or higher sites. Adey and co-workers have shown persistent hippocampal electrical changes, resembling those seen in orienting, with low dosage of LSD. Marrazzi has employed transsynaptic excitability as a criterion, measuring evoked cortical potentials from a homologous area on the opposite hemisphere.

Many chemicals that are alerters of the electrocorticograms inhibit or reduce the transcallosal evoked potential. This suggests that what appears by some electric criteria to be an increase in excitability may actually be functional inhibition of opposing systems. Winters has described a continuum of reticular-cortical excitability from arousal to excitatory-occlusive blocking and disorganization under the influence of certain excitatory drugs, with staring and hallucinatory-like posturing of experimental animals during the maximum drug effect.

West has formulated a general theory of hallucinations that predicts their occurrence under a variety of circumstances when sensory input is impaired while arousal is increased. The combination of cortical arousal and impaired sensory input leads to the emergent awareness of ongoing information processing by the brain, the so-called preconscious stream, which is then appreciated by the individual in experiences ranging from fragmentary images to well developed scenarios. The combination of LSD's effects as a sensory poison (it alters retinal cell excitability and electrochemical activity at the sensory synapses) and as a cortical arouser may account for its hallucinogenic characteristics.

Biochemical. Biochemical research in the area of mechanisms of action of the hallucinogens has been growing, but consistent correlates have not yet been established. This may, in part, be because one is dealing with a large number of biochemical phenomena, perhaps different for each drug in spite of similarities in their induced behavioral changes. In addition, the theoretical biochemical models being explored are not easily integrated with behavioral models; the clinician is more likely to feel comfortable when considering formulations from neurophysiology. Such words as alerting and arousal, which appear to have meaning in both the physiological and behavioral realms (even though they may refer to both related and nonrelated phenomena), are not as available in current neurochemical theory.

A number of the hallucinogens apparently undergo metabolic conversions to more active compounds in the body. Szara has done a series of studies on enzymes and urinary metabolites; his results suggest that 6-hydroxylation converts the indole alkylamines to psychoactive metabolites. Mescaline apparently is less active than the products of its oxidative deamination, the trimethoxyphenylethanol and aldehyde. Psilocybin is hydrolyzed to psilocin quite rapidly. The significance of the oxy and hydroxy metabolites of LSD has not yet been evaluated.

Effects on neurohormones. The major theme in research on the biochemical mechanisms of the action of hallucinogens centers around their effects on various postulated neurohormones, including 5-hydroxytryptamine (5-HT or serotonin), norepinephrine, dopamine, histamine, acetylcholine, and a brain polypep-

tide called "substance P." A series of studies of the interaction of LSD and serotonin could be used as representative of this approach.

Gaddum first reported a marked antagonism between LSD and serotonin in their effects on peripheral structures; LSD blocked the smooth muscle contraction effect of serotonin. Because of the structural similarities of these and other substances, it was subsequently postulated by Woolley that antimetabolites of serotonin (whether naturally occurring or artificially administered) may prevent the normal functions of serotonin from being accomplished, with psychopathological results. After Brodie demonstrated that serotonin levels were not depleted by LSD and that the reserpine-produced depletion of brain serotonin was not altered by LSD pretreatment, he postulated that LSD blocked serotonin receptor sites. However, a number of more potent blockers of serotonin's action on peripheral structures were subsequently synthesized in the lysergic acid series, but these blocking agents were not hallucinogenic.

More recent studies by Freedman and co-workers showed that LSD produces a consistent increase in the particle-bound fraction of serotonin, but the nonpsychotomimetic lysergic acid congeners are not as effective. These increases are greatest in the brain stem, mesencephalon, hypothalamus, and medial thalamus. That these changes may be significant is suggested by the fact that alterations in the LSD effects on autonomic and behavioral variables are produced by pretreatment with drugs, such as monoamine oxidase inhibitors and reserpine, which respectively increase and decrease brain amines. Similar studies of drug effects on total brain levels, regional distribution, and bound-free partitioning of serotonin and norepinephrine have been carried out with the use of the indole alkylamines and mescaline.

Acetylcholine has been implicated in the action of some hallucinogens. LSD has been shown to be an inhibitor of both pseudocholinesterase and true cholinesterase. The piperidylglycolates are antagonists of the action of acetylcholine on smooth muscle and are structurally similar to acetylcholine. Histamine levels in the brain have been shown to be reduced by LSD, but the bound form appears to be increased.

Effects of methyl groups. A recent chemical theory of psychosis and psychotogens is related to the presence of methyl groups in both mescaline (a trimethylated hydroxyphenylethylamine) and the *N,N*-dimethyltryptamines (methylated at nitrogen). Mescaline can be related to catecholamine metabolites, and the substituted tryptamines have the potential of coming from tryptophan. These characteristics have suggested to Smythies and others that hypermethylation of naturally occurring amines may make them more accessible to the central nervous system, which would result in the conversion of a peripherally active compound to one that, following hypermethylation, would

penetrate the blood-brain barrier, becoming centrally active and perhaps psychotogenic.

The search for these hypermethylated compounds in the urine of psychotics has been unrewarding except for the recent finding by Friedhoff and Van Winkle of dimethoxyphenylethylamine in the urine of schizophrenics in much higher incidence than in normals. They have also shown that this substance is made from dopa by liver from schizophrenic patients. Although at first reported to produce catatonia in cats, dimethoxyphenylethylamine in rather large dosages in man did not prove to be psychotogenic, although it was *not* given in the presence of a monoamine oxidase (MAO) inhibitor, an experiment that should be attempted.

Another interesting series of experiments by Kety and others, related to the hypermethylation hypothesis, indicated that loads of methionine (and other methyl donors) and tryptophan (following pretreatment with an MAO inhibitor) produced exacerbations of symptoms in schizophrenics. Whether this was a complex, toxic psychosis instead of an exacerbation of the underlying disease remains to be fully explored.

Effects of amines. Recent demonstrations of increased amine stores produced by hallucinogens may explain the chemical basis for their neurophysiological excitation of those brain stem and hypothalamic systems associated with arousal, information scanning, regulation of readiness, and ability to integrate sensory information. As neurochemical horizons expand, in all likelihood such broad categories as amines and such parameters as amount will give way to more specific physicochemical findings, with behavioral phenomena being the final common pathway of a number of different underlying mechanisms.

Screening Techniques

The pharmacological screening techniques for potential psychotogenic compounds are of interest. The most sensitive and pertinent technique for evaluation of these substances is the response of the human experimental subject, especially if care is taken to control for placebo and mental set or suggestive effects. Other efforts to get at these phenomena in man include questionnaires, interviews, and observations by trained observers.

Animal screening tests include check lists of behavior patterns, including aggressivity, excitement, and sociability. More standardized criteria for effects on animal behavior include performance tests like rope climbing and pole walking; activity levels in an activity wheel; blocking of learned avoidance responses and depression of positive instrumental responses; indicators of emotionality such as urination and defecations in a strange environment; and changes in body temperature, because some psychotomimetics produce hyperthermia. Psychotogenic substances have also been found to affect such behaviors as web-spinning

patterns in spiders and swimming patterns in Siamese fighting fish.

Use of Hallucinogens

Nontherapeutic use. The growing use of hallucinogens is worthy of special attention from the psychosocial point of view. Near many a college campus one may find small gatherings of young people in relatively characteristic costumes quietly talking of liberal causes, pop art, and avant garde theater, intermixed with periods of incoherence or sustained staring, against a background of modern jazz music, while smoking "pot," or perhaps sharing a mutual semi-mystical experience under the influence of black market LSD. The observer wonders if this isn't a modern, secular, pharmacologically more sophisticated version of peyotism in the Native American Church, where groups of Indians under the influence of mescaline wait together through the night for intermittent religious visions.

Marihuana. The issue of marihuana is discussed in more detail under drug addictions, perhaps improperly so, since it is not truly an addicting substance. Nevitt Sanford has commented, "Only an uneasy Puritanism could support the practice of focusing on the drug addicts (rather than on our five million alcoholics) and treating them as a police problem instead of a medical one, while suppressing harmless drugs such as marihuana and peyote along with the dangerous ones." On the other hand, it cannot be denied that many anti-social activities include "Mary Jane" as a partner and that the great majority of addicts to substances like heroin and many of those who now use LSD started out by using marihuana. Nevertheless there are many who believe that marihuana should be legalized and made available freely on a commercial basis, like alcohol, for those who wish to use it.

LSD. LSD presents a somewhat different problem, one of importance to medicine and social psychiatry. The use of LSD is increasing, in spite of stringent restrictions upon its distribution, since it is easily synthesized from commercially available starting materials and a growing demand exists. The drug seems to have a particular fascination for intellectuals from the middle and upper classes, many of whom have organized a whole way of life around its use.

It would be an oversimplification to say that all those who are involved in LSD cults of one kind or another are necessarily motivated by a pathological desire to withdraw from reality. The experience is too variable and too complex for such an explanation to hold true; contacts with many LSD users convince the observer that their motives range widely. These motives may include an adventuresome desire to seek new experiences, a craving for shared forbidden activity in a group setting to provide a sense of belonging, a manifestation of adolescent and postadolescent rebelliousness, a simple search for sexual opportunities, a genuine attempt to achieve greater self-under-

standing and self-fulfillment, the exercise of a truly mystical bent in persons with a philosophical orientation inclined toward the transcendental, and, as Blum has described it, the search for fulfillment of a private utopian myth.

Therapeutic use. In addition, of course, there is the inevitable variety of clinical psychiatric patients who are searching for treatment or relief through the use of chemicals. Their desire may be related not only to a magical hope for cure, enhanced by the reputation of a substance as mysterious and extraordinary as LSD, but also to a very understandable human wish for a short cut to therapeutic insight, with considerable saving of time, money, and suffering.

The physician may be tempted in some such cases to go along with the subject's request for one or more treatments with LSD. Before yielding to this temptation, however, he would do well to remember that there are other therapeutic maneuvers, such as hypnosis and the Amytal interview, which have been employed to bypass conscious resistance or temporarily modify ego structure and for which there were once high hopes indeed. Although valuable, these methods have in the long run been found to be of limited general application.

In the use of LSD, as in all instances where powerful drugs are employed, it is important for the clinician to have behind him a solid understanding of both pharmacological and psychodynamic factors, sufficient experience to evaluate the effects of the treatment, and a clear cut formulation of clinical indications and contraindications for the use of the medication in question. There is also a question whether repeated large doses of LSD in certain individuals may lead to apparently irreversible personality changes.

In respect to indications and contraindications, the therapeutic use of LSD and other hallucinogens certainly remains unclear. Among the conditions for which LSD therapy has been tried are alcoholism, narcotic addiction, homosexuality, criminal behavior, various neurotic symptoms, schizophrenia, and resistance in psychotherapy. However, many of these experiments are characterized by vagueness of the therapeutic rationale and poorly controlled clinical conditions. This, in addition to the rare but disturbing prolonged psychotic reactions to these drugs, has led to serious questions about their usefulness in treatment and makes their place in the psychopharmaceutical armamentarium dubious to say the least. Yet the possibility remains that certain individuals may benefit from controlled psychotic-like experiences in which primary process information floods the awareness to produce a self-realizing effect. Therefore, careful clinical research on the therapeutic potentialities of LSD should continue.

Suggested Cross References

More detailed discussions of the biochemical and psychopharmacological topics mentioned here may be

found in the sections by the Himwiches in Chapter 2 on basic biological sciences. The various chemical hypotheses regarding the causes of schizophrenia are discussed in detail by Weiner in his section (Section 15.3) in the chapter on schizophrenia.

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5.5 SENSORY DEPRIVATION

PHILIP SOLOMON, M.D.

History

Instances of aberrant mental behavior in explorers, shipwrecked sailors, and prisoners in solitary confinement have been known for centuries. Toward the end of World War II, startling confessions induced by brainwashing in prisoners of war caused a rise of interest in the psychological phenomena brought about by deliberate diminution of sensory input in the human individual.

To test the hypothesis that an important element in brainwashing was prolonged exposure to sensory isolation, Hebb and his coworkers in Montreal brought solitary confinement into the laboratory and demonstrated that volunteer subjects, under conditions of visual, auditory, and tactile deprivation

for periods of up to 7 days, reacted with increased suggestibility. Some of the subjects also showed symptoms that have since become recognized as characteristic of the sensory deprivation state: anxiety, tension, inability to concentrate, vivid sensory imagery—usually visual, sometimes reaching the proportions of hallucinations with delusory quality—and intense subjective emotional accompaniment.

Impressed by these results, Lilly went further and, in an attempt to reduce sensory excitation to as near zero as possible, immersed subjects in a tank of tepid water, having them breathe through a blacked out head mask. Symptoms occurred earlier and more intensely. At Boston City Hospital, the tank-type respirator was used to produce sensory deprivation and monotony, with the advantage that polygraphic recordings from the subject became feasible. Soon, many laboratories around the country and in Canada were setting up similar experiments, and in 1958 a national symposium on the subject was held.

Experimentation

Interest in sensory deprivation became widespread for many reasons. It was intriguing to think that simply doing nothing and being cut off from the outside world could bring about a transient psychotic-like state. Experimental psychoses could be produced heretofore only by drugs, toxic states, or other heroic measures. Theoretical considerations led to various hypotheses of basic psychological interest that could be tested by exposure to sensory deprivation. Among the parameters studied were physiological stress, cognitive functioning, creativity, imagery, personality type, motivation, suggestibility, learning, and state of consciousness. Possible applications could be recognized in such fields as clinical medicine, psychiatry, public health, industrial psychology, and military life.

Unfortunately, from the earliest reports it became evident that there was often considerable disparity in the results from different laboratories. Prolonging sensory deprivation did or did not modify certain cognitive abilities; intensifying deprivation did or did not increase hallucinatory-like experiences; either visual, auditory, or tactile deprivation was predominantly important. Acrimony thus crept into the field.

Thoughtful workers began to study basic differences in methods. Interest focused on choice of subject (the covert selection factor in the volunteer), instructions to the subject (the role of suggestion), novelty (and anxiety) in the experimental set up, breaks in sensory deprivation (feeding, talking, moving), length and type of deprivation (isolation room, water immersion, or iron lung), and other variables. Attempts were made to assess the effects on the subjects of concomitant immobilization and social isolation. Efforts to use the same subject in different laboratories were of little avail. Finally, it was recognized that

quantification would somehow have to be introduced before it would be possible to standardize techniques and understand the apparent discrepancies in the results of different investigators.

It may be concluded that, although much has yet to be learned about the effects of specific individual and experimental variables, sensory deprivation can definitely lead to deleterious effects on the psychological functioning of human subjects. The implications of this fact are relevant to many areas of psychiatry.

Mechanisms of Action

Two kinds of explanations are given for the phenomena of sensory deprivation, one psychological, the other physiological.

Psychological theories. Psychological explanations were anticipated by Freud, who wrote: "It is interesting to speculate what could happen to ego function if the excitations or stimuli from the external world were either drastically diminished or repetitive. Would there be an alteration in the unconscious mental processes and an effect upon the conceptualization of time?" This prophetic stab is an example of Freud's extraordinary and astonishing insight and intuitive faculty. It has, indeed, developed that, under conditions of sensory deprivation, suppression of the secondary process (perceptual contact with reality) brings about emergence of the primary process (regression, confusion, disorientation, fantasy formation, primitive emotional responses, hallucinatory activity, and pseudopathological mental reactions).

Physiological theories. Physiological explanations, though they sound more scientific with their neuro-anatomical terminology, are equally speculative. Presumably the maintenance of optimum conscious awareness and accurate reality testing depends on a necessary state of alertness, which, in turn, depends on a constant stream of *changing* stimuli from the external world, mediated through the reticular activating system. In the absence or impairment of such a stream, as occurs in sensory deprivation and in sensory monotony, alertness falls away, direct contact with the outside world diminishes, and the balance of integrated activity tilts in the direction of increased relative prominence of impulses from the inner body and the central nervous system itself.

Reverberating circuits from the association areas and proprioceptive systems, previously inhibited and kept from greater spread by the exteroceptive and activating systems, find themselves released and able to dominate the brain. The result is an increased tendency to rehearsal of memory, meditative thought, reverie, and body image awareness. Material previously repressed and relatively unconscious is given an impetus to appear in consciousness. The breakthrough, when it occurs, is thus experienced as unwilled or spontaneous, since the material involved has

been stored relatively inaccessible to willful utilization.

Areas of Application

Industrial and military psychiatry. As the phenomena of sensory deprivation become more widely known, it is evoked increasingly to explain puzzling industrial and military accidents. Reference has already been made to its pertinence in brainwashing; it has also been implicated in plane crashes due to grayout and in truck crashes on long hauls over monotonous superhighways. Modern architecture applied to industrial and business plants sometimes has the deleterious effect of producing an environment devoid of sensory stimulation for workers. Assembly line production may bring about similar results, with increased accident rates.

General hospital psychiatry. In the general hospital, the psychiatrist is often consulted in reference to transient psychotic states that appear in conjunction with certain specific treatment procedures in various branches of medicine.

Neurology. Patients with respiratory paralysis treated in a tank-type respirator have long been known to experience peculiar hallucinatory states, which disappear promptly on the patient's removal from the respirator. These states are now recognized to be produced by sensory deprivation.

Medicine. Patients with so-called cardiac psychosis may be suffering from the effects of sensory deprivation. Elderly decompensated patients may be found wandering in the corridors of the hospital at night, when the wards have become quiet. They are usually confused and think they are at home. Too much rest, silence, solitude, and darkness loosen the patients' hold on reality and make them prey to fantasy. Arthritics and other chronic invalids too carefully protected from environmental stimulation may be afflicted similarly.

Ophthalmology. Black patch psychosis, which occurs postoperatively in patients following cataract or other eye operations, is often characterized by a frenzied confusion and disorientation. Bandaging only one eye or allowing a central peephole is usually corrective or preventive.

Orthopedics. Patients in total body casts or immobilized by head tongs or other severely restricting apparatus may develop disturbing psychotic behavior. The provision of frequent visitors, radio, and television is effective in relief.

Surgery. Postoperative isolation in exaggerated form, especially in open heart cases, can bring about the complication of postoperative psychosis. Apparently, sensory deprivation must be avoided assiduously, like wound infection.

Mental hospital psychiatry. The element of sensory deprivation is surely important in delirium tremens, where the best sedative is a sympathetic, attentive nurse. It is probably also a vital factor in the

deterioration of the chronic back ward inmate. When sensory deprivation is neutralized by the many attentions that accompany a new drug study, some previously neglected patients seem to get well.

Developmental psychiatry. In addition to cutaneous stimuli, variegated sensory environment is necessary for the normal development of the infant. Mental retardation may be the result of sensory deprivation as well as of biochemical or physiological factors. Animal studies have shown that early sensory deprivation leads to lowered resistance to stress in later life.

Geriatric psychiatry. Psychological functions in the elderly may deteriorate as the result of pitiful social isolation and sensory deprivation. An increasing number of persons among the elderly live out their lives in single, desolate, barren rooms.

Psychiatric treatment. Results of studies by Azima, Harris, Cohen, and other workers have shown that sensory deprivation can make some psychotic and depressed patients more susceptible to certain treatment methods. The associated regression, for example, favors the anacletic approach.

Conclusion

It has been said that mankind has suffered three major mortifications in its history: Copernicus forced the realization that the earth was not the center of the universe; Darwin stung man with the revelation that he was not created uniquely but evolved from lower animals; and Freud shook man's ultimate conceit, his mind, by showing that much of its vaunted value derived from *unconscious* elements. In a sense the results of sensory deprivation studies may be considered a corollary of this last, in that even man's *conscious* mind can now be seen to be intimately dependent on continuous changing stimuli from the outside world.

Suggested Cross References

For a discussion of the psychotic-like states produced by drugs, see Mandell and West's section (Section 5.4) on hallucinogens in this chapter. Also see Shagass's section on the experimental neurosis (Section 5.3) for more material regarding experimental psychopathology. The various fields in psychiatry and medicine mentioned in this section, such as geriatric psychiatry and psychiatric treatment, are presented in greater detail in Areas J and G, respectively.

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Normality

5.6 CONCEPTS OF NORMALITY IN PSYCHIATRY

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Psychiatrists have always been interested in psychopathology and abnormality. Only recently, however, has there been a concerted effort to define mental health and normality. By and large, previous

textbooks of psychiatry have omitted references to normal or healthy behavior. There has been an implicit understanding that mental health could be defined as the antonym of mental illness. Given such an assumption, the absence of gross psychopathology was often equated with normal behavior. A number of recent trends have cast doubt on the usefulness of this assumption and have made it increasingly important for psychiatrists to become concerned with providing more precise concepts and definitions of mental health and normality.

As psychiatrists have moved out of their consult-

ing rooms and hospital wards into the community, they have come into contact with segments of the population not previously seen. The broader acceptance of preventive psychiatry, including primary prevention, has necessitated a reexamination of preventing *what* in *whom*. Psychiatrists have also become increasingly involved in agency consultation; they are called on to make decisions about who is healthy rather than to decide who is too sick for various positions. Interest in evaluating the outcome of psychiatric therapeutic endeavors has also brought the issue of mental health into focus. Indeed, one of the weaknesses of much work on assessing therapeutic outcome has related to lack of clarity regarding the concepts of normality and mental health.

This section attempts to clarify some of the conceptual issues related to normality and mental health. It cannot provide a definitive answer to the question, "What is mental health or normality?" Such an answer must evolve out of new research and new experience. It does attempt, however, to delineate the current perspectives of normality and to point to new directions that give promise of elucidating the issues still further.

Four Perspectives of Normality

The many theoretical and clinical concepts of normality seem to fall into four functional perspectives of normality. Although each perspective is unique and has its own definition and description, the perspectives do complement each other, so that together they represent the total behavioral and social science approach to normality. The four perspectives are: (1) normality as health, (2) normality as utopia, (3) normality as average, and (4) normality as process.

Normality as health. The first perspective is basically the traditional medical psychiatric approach to health and illness. Most physicians equate normality with health and view health as an almost universal phenomenon. As a result, behavior is assumed to be within normal limits when no manifest psychopathology is present. If all behavior were to be put on a scale, normality would encompass the major portion of the continuum, and abnormality would be the small remainder.

This definition of normality correlates with the traditional model of the doctor who attempts to free his patient from grossly observable signs and symptoms. To this physician, the lack of signs or symptoms indicates health. In other words, health in this context refers to a *reasonable* rather than an *optimal* state of functioning. In its simplest form, this perspective is illustrated by Romano, who states that a healthy person is one who is reasonably free of undue pain, discomfort, and disability.

Normality as utopia. The second perspective conceives of normality as that harmonious and optimal blending of the diverse elements of the mental

apparatus that culminates in optimal functioning. Such a definition emerges clearly when psychiatrists or psychoanalysts talk about the ideal person or when they grapple with a complex problem of discussing their criteria of a successful treatment. This approach can be traced directly back to Freud, who, when discussing normality, stated, "A normal ego is like normality in general, an ideal fiction."

Although this approach is characteristic of a significant segment of psychoanalysts, it is by no means unique to them. It can also be found among psychotherapists in the field of psychiatry and among psychologists of quite different persuasions.

Normality as average. The third perspective is commonly employed in normative studies of behavior and is based on a mathematical principle of the bell-shaped curve. This approach conceives of the middle range as normal and of *both* extremes as deviant. The normative approach based on this statistical principle describes each individual in terms of general assessment and total score. Variability is described only within the context of total groups, not within the context of one individual.

Although this approach is more commonly used in psychology and biology than in psychiatry, psychiatrists have been using pencil and paper tests recently to a much larger extent than in the past. Not only do psychiatrists use the results of I. Q. tests, the Rorschach test, and the Thematic Apperception Test, but they also construct their own tests and questionnaires. Conceptually, the normality as average perspective is similar to Kardiner's basic personality structure for various cultures and subcultures. In developing modal personalities for different societies, one assumes that the typologies of character can be statistically measured.

Normality as process. The fourth perspective stresses that normal behavior is the end result of interacting systems. Based on this definition, temporal changes are essential to a complete definition of normality. In other words, the normality-as-process perspective stresses changes or processes rather than a cross-sectional definition of normality.

Investigators who subscribe to this approach can be found in all the behavioral and social sciences. Most typical of the concepts in this perspective are Grinker's thesis of a unified theory of behavior and Erikson's conceptualization of epigenesis of personality development and the seven developmental stages essential in the attainment of mature adult functioning.

New Directions in Studies of Normality

Although there is growing awareness of the importance of clarifying the various perspectives on normality, there is also an increasing effort to develop empirical research in this area. These new developments are seen in almost all aspects of behavioral science, but the following areas are most prototypic

of the new directions: (1) psychoanalysis, (2) human development, (3) social and community psychiatry, and (4) psychiatric research.

Psychoanalysis. In addition to their growing involvement in linking normality and social process, psychoanalysts have continued their long term interest in elucidating the vicissitudes of normal psychopathology of everyday life. Psychoanalysts have increasingly demonstrated their interest in normal adaptation to the social environment.

Hartmann has given primary leadership to this trend in his conceptualization of autonomous functions of the ego and the ego's conflict-free sphere. The concept of autonomous and conflict-free functions of the ego has intensified clinical exploration of the mechanisms whereby some individuals lead a relatively normal life in the presence of extraordinary external traumatic experiences. In discussing the average expectable environment, Hartmann has provided a framework wherein the molding of character structure for specific contexts becomes more easily understood.

Erikson's work has also served as a bridge linking developmental stages and social process. His concept of modal adaptive tasks at phase-specific stages of life not only has provided a process analysis of normal behavior but allows a cross-sectional analysis throughout life. Thus, it becomes possible to establish specific modes of adaptation.

Human development. In the area of human development, Anna Freud has begun to delineate aspects of normal growth and development in children. Like Erikson, she has been interested in empirical research in helping to clarify how the child copes with a variety of adaptive tasks. The field of child development has been facilitated in its growth recently by a number of reports of longitudinal studies (Kagen). The primary point to be emphasized is that massive data is being collected regarding individual growth and development throughout life. Populations not heretofore studied have been examined with depth and precision.

The study of Offer and Sabshin (1963, 1965) on adolescents is prototypic of this trend. They have studied a group of young adolescents throughout their high school years. The group was selected by means of a questionnaire, and psychiatric interviews have been conducted with a modal sample throughout the high school years. One group of normal teen-agers are being studied over a period of time. Studies like this make it possible to formulate a base line of normal adolescent behavior and psychodynamics.

Based on their experience with a sample of adolescent subjects, the authors have formulated an operational definition of normality that is not an absolute one but is descriptive of one type of middle class adolescent population. The criteria best describing the teen-agers are: (1) almost complete absence of gross

psychopathology, severe physical defects, and severe physical illness; (2) mastery of previous developmental tasks without serious setbacks; (3) ability to experience affects flexibly and to bring their conflicts actively to reasonably successful resolutions; (4) relatively good object relationships with parents, siblings, and peers; and (5) feeling a part of a larger cultural environment and being aware of its norms and values.

These authors based their conclusions on studies of typical or modal groups rather than generalizing from their experience with patients, as had been the predominant pattern in the past.

It is important to note that the developmental approach is also being used for adults. Studies of adaptation to marriage, to parenthood, to work, and to leisure activities have become increasingly prominent. Precise empirical studies are being conducted regarding developmental problems in the period of involution and decline.

The development of geriatrics has moved in a more normative direction. The deficit-focusing orientation of earlier studies in gerontology has been replaced to a significant extent by a normative framework that asks, in effect, "How do older people cope with the adaptational tasks of the 60's, 70's, and beyond?"

Social and community psychiatry. The rapid evolution of social and community psychiatry has given even broader possibilities to studying normative populations. As psychiatrists and their collaborators have moved into the community, they have become involved in providing services for and conducting research with populations not heretofore seen by the mental health professionals. Epidemiological investigations have become increasingly precise and sophisticated. One of the pioneering studies in the epidemiology of illness and health was carried out by Leighton et al. This attempt to ascertain the degree of sickness and health in a large population serves as a paradigm for investigations on a variety of target populations. Although a number of models for social and community psychiatry have developed over the past few years, it has become accepted that community psychiatry involves investigation and service to meet the mental health needs of a functional or geographic community.

One important model for such community psychiatry activity is carried out in the Woodlawn Mental Health Center. At this center, studies have been carried out on all of the children entering first grade in the public and the parochial schools within this geographic community. Over a 2-year span, 4,000 first-graders have been studied. The investigators have been interested in the ratings of adaptation and maladaptation by the teachers, the parents, and the mental health researchers for this entire population. They are also interested in carrying out follow-up studies to determine the impact of changes in experi-

mental groups on the ultimate rating of adaptation and maladaptation.

It is impressive to note that this primary preventive approach combines the interest of child development with community psychiatry. This merging of two trends within the mental health field has great promise in helping to clarify definitions of adaptation and normality as well as maladaptation and abnormality.

Psychiatric research. Psychiatric research has shown a resurgence of interest in the question of the use of controls for a variety of psychiatric investigations. Although a number of studies have focused on the emotional problems of volunteers for psychiatric experimentation, there is a general awareness that increased precision is necessary in selecting controls for a specific psychiatric research question. The report by the Group for the Advancement of Psychiatry has documented this specific need.

Although many investigators have become engaged in studies of controls or normal samples in the context of elucidating an experimental question regarding psychopathology, a host of new investigations have been undertaken to study normal populations as such. Grinker's presentation of a sample of homocites is prototypic of this trend. His sample included an overwhelming number of individuals who ordinarily would not have been seen in a psychiatrist's office. They represent well adjusted individuals whose aspirations and capacities fall within a comparable range of each other.

Psychiatrists are studying the ways individuals adapt to a variety of situational stresses. The stresses vary from adjustment to physical illness and physical hardships (such as the astronauts undergo) to adaptation to marriage, parenthood, leisure, and aging. The study by Silber et al. of the normal coping mechanisms mobilized and utilized by adolescents in the transition from high school to college is one example of such a study.

The Future

The trend toward increased study of normative populations can be equally well documented in a variety of other mental health areas. Convergences have already begun to take place, for example, the convergence of community psychiatric studies and child development within an epidemiological framework. Increasing numbers of such convergences will probably take place during the next few decades. It is not yet possible to synthesize these multiple trends either conceptually or pragmatically. Many more studies will be necessary before such an integrating synthesis will be possible. It is likely, however, that such a synthesis will become possible within a decade, at which time the various perspectives and the various empirical studies can be put together into a more meaningful whole (Offer and Sabshin, 1966).

Suggested Cross References

The reader should compare normal human behavior as discussed in this section with the various pathological behavioral manifestations that are described in Area E on psychiatric assessment and in Area F, which deals with the psychiatric disorders.

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5.7 NORMAL PSYCHOSEXUAL FUNCTIONING

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Human sexual behavior is so diverse and its interrelations with almost every facet of life are so complex that a comprehensive understanding of it is extremely difficult. Understanding has been further complicated by age-old prejudices, myths, superstitions, half truths, and erroneous theories that, under the protective mantle of "science," have bedeviled the serious investigator of human sexuality. The intense emotions surrounding sex have further hampered such investigation.

Definitions

Normal sexual behavior. Extreme or deviant behavior is easier to discern and comprehend than is the usual range of behavior. In sexual behavior, as in medicine, the normal has generally been extrapolated from observations of the abnormal. To deal with this problem by a different method, Kinsey et al. undertook a monumental study of representative samples of the population.

In this chapter, however, normal is not being used primarily in a statistical sense, although knowing how most people behave sexually is obviously useful, or in the sense of social norm, meaning behavior acceptable to people with average attitudes toward sex, codified by law, social institutions, or religion. In any case, the criteria for social norm based on morality, law, and social customs are contradictory. For example, coitus among unmarried partners is morally abnormal but normal by social custom, accepted by law in half the states and disapproved in the other half.

Normal is used here in the traditional medical sense of healthy or nonpathological. More specifically, it signifies behavior that is adaptive not only to the requirements of society but also to the individual's needs for pleasure, growth, and self-realization or enhancement of his capacities for personality development. The difficulties in this approach are clear: (1) The needs of the individual may conflict with the needs of society. (2) The individual's pursuit of pleasure may conflict with his search for self-realization. (3) His pursuits of short range and long range pleasure may conflict with each other. (4) The value system used by the physician or therapist in reaching judgments of healthy or adaptive behavior is determined by his own cultural value orientation and his personal experiences. For these reasons, no one has satisfactorily delineated normal or healthy psychosexual function.

Since the delineation of normality in human sexual behavior is beset with difficulties, clinical experience suggests that any delineation should not be drawn too rigidly or too narrowly. From a clinical standpoint, sexual behavior may be considered normal even when it does not involve exclusively monogamous heterosexual intercourse or the use of stimulation techniques confined to the primary sexual organs or when it does not culminate in the achievement of mutually satisfactory orgasm. Sexual behavior that deviates widely from such delimited standards may not usefully be designated pathological unless the behavior is also compulsive, exclusive, destructive, or accompanied by much anxiety and guilt. Thus, sex outside of marriage, masturbation, and various forms of sexual stimulation involving other than the primary sexual organs may still fall within normal limits, depending on the total context.

Psychosexual. Further complications occur in use of the term psychosexual. A person's sexuality is so

closely entwined with his total personality—affecting his concept of himself, his relations with others, and his general patterns of behavior—that it is virtually impossible to speak of sexuality as a separate entity. The term psychosexual is, therefore, used here to imply personality development and functioning as these are affected by one's sexuality. It is clearly not limited to sexual feelings and behavior alone, nor is it synonymous with libido in the broad Freudian sense.

In Freud's view, all pleasurable impulses or activities are *ultimately* sexual and should, therefore, be called sexual from the start. This generalization has led not only to endless misinterpretations of Freudian sexual concepts by the laity but also to confusion of one motivation with another by psychiatrists. For example, some oral activities are directed toward obtaining food, whereas others are directed toward achieving sexual gratification, but merely because both are pleasure-seeking and both use the same organ, they are not, as Freud contended, necessarily sexual. Labeling all pleasure-seeking behavior "sexual" precludes clarification of motivation. On the other hand, a person may use sexual activities for gratification of nonsexual needs, such as dependent, aggressive, or status needs. Although sexual and nonsexual impulses may jointly motivate behavior, the analysis of behavior depends on understanding underlying individual motivations and their interactions.

Sexual Learning in Childhood

Not until Freud described the impact of a child's experience on his character as an adult did the world recognize the universality of sexual activity and sexual learning in children. This concept has had greater effect on treatment and on education than any of the other sexual theories Freud expressed. If we put the child's learning in a transactional information (general systems theory) model, we can retain many of Freud's clinical insights while abandoning his psychic instinctual model. For example, as Gagnon indicated, the initiation of sexuality may derive not from the child's nature as much as from the sexual interests of the parents and their labeling of certain aspects of the child's behavior as sexual. Certain oral behavior and the learning of bowel control in the child can be reconceived in terms of their later effect on his sexual life, without insisting that these activities are either completely sexual or protosexual from the beginning.

Most of the sexual learning experiences in childhood occur without thought on the part of the parent, but the consciousness of sex usually determines the degree of vigor of play, the frequency of father-child and mother-child contacts, the tolerance for aggression, the reinforcement or extinction of activity or passivity and of intellectual, aesthetic, or athletic interests. As Gagnon says, "The period of contact, the frequency of contact, and the psychological set of the parents

can be expected to have differential consequences for gender role development."

It is clear from direct observation of children in various situations that genital play in infants is part of the normal pattern of development of the healthy child in contact with an affectionate mother. Interaction with mothers and peers is necessary for the development of effective adult heterosexual contacts in monkeys, according to Harlow, a finding that has relevance to the normal socialization of children. There is a critical period in development beyond which the infant may be immune or resistant to certain types of stimulation but during which he is particularly susceptible to the same stimuli. The detailed relation of critical periods to psychosexual development has yet to be established; presumably Freud's stages of psychosexual development—oral, anal, phallic, and genital—are only gross approximations.

Psychosexual Factors

A person's sexuality is dependent on three interrelated factors: his sexual identity, his gender identity, and his sexual behavior. These factors affect his personality growth, development, and functioning, and their totality is here termed psychosexual. Clearly this is something more than physical sex, coital or noncoital, and something less than every aspect of behavior directed toward attaining pleasure.

Sexual identity. Sexual identity refers to a person's sense of maleness or femaleness, which, in turn, depends on his biologic sexual characteristics: chromosomes, external genitalia, internal genitalia, hormonal composition, gonads, and secondary sex characteristics. In normal development these form a cohesive pattern, so that a person has no doubt about his sex.

Modern embryological studies have shown that all mammalian embryos, both the genetically male and the genetically female, are anatomically female during the early stages of fetal life. Differentiation of the male from the female results from the action of fetal androgen; the action begins about the 6th week of embryonic life and is completed by the end of the 3rd month. Sherfey contends that these observations have "demonstrated conclusively that the concept of the initial anatomical bisexuality or equipotentiality of the embryo is erroneous." Sherfey's refutation has far reaching implications regarding normal human sexual responsiveness and alleged causes of homosexuality and other sexual deviations.

By the age of 2 or 3 years, almost everyone has a firm conviction that "I am male" or "I am female." Even if maleness and femaleness develop normally, the person still has the adaptive task of developing a sense of masculinity and femininity.

Gender identity. According to Stoller, gender identity "connotes psychological aspects of behavior related to masculinity and femininity." Gender he considers social, whereas sex is biological; "most often the two are relatively congruent, that is, males tend to

be manly and females womanly," but sex and gender may develop in conflicting or even opposite ways.

"Gender identity results from an almost infinite series of cues derived from experiences with family members, teachers, friends, and co-workers as well as from cultural phenomena. Physical characteristics derived from one's biological sex, such as general physique, body shape, and physical dimensions, interrelate with an intricate system of stimuli, including rewards, punishment, and parental gender labels, to establish gender identity.

Cultural factors, as Cohen has pointed out, may establish conflicts about gender identity by stereotyping certain nonsexual behavior as masculine or feminine: "Our narrow conceptions of what is manly and hence not womanly, of what is womanly and hence not manly (conceptions which exclude large areas of thought and feeling which might appropriately be considered as human rather than narrowly sex-bound) can be seen to give rise to difficulties in our development and our relations with each other and with our children." Artistic or intellectual interests in a boy may be regarded by his parents and perhaps himself as feminine, whereas a girl who strives for competence, intellectual development, and independence may be made to feel uneasy if these activities are labeled masculine.

The formation of gender identity is based on three factors: parental and cultural attitudes, the infant's external genitalia, and a biological force under genic influence, now identified as being physiologically active as early as the 6th week of fetal life. Whereas family, cultural, and biological influences may complicate establishment of a sense of masculinity or femininity, the standard and healthy outcome is a more or less secure sense of identification with one's biological sex, a stable gender identity.

Gender role. Related to and in part derived from gender identity is gender role behavior. This is described in the words of Money and the Hampsons as "all those things that a person says or does to disclose himself or herself as having the status of boy or man, girl or woman, respectively. . . . A gender role is not established at birth but is built up cumulatively through experiences encountered and transacted—through casual and unplanned learning, through explicit instruction and inculcation, and through spontaneously putting two and two together to make sometimes four and sometimes, erroneously, five."

The standard and healthy outcome is a congruence of gender identity and gender role. Although biological attributes are significant, the major factor in attaining the role appropriate to one's sex is learning; the influence of chromosomal and hormonal sex, for example, can be overcome by opposite sex assignment by parents or by other learning experiences.

Gender role can appear to be in opposition to gender identity. A person may identify with his own sex but adopt the dress, hair style, or other characteristics of

the opposite sex (as many of our present teen-agers do). Or a person may identify with the opposite sex, yet for expediency adopt much of the behavior characteristic of his own sex.

Sexual behavior

Masturbation. Masturbation is usually a normal precursor of object-related sexual behavior. In the words of Dearborn, "No other form of sexual activity has been more frequently discussed, more roundly condemned, and more universally practiced than masturbation." Research by Kinsey et al. into the prevalence of masturbation indicated that nearly all men and three fourths of all women masturbate sometime during their life.

Longitudinal studies of development show that sexual self-stimulation is very common in infancy and childhood. Just as the infant learns to explore the functions of his fingers and mouth, so it is inevitable for him to do the same with his genitalia. Pleasurable sensations result from any gentle touch to the genital region. These sensations, coupled with the ordinary desire for exploration of one's body, produce a normal interest in masturbatory pleasure at this time. As the youngster acquires playmates, this curiosity about his and others' genitalia motivates episodes of exhibitionism or genital exploration, and such experiences, unless blocked by guilty fear, contribute to continued pleasure from sexual stimulation.

With the advent of puberty, the upsurge of sex hormones, and the development of secondary sex characteristics, sexual curiosity is intensified and masturbation increases. The adolescent is physically capable of coitus and orgasm but is usually inhibited by social restraints. He is under the dual and often conflicting pressures of establishing his sexual identity and controlling his sexual impulses. The result is a great deal of physiological sexual tension that demands release, and masturbation is a normal way of reducing sexual tensions. An important emotional difference between the pubescent child and the youngster of earlier years is the presence of coital fantasies accompanying masturbation in the adolescent. These fantasies are an important adjunct to the development of sexual identity, for in the comparative safety of his imagination the adolescent learns to perform the adult sex role. This form of autoerotic activity is usually maintained into the young adult years, when it is normally replaced by coitus.

It is incorrect to assume that couples in a sexual relation abandon masturbation entirely. When coitus is unsatisfactory or is unavailable because of illness or absence of the partner, self-stimulation often serves an adaptive purpose, combining sensual pleasure and tension release.

Moral taboos against masturbation have generated myths that masturbation causes mental illness or a decrease in sexual potency. There is no scientific evidence to support such claims. Masturbation is a psy-

chopathological symptom only when it becomes a compulsion beyond the willful control of the person. It is then a symptom of emotional disturbance, not because it is sexual but because it is compulsive. Masturbation is almost a universal and inevitable aspect of psychosexual development, and in most cases it is adaptive.

Orgasm. The development of adaptive sexual behavior involves an increasing interest in the opposite sex, first at the level of fantasy and dreams and then in dating and courting. Orgastic behavior for both men and women involves the sexual arousal state followed by four stages, as described by Masters and Johnson: excitement, plateau, orgasmic, and resolution phases.

The sexual motive or arousal state is affected by many factors, such as the partner, the setting, the mood, and the positive or negative effect of emotions (love, anxiety).

When the degree of motivation for orgastic release is high, excitement occurs quickly. In the male, the initial physiological response to effective sexual somatogenic or psychogenic stimulation is penile erection; in the female, it is vaginal lubrication. Lubrication occurs within 10 to 30 seconds and is the result of a sweating phenomenon on the walls of the vaginal barrel.

If excitement is maintained, the intensity of the response usually increases rapidly, and the human male or female enters the plateau phase of the sexual cycle. The duration of the plateau phase again depends on the effectiveness of the stimuli and the strength of the drive for orgastic release.

The orgasmic phase lasts only a few seconds, during which basic responses of the body to sexual stimulation—widespread vasocongestion and generalized increase in muscle tension—are released. Both the intensity and duration of orgasmic experience vary widely in women, whereas in men there is less individual variation.

In men, the resolution phase includes a refractory period that prevents restimulation until its termination. In the female, the potential for multiple orgastic experiences is almost unlimited.

Important findings in the research of Masters and Johnson include the following observations. (1) The nature of the orgasm in women is the same, regardless of the method or zone of stimulation, and it is as definite as it is in men. There is no such thing as a vaginal orgasm distinct from a clitoral orgasm; anatomically and physiologically there is only one type of orgasm: the rhythmic contractions of the outer third of the vaginal barrel, releasing the vasocongestion of the greatly distended circumvaginal venous plexi and vestibular bulbs surrounding the lower third of the vagina. (2) The clitoris retracts about 60 to 90 seconds before orgasm, an essential feature of a mechanism of the clitoral region, which maintains continuous stimulation of the retracted clitoris by a rhythmic

pulling on the edematous prepuce during coition or by preputial friction during direct stimulation of the clitoral region. Clitoral responsivity is far more important than vaginal sensations in producing orgasm. (3) With full sexual arousal, women are normally capable of many orgasms. As many as six or more can be achieved with intravaginal coition, and many more orgasms can be obtained in an hour by direct stimulation of the clitoral region—limited only by physical exhaustion.

Sexual drive and expression is multidetermined and can be profoundly affected by physical and psychological factors. Normal strength of the sexual drive varies widely with age, sex, and the individual. The usual frequency of orgasm in mature men is two or three times a week; women have a much greater and, according to Masters and Johnson, an almost unlimited orgasmic potential. It is a matter of practical importance that there is a disparity in the age-related strength of the sexual drive in men and in women. The peak of sexual drive for men occurs during late adolescence, after which it gradually declines. Women reach the maximum of sexual desire in their 30's, particularly after the birth of one or more children.

Sherfey hypothesizes that the rise of modern civilization "was contingent on the suppression of the inordinate cyclic sexual drive of women because... women's uncurtailed continuous hypersexuality would drastically interfere with maternal responsibilities;... with the rise of the settled agriculture economies... large families of known parentage were mandatory and could not evolve until the inordinate sexual demands of women were curbed."

Social sexual morality, operating primarily through the effect of guilty fear (a sense of wrongdoing and a fear of punishment internalized as a fear of conscience), has impaired the orgasmic potential of many women. Guilty fear and other emergency emotions, such as anxiety, anger, and guilty anger, may delay or completely inhibit orgasm in the female and prevent erection or speed up orgasm in the male. Since emergency emotions increase the disparity between the time it takes to reach orgasm in men and women, hastening it in men and retarding it in women, healthy psychosexual functioning requires minimal or absent emergency emotions and is enhanced by positive or welfare emotions, such as pride, joy, and love. Of these, in the normal person, love for the partner has the greatest effect in increasing sexual pleasure and performance.

Love, Intimacy, and Sex

As we have seen, healthy psychosexual functioning depends on the development of sexual identity, gender identity, appropriate gender role behavior, and adequate sexual performance. It also requires the devel-

opment of the capacity to love and to form intimate relations with a person of the opposite sex. If anything is more complex than sex, it is love. If sex is diversified and varied, love is more so; if sexual behavior is the result of the subtle interplay of multiple motivations and needs, love is more so. If man's capacity to perform sexually may be inhibited by faulty learning and the influence of emergency emotions during childhood and adolescence, even more subject to the vicissitudes of unfortunate life experiences during these formative years is man's capacity to love and to be intimate.

(In a child's healthy evolution into adulthood, the potential for enjoyment of physical sexual sensations and the ability to give and to receive love have interrelated lines of development. It is as if two streams come from a similar source, the headwaters being the love of mother for child, then diverge, cross, become confluent, separate, come together again, and separate again and again until ultimately, in the state of being in love, they fuse again in a crescendo of power and fulfillment.)

Definition of love. A precise definition of love is difficult. Rado defines love as a sustained emotional response to a known source of pleasure. There are as many kinds of love, therefore, as there are types of pleasure, and typical of being in love is a desire to maintain closeness to the love object. This circular definition includes varieties of love besides sexual love, such as parental, filial, fraternal, anaclitic, and narcissistic love, as well as love for group, school, and country. Here we are concerned specifically with love enhanced by sex, and sex enhanced by love. The development of sexuality and the development of the ability to love have reciprocal effects on each other.

Stages of love. As with sexuality, love evolves through a number of stages. In the beginning, since he is dominated by the wish to gratify his needs, the child loves himself. His parents are the principal instruments by which his needs are met; hence, a magical love for his parents appears, a love marked by illusions that parental figures are omnipotent, capable of immediate and complete satisfaction of the child's basic needs, and constant in their love for the child, regardless of his misbehavior. As the child becomes more and more aware of others, he learns the pleasure of object love and gradually is encouraged to feel sympathy, affection, and love toward others in various interpersonal situations. These feelings and related behavior are reinforced by love, praise, and gifts from others. The achievement of object love by the child is the goal of early acculturation, for the ability to cooperate and compromise allows the developing child to acquire satisfactory group behavior, which in turn assures acceptable social patterns in later life.

Although the influence of sex on the development of love begins with the development of early sexual identity, it becomes more evident during development of

gender identity and gender role behavior. As the child is taught in many ways to discriminate between masculinity and femininity, he is also challenged to become aware of differences between men and women in their attitudes toward sex as an expression of love. Boys, for example are encouraged to express sexual love assertively and girls more passively.

Freud made the error, in his libido theory, of thinking that there were fixed quantities of love and consequently that, as in a closed system of energy exchange, the more one loves himself, the less love he has to give another. As Fromm pointed out, however, self-love or self-regard is a fundamental requirement of the capacity to love another, and the two are not mutually exclusive.

When a person is able to give and receive love with a minimum of fear and conflict, he has the capacity to develop genuinely intimate relations with others. When involved in an intimate relation, he actively strives for the growth and happiness of the loved person. Mature heterosexual love is marked by the intimacy that is a special attribute of the relationship between a man and a woman. The quality of intimacy in a mature sexual relationship is what May terms an ability of "active receiving," wherein a person, while loving, permits himself to be loved. This capability indicates a profound awareness of love for another as well as for oneself. In such a loving relation, sex acts as a catalyst. May described the values of sexual love as an expansion of one's self-awareness, the experience of tenderness, increase of self-affirmation and pride, and sometimes, at the moment of orgasm, even loss of feelings of separateness. It is in this setting that sex and love are reciprocally enhancing and healthily fused.

The nuances of the interplay between love and sex in a heterosexual relation reflect strength, not weakness. Persons who establish alliances based primarily on sex, in which each uses the other as an object for orgasmic release and little else, may soon tire of each other. At the opposite extreme, couples attracted to each other primarily for reasons of security, rather than sex, sacrifice a very important aspect of psychosexual experience.

Normal heterosexual love has three major components, called by Rado "sexual," "magical," and "sensual." Sexual love is dominated by the desire for shared orgasmic release. Magical love is surrounded by the expectation that the love object is so powerful and wise that he will provide care and security as effortlessly as one's parents appeared to do in childhood. Sensual love is stimulated by an appreciation of the physical attractions of the loved one and an idealization of them on a highly subjective level. A couple may experience any of these types of love at different times and at different emotional levels, depending on the vicissitudes of life and the proclivities and interactions of the two people. A constant interweaving of

the three types of love is likely to produce the most enduring and fulfilling relation.

Marital and Nonmarital Sexual Relations

Historically, marriage has provided for the fulfillment of sexual desires, the bearing of children, and distribution of wealth. Only relatively recently in the history of man has marriage been undertaken as an act of love; in the past, most cultures arranged marriages primarily on economic grounds. American civilization, under the impact of the Judeo-Christian tradition, has been characterized by a respect for the individual person based on two dominant values, achievement and equality. The result has been the development of a social system that attaches high status and prestige to the person who realizes his highest potentials as a citizen and as a human being. At first, this attitude applied exclusively to men, but in recent generations it has included both sexes.

Indeed, the most profound change in the modern sexual revolution has been traced to the altered role of woman. Whereas woman was once expected to accept a double standard in which man alone was permitted sexual freedom, she is now challenging this male prerogative. There is a strong trend toward the dispelling of psychosexual conditioning that previously made women feel guilty and excessively inhibited in sexual matters. Many observers consider this trend indicative of a future era of sexual freedom in which both sexes will relate on a more equal basis than has been the case in the past.

Choice of love object. The increasing equality of the sexes profoundly affects the choice of love object. A person is attracted toward a potential mate for various reasons. One may be a purely physical attraction, which ordinarily establishes a transient relation. Another may be a magical desire to find the perfect lover, whose qualities will be reminiscent of the idealized qualities of one's parents or other sources of love and affection in the past. Other emotional reasons for choosing a mate stem from a variety of neurotic patterns in one's own personality. For example, one may take a partner to protect pride or security rather than to satisfy feelings of love. A woman who considers herself unattractive sexually may choose a mate who is passive and dependable yet sufficiently unattractive so that she does not have to compete with other women. A man who has considerable doubt about his masculinity may turn to a woman who has great sex appeal on the surface but in reality may not demand exceptional sex drive or performance. Essentially neurotic themes such as these exist in all personalities and probably in all matings. When they predominate and the couple act mainly to exchange patterns of exploitation or when interlocking complementary needs fail to bring sufficient security or happiness, discomfort and anxiety occur, and a breakdown in the relation is possible.

Premarital intercourse. Kirkendall noted that there is no consensus about the effects of premarital intercourse on successful marital adjustment. He found no statistical evidence in favor of premarital sex helping later sexual adjustment but pointed out that a couple's viewpoint toward premarital sex may range from a highly positive one to a very damaging and disruptive one. He also noted that the negative effects on marriage attributed to premarital sex have been exaggerated in our culture, presumably as a result of religious views that equate sex outside of marriage with sin. Just as Kinsey found that the most important social coordinate that had a negative effect on the sexual behavior of women was religion, so did Kirkendall note that those who are reared with a rigid attitude toward sex are likely to experience guilt reactions in either premarital or marital intercourse.

At this point some evaluation of cultural norms is in order. An adaptive sexual relation is possible between partners who are not married. The achievement of healthy intimacy and mutual respect cannot be traced to the ritual of marriage by itself. As many neurotic interactions occur in marriage as outside of it. In view of our cultural disapproval of nonmarital coitus, however, a large number of premarital coital acts may be nonsexually motivated; they may, for example, represent acting out of rebellion against authority. There is, thus, a somewhat greater chance that a premarital sexual relation is partly neurotic in origin than that a marriage is neurotic. This statement requires qualification, however, since certain sectors of our society permit premarital sexual relations with a minimum of guilty fear. Despite the neurotic bases of many marriages, including destructive sexual behavior, the psychological and social assets of marriage are nonetheless inestimable. Marriage can provide the structure for the maintenance of love, intimacy, sexual gratification, and development of family life over many years.

Problems of marriage

Early problems. Many fine romances have been ruined by marriage. In the marriage act couples undertake a psychological transformation. Whereas they may be able to relate sufficiently to each other as single men and women, the moment they are married and undertake the roles of husband and wife and thereby anticipate the roles of mother and father, they encounter unconscious responses to their own parents. The girl friend who becomes a wife must start managing a house, and she usually does this by imitating her mother. In so doing, she may be profoundly influenced by her mother's attitudes toward sexuality which were transmitted to her during her childhood. Similarly, the man who becomes a husband finds himself relying on patterns established by his father in the husband role. If there had been an intense relation between the child and parent of the opposite

sex during the child's formative years, coitus in marriage may be accompanied by intense anxiety, not present in the couple's sexual relations outside marriage. One of the sources of sexual difficulties at this time is the unconscious perception of coitus with one's spouse as incest.

The marital pattern now in vogue in America is subject to certain vulnerabilities. The average age of marriage today for girls is around 19 years; about half the teen-age marriages end in divorce, and nearly one third are complicated by premarital pregnancy. Most observers agree that these marriages are products of a culture that has overemphasized sexual gratification and performance to the exclusion of love, intimacy, and a lasting relation. Our culture may be guilty of the mechanization of sex, of separating sex from love. With the influx of knowledge about the art of coitus and the constant emphasis on the need for adequate sexual satisfaction of one's partner, there is danger, as May pointed out, of creating a culture of sexual athletes. Such persons treat each other primarily as objects for orgasmic release. They function purely on the basis of sexual love, and the relationship may deteriorate as soon as sexual tensions decline and their related needs are gratified. This outcome is the unfortunate fate of many young couples who discover too soon that the honeymoon is over.

Later problems. The passage of time brings different pressures on marriage. Early in marriage, money, sex, in-laws, and the demands for companionship are common sources of conflict and stress. Somewhat later in marriage, childbearing brings into sharp relief conflicts in gender role behavior, and underlying neurotic patterns based on earlier relations with parents. A woman overly committed to her family and home during the period of child rearing may regard eventual separation from her children as an indication of her uselessness (the empty nest syndrome). When marital, especially sexual, relations do not compensate for this loss, additional strain occurs. An aging man's preoccupation with personal success may be accompanied by fears of failing potency.

As couples grow older, sexual relations usually play an important role in maintaining marital stability. For this reason, the findings of Masters and Johnson that the sexual drive of women increases during middle age and that orgasm can be achieved during the 8th decade of life are significant in counseling the aged. These researchers point out that aging women are fully capable of achieving orgasm, particularly if they are exposed to regular and effective sexual stimulation. Aging men are usually able to continue some form of active sexual expression into the 8th and even 9th decades of life. The most important factor in maintaining effective sexuality in men of this age is consistency of active sexual expression. If a man is sexually active through the middle and involutional years, sexual gratification thereafter may be highly satisfactory.

Suggested Cross References

The concept of normality is discussed by Offer and Sabshin in the preceding section. For a discussion of the sexual deviations of adults, see the sections by Bieber (Sections 26.2 and 26.3) and by Lorand and Schneer (Section 26.4) in Area F, on the psychiatric disorders. Other sexual disturbances such as impotence and frigidity are discussed in the sections by Klein (Section 30.8) and by Hastings (Section 30.7) in the chapter dealing with psychosomatic disorders. Work deals with sexual pathology of children (Section 41.6) in Area H, on child psychiatry. Psychosexual development is also discussed by Mack and Semrad in their section (Section 6.1) on classical psychoanalytic theory of personality and psychopathology in Area C.

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CURRENT THEORIES OF PERSONALITY AND PSYCHOPATHOLOGY

The term "personality" is used in different ways by different authors. In general, however, it refers to the individual's characteristic behavioral interaction with his environment. Normal personality organization and abnormal psychological functioning (or psychopathology) are closely related and can be considered within similar conceptual frameworks. Many theories have been proposed to explain the structure and dynamics of normal and abnormal behavior. Essentially, these theoretical models are designed to facilitate the understanding, prediction, and eventual therapeutic control of human behavior.

Different theories of personality and psychopathology generally deal with the same basic issues and operate on comparable levels of description. However, they tend to vary in emphasis; they employ different theoretical constructs and are often based on different underlying hypotheses. At the present time, no one theory is able to explain and predict normal human behavior in an entirely satisfactory manner; nor has any single theory been able to account adequately for the many forms of abnormal behavior encountered in clinical practice. Nevertheless, many theories of personality and psychopathology have contributed valuable concepts and methods of treatment.

Brief, but comprehensive, synopses of those theories which exert the greatest influence on current psychiatric thought are presented below in this area, on current concepts of personality and psychopathology. Because authenticity and accuracy are of importance in this complex field, each theory is discussed by one of its eminent exponents.

To facilitate comparison, wherever feasible, each of

these theories is presented from the viewpoint of the following parameters: (1) the structure and development of normal personality; (2) concepts of psychopathology and psychodynamics; and (3) the treatment techniques which have derived from each theory.

Sigmund Freud's role in explaining the motivation of behavior within the framework of his classical psychoanalytic theory was preeminent in the evolution of the psychodynamic approach in psychiatry. In addition to a comprehensive theory of personality, Freudian psychoanalysis provides a method for treatment and research. Classical psychoanalysis has undergone some modifications which reflect recent developments in ego psychology, and the further refinement and elaboration of concepts concerning the structure of the psychic apparatus. On the whole, however, the basic concepts of psychoanalysis, as they were originally elaborated by Freud, remain relatively unchanged and represent the approach of many psychiatrists in the United States today.

At various stages in the evolution of psychoanalysis, several of Freud's colleagues expanded or revised his formulations. At times, these modifications were subsequently incorporated into the body of psychoanalytic theory. However, other innovations produced schisms within the Freudian movement and in some instances led to the establishment of new schools of psychoanalysis.

Among the most prominent of these early "dissenters" were Adler and Jung, both of whom rejected Freud's belief that sexuality plays a unique role in normal and pathological human behavior. Jung's rejection of Freud's libido theory led to the elabora-

tion of a rather mystical psychoanalytic system. Adler turned to the sociocultural determinants of behavior. Social, cultural, and interpersonal behavioral determinants were also emphasized in the so-called "culturalist" theories of Rado, Horney, Sullivan, and Fromm. And concomitantly, these workers deemphasized the biological instinctual drives, particularly sexuality, as dominant determinants of behavior.

Other theories of psychopathology did not evolve as direct offshoots of Freudian psychoanalysis. Among these is the theory of Adolf Meyer, who conceived of normal as well as abnormal behavior as deriving from a series of adaptive reactions to the environment. Meyer's theoretical position, although not represented by an organized "school," has exerted marked influence on American psychiatry. Indeed, in the American Psychiatric Association's standard nomenclature, the psychiatric disorders are termed "reactions," which derives from Meyer's theoretical model. Another theory of interest is existential psychoanalysis, which derives from the application of the concepts of existentialist philosophy to psychoanalysis.

Other theories of personality derive from various aspects of psychology, such as learning theory and the quantitative methods of personality assessment. No

attempt has been made to present a comprehensive survey of this field. Rather, those theories have been selected for discussion which are considered most relevant for psychiatry.

As mentioned above, all of these theories have limitations; no single theory has, as yet, been universally accepted by psychiatrists. Nevertheless, the theories of personality and psychopathology presented below are the foundations upon which the practice of psychiatry rests. Each of these theories contains insights which merit consideration because they enhance our understanding of the complexities of normal and abnormal human behavior. Furthermore, they provide useful theoretical frameworks around which the psychiatrists' clinical work can be organized. Methods of psychiatric assessment, as well as the various treatment methods which are described in Area G, on psychiatric treatment, have evolved from these models. Similarly, current hypotheses that have been proposed to explain the dynamics of the various psychiatric disorders, which are described in Area F, derive from the theories described herein. The different disorders are described according to different psychodynamic theories, another indication of the diversity of theoretical orientation which is characteristic of psychiatry today.

CURRENT THEORIES OF PERSONALITY AND PSYCHOPATHOLOGY

Chapter 6

Classical Psychoanalysis

6.1 • • •

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Introduction

Concepts derived from psychoanalysis are applied so widely in psychiatric training and practice that they have become a fundamental part of our approach to mental and emotional disorders. Obviously, then, it is imperative that the student develop a clear understanding of classical psychoanalytic theory and the work of its founder, Sigmund Freud. Unfortunately, discussions aimed at residents, medical students, and other students of psychiatry, which attempt to facilitate such understanding, are typically impeded by problems arising from the student's lack of familiarity with the principal investigative tool of classical psychoanalysis—free association—and, concomitantly, his limited contact with the data derived therefrom, upon which psychoanalytic theory is based. In fact, the study of psychoanalysis requires a fundamental change in orientation: in contrast to the planned, organized pursuit of data which is characteristic of most fields of medicine, the psychoanalyst does not deliberately solicit specific information from his patient. Rather, psychoanalytic data consist of the patient's spontaneous (and uncensored) verbal expressions. In addition, the student's efforts to understand psychoanalytic theory may be further complicated by the apparent disparity between the formal terminology Freud employed to describe mental and emotional phenomena and the technical language used in other medical and paramedical disciplines. Throughout this discussion, an attempt has been made to define in detail the methods and terminology which are fundamental to classical psychoanalytic theory in order to avoid confusion and misunderstanding.

Scientific orientation. As a result of his early training, Freud came to his work in psychology imbued with the belief, held by most scientists of his

day, that scientific law and order would ultimately permit an understanding of the apparent chaos of mental processes and that brain physiology was the most promising avenue of approach to this objective. By 1897, Freud no longer shared this illusion; however, all his life he continued to believe that there was a close interrelationship between physical and psychical processes, that mind and brain did not exist as separate entities. In addition, he maintained that physical processes preceded psychological phenomena. All information which reached the mind began as physical excitation, whether such information emanated from the external world and was transmitted through the sense organs, or whether it came from the chemical stimuli provided by the body. In his efforts to correlate mental processes with physiological ones, Freud was able to note similarities in the way both operated. However, although he was thoroughly familiar with the language of physiology, he found the task of translating psychological processes into physiological terms an insurmountable one. Nevertheless, he made several attempts to describe mental phenomena in terms of the functioning of the nervous system before he eventually suspended these efforts and decided instead to approach psychological problems on a level of investigation appropriate to their study.

Definition. Traditionally, classical psychoanalysis has referred primarily to Freud's libido and instinct theories; recently, it has come to include the concepts of ego psychology as well. Essentially, it is based on the free association method of investigation which yielded the data used by Freud to formulate the key concepts of unconscious motivation, conflict, and symbolism which formed the basis for his broader theoretical system.

Basic hypotheses. Psychoanalytic theory, like all personality theory, is concerned primarily with the elucidation of those factors which motivate behavior. Psychoanalysis is unique, however, in that it considers these motivating forces to derive from unconscious mental processes. Freud's demonstration of the existence of an unconscious mind and, concomitantly, his concept of psychic determinism are generally regarded as his greatest contributions to science, and these re-

main the fundamental hypotheses of psychoanalytic theory. When it is considered within this theoretical framework, behavior which is inexplicable otherwise can be attributed to specific psychic determinants or goals.

These hypotheses led, in turn, to the elaboration of a third concept which is central to psychoanalytic theory: the mechanism of repression, the selective forgetting of what is too painful or objectionable for the conscious mind to accept. Initially, on the basis of his early clinical experiences, Freud maintained that the significance of repression resided in its relationship to psychopathology; or, more specifically, he believed that there was a relationship between the repression of sexuality and the development of neurosis. While this insight, in itself, was of dramatic import for the future development of psychoanalysis, its true value lies in the fact that it opened new avenues of investigation which, in turn, gave rise to more complex theoretical constructs of greater significance. Thus, Freud's subsequent study of infantile sexuality and his knowledge of adult perversions led him to hypothesize that the sexual instinct may find many forms of expression apart from its final aim of genital union, i.e., coitus, that, in fact, the sexual instinct must pass through a rather complicated developmental sequence before it achieves what Freud called "genital primacy."

Psychoanalytic theory deals with mental structure and the economics of mental functioning, as well as its dynamics. Thus, Freud divided the mind, in a regional or topographical fashion, into the unconscious proper, the preconscious, and the conscious. The study and formulation of these systems of the mind, and of the tripartite model of ego, id, and superego, which represent its structural components, form the basis for the Freudian theory of personality.

Throughout his lifetime, Freud continued to modify and elaborate his original concepts of the psychic apparatus, the dynamics and economics of mental functioning, and the origins and nature of psychopathology. And the open-ended nature of psychoanalytic theory has permitted further modification and elaboration of these constructs by those who followed in his path. The boundaries of classical psychoanalytic theory have not been sharply defined in this section. Rather, an attempt has been made to describe in detail those concepts which are currently accepted by psychoanalysts who have been trained in the classical tradition, and which have particular relevance for students of psychiatry, i.e., Freud's concept of the topography of the mind, the libido and instinct theories, concepts pertaining to the mechanisms of defense and to the nature of anxiety, the psychology of dreams, the significance of early childhood experiences, and, finally, formulations in ego psychology. At the same time, however, it is generally agreed that these formulations can be fully understood only if one traces their historical development. The following discussion

and further elucidation of these basic concepts have been guided by this premise.

Historical Beginnings of Psychoanalysis

Sigmund Freud was born of Jewish parents on May 6, 1856, in Freiburg, a small town in Moravia, which has since become part of Czechoslovakia. When he was 4, his father, a wool merchant, brought the family to Vienna. And it was in Vienna, a city he both loved and hated, that Freud was educated, practiced, and lived his entire life, until he was forced to flee to England in 1938 when the Nazis annexed Austria.

Medical training. Because his education followed a somewhat erratic course, it took Freud 3 years longer than the usual time to earn his medical degree. However, the fact that he was a medical student in the years from 1873 to 1881 is significant. For during this period the researches in biology of Darwin and his associates, and the investigations in physiology and physics by Helmholtz and his school were producing a new scientific climate which played a significant role in Freud's intellectual development. More specifically, this new orientation emphasized natural law, the unity of science, and scientific exactitude, as opposed to the romanticism and mysticism which pervaded scientific thought in central Europe after the Napoleonic Wars. For 5 years while he was at medical school, Freud studied in the physiological laboratory of Ernst Brücke, a founder of the scientific movement known as the Helmholtz School of Medicine, which postulated that the only forces active in biological organisms were the physicochemical forces inherent in matter, "reducible to the force of attraction and repulsion." In a broader sense, according to the Helmholtz School, all biological organisms were phenomena of the physical world: systems of atoms, governed by forces, according to the principle of conservation of energy which had been described by Robert Mayer in 1842 and was applied by Helmholtz 20 years later. Freud was strongly influenced by these principles, and by Brücke, himself, who epitomized the qualities which he most admired, scientific discipline and intellectual integrity.

Medical career. Freud continued to work in Brücke's laboratory for a year after he graduated from medical school, and it was there that he developed the physiological framework into which he later tried to cast his psychological theories. Nor did Brücke's influence diminish throughout Freud's lifetime; his consistent, overriding goal was to apply to Brücke's principles to the study of the nervous system and then to the mind. As mentioned above, Freud made a number of attempts to do so before he became resigned to the fact that the lack of relevant physiological data precluded the explanation of mental phenomena in terms of the physicochemical nature of brain function. Although he never renounced Brücke's principles, thereafter he limited his theory of the mind

to the psychological parameters of mental functioning. Nevertheless, it would seem useful at this point to digress briefly to describe the essay entitled "Project for a Scientific Psychology," which represented Freud's most ambitious attempt to explain the physical roots of mental phenomena. Space limitations preclude a detailed outline of this remarkable document, which was written over a 2-year period from 1895 to 1897 and published posthumously. Its essential features may be summarized as follows.

Writing in the language of physics and brain physiology and drawing upon contemporary neurophysiology and neuroanatomical concepts, Freud attempted to conceptualize psychology as a natural science. To do this, he combined two theories. One, which may be attributed to the influence of the Brücke-Helmholtz School, stated that the laws which governed physics and chemistry were equally applicable to psychology. Secondly, the theory of neurones, which derived from Freud's neurohistological studies, was the basis for his attempt to describe the mind in terms of their neurones and their synapses.

According to the "Project," the functioning of the nervous system could be described in terms of two closely allied principles. The first principle, of "inertia," stated that neurones tend to discharge nervous excitation. Pain was related to excessive nervous excitation and pleasure to its discharge; this discharge of excitation was the primary function of the neuronic system. Its secondary function, which Freud explored in the "Project," concerned the choice of specific paths for the discharge of quantities of excitation which impinged upon the nervous system from the external world or from within the organism, in order to maintain psychic equilibrium. Secondly, Freud maintained that the functioning of the nervous system was governed by the principle of "constancy." This concept may be traced to the principle of the conservation of energy (Mayer and Helmholtz), which held that the sum of forces remains constant in every isolated system, and to Herbart's hypothesis that mental processes tend to strive for equilibrium (an idea which is similar to what Cannon later described as homeostasis). In 1892, Freud (with Breuer) defined constancy as follows: "The nervous system endeavors to keep constant something in the functional condition that may be described as the 'sum of excitation.'"

Despite the fact that many of the speculations advanced in the "Project" regarding the functioning of the nervous system were confirmed by subsequent neurophysiological investigations, clearly, the "Project" was premature in its effort to link mental and physiological phenomena. However, it did anticipate many of Freud's subsequent purely psychological concepts; for example, physiological principle of inertia was later translated into the psychoanalytic "pleasure-unpleasure" principle. But, most important, it demonstrated Freud's deep commitment to discovering a biological basis for his psychological theories.

To return to our chronological account of Freud's medical career, during the year he spent at Brücke's Institute, he did several highly creditable pieces of histological and neuroanatomical research. He found research particularly congenial, and he hoped to continue with his theoretical work. But financial considerations made this impossible. Despite a deep aversion to the practice of medicine as such, Freud was forced, by his personal economic situation, to leave the laboratory setting in 1882 and to begin work in the General Hospital in Vienna, first on the surgical service and then in Theodor Meynert's Psychiatric Clinic. As a student, only Meynert's medical lectures had aroused Freud's interest; and, while he was assigned to his service, he shared the general opinion that Meynert was the most gifted brain anatomist of his time. Freud was not quite so enthusiastic about Meynert's qualifications as a psychiatrist, however. He felt that the emphasis on neuroanatomy and neuropathology (which, in fact, was characteristic of psychiatry during this period) diminished Meynert's clinical competence. Nevertheless, as a result of his study of "Meynert's amentia" (acute hallucinatory psychosis), Freud obtained a vivid impression of the mechanism of wish fulfillment, which later became a basic part of his theory of the unconscious.

Interest in neurology. On Meynert's service, Freud increased his knowledge of brain disorders; concurrently, he received Meynert's permission to use his laboratory for an extensive study of the brain of the neonate. These events coincided with his decision to specialize in neurology, rather than engage in general practice, and, when he received a highly coveted traveling grant in 1885, he used it to go to Paris, where he studied at the Salpêtrière for 19 weeks under the great French neurologist, Jean-Martin Charcot. This was a crucial period in Freud's career. During the time he spent in Charcot's clinic, Freud was able to observe a wide variety of neurological syndromes. However, he was most impressed by Charcot's radical approach to hysteria. As a result of Charcot's influence, Freud became deeply interested in the problem of hysteria and firmly convinced that hysterical phenomena were genuine.

In fact, Charcot's teachings were in marked contrast to the view that had been prevalent up to that time, according to which hysterical phenomena were viewed either as deliberate pretense or as the product of the patient's "imagination," and, as such, were not to be taken seriously. As a result of Charcot's systematic and thorough study of the manifold manifestations typical of hysteria, it was recognized as a "legitimate" disease of the nervous system, and, as such, a possible subject of serious study and understanding.

The psychological explanation for hysterical phenomena was not investigated by Charcot. However, the possibility that such phenomena might be psychological in origin did occur to Freud when Charcot was able to precipitate hysterical paralyses, seizures, and

other characteristic symptoms artificially, through hypnotic suggestion. Thus, by means of his experiments in hypnosis, Charcot distinguished hysterical phenomena from organic neurological entities. Although he believed that hysteria had a neurological basis and, in fact, was due to congenital degeneration of the brain, the symptoms manifested in hysteria were psychogenic in origin; that is, they were produced by specific "ideas" held by the patient. And, by the same token, hysterical symptoms could be cured by "ideas."

The Austrian physician, Anton Mesmer, who died in 1815 at the age of 81, is generally credited with the discovery of hypnotism, which was to play such a crucial role in the development of psychoanalysis. Mesmer used the special power he called "animal magnetism" to "cure" people (often in dramatic public exhibitions) of afflictions which, in all probability, would be diagnosed today as hysterical symptoms. A century later, A. A. Liébault, a kindly French country doctor in Nancy, used hypnotic sleep to relieve countless peasants of their neurotic symptoms via the technique of suggestion. It remained for psychoanalysis to provide a rational scientific explanation of the psychological mechanisms operant in the psychoneuroses; however, psychotherapy, as a form of medical treatment, may be said to have had its beginning in Liébault's clinic. Freud was particularly interested in the work of Hippolyte Bernheim, an associate of Liébault, who used hypnosis as a therapeutic modality. On the basis of his careful study of the characteristics of suggestibility, Bernheim concluded that this phenomenon was not limited to hysterics. In fact, it was present in patients with a wide range of neurotic disorders and in normal individuals as well. Bernheim's attempt to account for a wide variety of normal and abnormal social reactions through suggestion or autosuggestion may well have represented the first attempt to understand human behavior and its motivation on the basis of data derived from clinical study.

Freud spent several weeks in Nancy during the summer of 1889. His visit was a profitable one, in several respects. He was deeply impressed by the relationship Liébault established with his patients and by the dramatic effects Bernheim was able to produce in his hospitalized patients through the use of hypnotic suggestion. Most important, as he observed Bernheim's experiments, Freud became profoundly aware of the possibility that powerful mental processes, which were hidden from consciousness, were operative in the minds of men.

In summary, then, Freud's approach to mental and emotional disorders and psychological phenomena up to this point can be traced to two principal influences. From the Helmholtz School, from his teachers, Brücke, Meynert, and Charcot, he had learned to emphasize rational scientific understanding, careful empirical

study, and clinical observation. From the French doctors, Liébault and Bernheim, he learned that the physician, himself, may play a useful role as an instrument of psychotherapeutic change. In addition, in the course of his visit to the Liébault Clinic, he gained the impression that deeper psychological forces, not immediately accessible to consciousness, were operative in human motivation and behavior. Initially, he was inclined to defend the orientation of the Helmholtz School, and of Brücke and Charcot in particular. Ultimately, his ability to integrate these diverse influences, together with the extraordinary psychological sensitivity and insight which characterized Freud's genius, enabled him to create a new science which represented a unique approach to the study and resolution of human conflict.

Freud returned to Vienna from Charcot's clinic in Paris in 1886 with the avowed intention of giving up his laboratory studies so that he might devote all his time to the clinical practice of neurology. Nevertheless, in 1891 he wrote a short book, entitled *Aphasia*, in which he challenged Wernicke's and Lichtheim's minute localization schemes of this disorder and instead offered a functional explanation which accounted for the subvarieties in terms of disruptions of the radiating associational pathways. Freud's work, which was the only one of the period to cite the genetic view of Hughlings Jackson, received little attention at the time; however, the validity of its basic principles has since been recognized. In 1891 and 1893, he published two exhaustive clinical studies of the paralyses of children. The first of these, written in collaboration with Dr. Oscar Rie, a pediatrician, dealt with the unilateral paralysis in children. It was widely acclaimed by neurologists, and even today it is considered a classic. The second presented an equally comprehensive study of the central diplegias in children.

Evolution of Psychoanalysis

Psychoanalysis as a method of investigation, a therapeutic technique, and a scientific discipline with a growing body of basic propositions and findings may be said to have evolved in the decade from 1887 to 1897, first through Freud's collaboration with Breuer, and then through his independent efforts.

Collaboration with Breuer. Even at the time the two works on childhood paralyses were written, however, Freud had already become deeply interested in clinical psychopathology. In part, this may be attributed to the fact that the cases seen by a neurologist in private practice were largely psychoneurotic rather than neurological. To an even greater extent, however, Freud's growing interest in psychopathology may be attributed to his association with Josef Breuer, a prominent Viennese physician, with whom he formed a close friendship while he was working at Brücke's Institute of Physiology. Breuer's treatment of the famous case of Frä. "Anna O." or, more specifically,

his communication to Freud of the details of that case, was one of the factors which led to the development of psychoanalysis. Breuer treated "Anna O." (Bertha Pappenheim) from December, 1880, to June, 1882. The patient was an intelligent girl of 21 who had developed a number of hysterical symptoms in association with the illness of her father, of whom she was passionately fond. These included paralysis of the limbs, contractures, anesthetics, disturbances of sight and speech, inability to take food, and a distressing nervous cough. Her illness was further characterized by two distinct phases of consciousness. During one, she was normal; during the second, she took on another personality. The transition between these states of consciousness was effected by autohypnosis, which Breuer subsequently supplemented with artificial hypnosis. Anna had shared with her mother the duties of nursing her father until his death. During her altered states of consciousness, she was able to relate the vivid fantasies and intense emotions she had experienced while tending her father. And to the great amazement of the patient—and Breuer—her symptoms could be made to disappear if she could recall, with an accompanying expression of affect, the scenes of circumstances under which they had arisen. Once she had become aware of the value of this "talking cure" or "chimney sweeping," Anna proceeded to "deal" with each of her manifold symptoms, one after another. For example, she recalled that on one occasion when her mother was absent and she had been sitting at her father's bedside, she had had a day-dream in which she imagined that a snake was coming to bite her sick father. When she tried to ward off the snake, her arm, which had "gone to sleep" over the back of a chair, seemed paralyzed. Moreover, the arm had remained paralyzed until the patient recalled the scene under hypnosis. Quite understandably, the case of Anna made a profound impression on Freud; it provided convincing evidence of the power of unconscious memories and suppressed affects in the production of hysterical symptoms.

Still another aspect of Breuer's treatment of Anna was of crucial significance for the future development of psychoanalysis: in the course of treatment, Breuer had become increasingly preoccupied with his unusual patient, and his wife had grown increasingly jealous and resentful. When he realized this, Breuer abruptly terminated treatment. Only a few hours had elapsed, however, before he was recalled to Anna's bedside. He found the patient, who he believed was greatly improved, in a state of acute excitement. Anna, who had never alluded to the forbidden topic of sex during the course of treatment was now experiencing a hysterical childbirth (pseudocyesis), the logical termination of the phantom pregnancy she had developed in response to Breuer's therapeutic efforts, of which he had been quite unaware. Breuer managed to calm her through hypnosis. However, the experience unnerved

him and served to restrict his further participation in Freud's investigations into the unknown (and therefore unpredictable and dangerous) sphere of the mind.

Independent investigations: Therapeutic technique

Use of hypnosis. Late in 1887, Freud began to use hypnosis intensively in his own practice. At first, he used hypnosis for the single purpose of getting the patient to deny the reality of his symptoms. It was evident, however, that even though the patient might deny his symptoms under hypnotic suggestion, he was well aware of their reality in waking life. Concomitantly, Freud found the contradiction and general superficiality of this approach a source of increasing dissatisfaction. Partly as a result of his interest in Breuer's treatment of "Anna O.," Freud was eager to learn what lay behind his patients' symptoms, to investigate them in depth, and it is this goal which continues to distinguish the more arduous psychoanalytically oriented treatment methods from those psychiatric treatment techniques which seek merely to suppress overt symptoms.

Accordingly, in 1889, Freud turned to the cathartic method (in conjunction with hypnosis) in order to retrace, as Breuer had in the case of Anna O., the history of the symptom. The first time he employed this method, in the case of Frau Emmy Von N., he adhered quite strictly to the concept of the traumatic origin of hysterical phenomena. Accordingly, the goal of treatment was limited to the removal of symptoms through recovery—and verbalization—of the suppressed feelings with which they were associated, a procedure which has since been described as *abreaction*. In his account of this case, Freud also hinted that inhibited sexuality may have played a role in the etiology of the patient's symptoms.

Once again, however, he was dissatisfied with the results he achieved. The beneficial effects of this hypnotic treatment were transitory; they lasted only as long as the patient remained in contact with the physician. Freud suspected, therefore, that they were, in fact, dependent upon the personal relationship between patient and physician. Freud's suspicion was confirmed when, one day, a patient awoke from a hypnotic sleep and suddenly threw her arms around his neck. Breuer had told him earlier of the events which followed the termination of his treatment of Anna O. Now Freud himself had an opportunity to observe a similar reaction in a patient he had been treating. Fortunately, unlike Breuer, he was not frightened by this experience. Rather, it aroused his scientific interest.

More specifically, from this point on, Freud understood that the therapeutic effectiveness of the patient-physician relationship, which had so mystified him, could be attributed to its erotic basis. (Many years later, he said that he had also regarded these trans-

ference phenomena as definitive proof of the sexual etiology of the neuroses.) In any event, these experiences served to underscore his dissatisfaction with hypnosis. At a later stage in the development of psychoanalysis, Freud described hypnosis as a "mask" which concealed, and therefore precluded, investigation of the transference and resistance phenomena which are central to psychoanalytic theory and practice. In essence, his decision to make the crucial transition from Breuer's cathartic method to another more suitable technique was based on similar, albeit less sophisticated considerations. He wanted to be "free" of hypnosis because it had become increasingly apparent that the hypnotic method owed its success to the fact that the patient acted out of love for her doctor. That is, she remembered traumatic experiences and feelings at his command and, concomitantly, appeared to recover from her illness, in order to please him. Obviously, a cure which did not involve some understanding on the part of the patient of the origins and significance of her symptoms could only be temporary, at best. Freud's decision was based on other considerations as well: he had found that many of the patients he encountered in private practice were refractory to hypnosis. Later, he recognized that his inability to hypnotize a patient might be due to the patient's reluctance to remember, and he identified this as resistance. At the time, however, he was eager to develop a treatment method which might be applied whether or not the patient was "hypnotizable." Freud continued to use hypnosis, where indicated, until he had refined the technique of free association to his entire satisfaction. He reached this point in 1896, and he never used hypnosis again.

"Concentration" method. In 1892, Freud undertook the treatment of Frl. Elisabeth von R., a patient whom he had earlier found to be refractory to hypnosis, and for the first time abandoned this therapeutic tool. His decision to make this attempt was based largely on a statement made by Bernheim to the effect that although they appeared to be forgotten afterward, the experiences recalled under hypnosis could once again be recalled in states of consciousness, if the physician asked the patient leading questions and urged him to produce these crucial memories. (Concentration was based on this premise. The patient was asked to lie down on a couch and close her eyes. She was then instructed to concentrate upon a particular symptom and to try to recall memories. Concurrently, Freud pressed his hand on her forehead in order to facilitate the emergence of such memories, even as he urged her to remember and continued to question her.)

Free association method. The use of free association as a therapeutic technique evolved very gradually from these beginnings over the 3-year period from 1892 to 1895. The first step in its development came about when the patient, Elisabeth von R., remarked that she had not expressed her thoughts because she

wasn't sure what Freud wanted to hear. From this point on, Freud no longer tried to direct the patient's thinking but encouraged her to ignore all censorship and to express every idea that occurred to her, no matter how insignificant, irrelevant, or shameful it might seem. Again, at a later point in treatment, the patient complained that Freud had interrupted her train of thought by his persistent questions and that she found his habit of pressing his hand on her forehead an unnecessary distraction.

In brief, by the late 1890's, both Freud and his patients had come to feel that the urging, pressing, and questioning which were part of the "concentration" method actually interfered with the free flow of thought. Accordingly, these procedures were abandoned, and eventually patients were no longer instructed to close their eyes. However, the use of the couch continues to play a central role in classical psychoanalysis, and the fundamental rule of the free association method has remained unchanged.

Theoretical contributions

Etiological propositions. The application of free association as a treatment method served to illuminate aspects of mental functioning which had never been observed previously. For one, Freud discovered that a patient's train of memory extended well beyond the traumatic event which had precipitated the onset of his illness. Rather, he found that his patients were able to produce memories of their childhood experiences, of scenes and events which they thought had long been forgotten. This discovery led, in turn, to the conclusion that, frequently, these memories had been inhibited previously because they involved sexual experiences or painful incidents in a patient's life. Moreover, he learned that the recollection of such experiences even in the present could evoke intense excitement, moral conflict, feelings of self-reproach, or fear of punishment. Since these childhood experiences remained so vivid, obviously they must exert a "predisposing" influence in relation to the development of psychoneurosis. Inevitably, this led to extensive modification in the view prevalent at the time and shared by Freud, that heredity must be accorded a major role in the predisposition to neurosis. Freud continued to acknowledge the role of heredity in determining an individual's future susceptibility to neurosis, an opinion which most psychoanalysts share today. However, he assigned much of the responsibility for the etiology of the psychoneuroses, which had hitherto been attributed to heredity, to unfavorable childhood experiences. He further postulated that hysteria might be acquired, as well as congenital. Emotionally disturbing experiences played a major role in the etiology of "acquired hysteria," while hereditary factors were of minor importance.

Concept of resistance. As mentioned above, Freud discovered early in his practice that his patients were

often unwilling or unable to recount memories which later proved to be etiologically significant. He defined this reluctance, as it manifested itself in the treatment setting, as resistance. However, his initial observations were supplemented later by data derived from his clinical investigations. He found that, in the majority of patients he treated, resistance could not be attributed to a reluctance to cooperate (i.e., to obey the rule of free association). Nor were they unwilling to get well, for frequently those patients who were most distressed and embarrassed by their illness were most hampered in treatment by this phenomenon. Rather, resistance was due to active forces in the mind, of which the patients themselves were often unaware, which led to the exclusion from consciousness of painful or distressing material. Freud described this active force as repression, and this concept remains one of the cornerstones of psychoanalytic theory.

Repression. In a broad sense, Freud considered repression to be at the core of symptom formation. He described the mechanism as follows. A traumatic experience or series of experiences, usually of a sexual nature, which had occurred in childhood, had been "forgotten" or, more accurately, repressed because of their painful nature. However, the excitement associated with the event has not been extinguished, and its traces persist in the unconscious in the form of repressed memories. These memories remain without pathogenic effect until some contemporary event, such as a disturbing love affair, revives them. At this point, there is a breakdown of the successful repression and what Freud termed "the return of the repressed"; this signals the onset of the period of illness proper. The original sexual excitement is revived and is now forced to find a new path or outlet. The clinical manifestation or symptom results from a compromise between the repressed desire and what Freud called the "dominant mass of ideas constituting the ego."

Cases of conversion hysteria were considered of particular relevance in this connection and were studied carefully by Freud during the 1890's. More specifically, in such cases impulses which were not allowed access to consciousness followed the path of somatic innervation, resulting in such symptoms as paralysis, blindness, disturbances of sensation, and less disguised hysterical attacks. However, despite his emphasis on conversion hysteria as the prototype of repression, Freud believed that the basic proposition, i.e., that symptoms resulted from a compromise between a repressed impulse and the repressing forces in the personality, applied to obsessive-compulsive phenomena as well, and even to paranoid ideation. As a logical consequence of this hypothesis, psychoanalytic treatment during this period consisted of helping the patient to recall repressed sexual experiences so that the excitation which had accompanied such experiences could find its way to consciousness and be discharged through verbalization with accompanying remembered affect.

Theory of infantile sexuality. One final, yet fundamental, modification of these early ideas had still to be made before psychoanalysis could come into its own as a "depth psychology" which presented a new science of the human mind. During the middle 1890's, Freud's clinical experience had led him to devote increasing attention to the importance of sexual seduction in the etiology of the psychoneuroses, especially when such seduction had occurred prior to puberty. He had even distinguished obsessional neurosis from hysteria on the grounds that in the former the subject actively and aggressively pursued the precocious sexual experience, while in hysteria the subject remained passive during the trauma. The important point was that until this time he had taken literally his patients' "tales of outrage" committed by their fathers, nursemaids, etc., but had devoted little attention to the role of the child's own psychological life in the elaboration of these tales. The specific factor which precipitated a radical change in this view has not been clearly delineated. There are several possibilities, however. For one, he had gained additional insight as a result of his clinical investigations of the role of fantasy in childhood. Secondly, his own self-analysis had clearly demonstrated the child's inclination to distort reality to conform with his wishes. There is a third possibility that he simply began to doubt there could be so many wicked fathers in middle class Vienna. In any event, in a letter to his friend, Wilhelm Fliess, in September, 1897, he expressed his doubts as to the veracity of his patients' reports of seduction and suggested instead that "sexual phantasy regularly makes use of the theme of the parents."

At first, the obvious validity of this new insight seemed to threaten the very foundation on which his theories rested, but his depression did not last. He sensed that this discovery offered new possibilities for the study of psychological factors. In attempting to distinguish psychic reality and fantasy from actual events, and psychoneurosis from perversion, psychoanalysis had taken on a new dimension. A dynamic theory of infantile sexuality, in which the child's own psychosexual life played a dominant role, could eventually replace the static concepts in which the child represented an innocent whose eroticism was prematurely and consistently disrupted at the hands of unscrupulous adults. Writing to Fliess, he recalled a quote from a story which was applicable to these new developments in psychoanalysis: "Rebecca, you can take off your wedding-gown, you're not a bride any longer. . . . In the general collapse only the psychology has retained its value." In fact, however, for psychoanalysis there would never be a honeymoon. After an initial period of rejection by the medical world, it entered a period during which it assumed its full responsibilities as a psychological science. The fact that Freud himself turned to the study of dreams, to his self-analysis, to his theory of the mind, to further studies of infantile sexuality, and to the origins and

nature of the psychoneuroses, was additional evidence of its maturation. It was the end of the beginning.

Summary: Therapeutic and theoretical contributions (1887–1897). By 1897, the fundamental concepts of psychic determinism and the operation of a dynamic unconscious were established, and, concomitantly, a theory of psychoneurosis based upon psychic conflict and the repression of the memories of disturbing childhood experiences was clearly outlined. Sexuality, especially in early childhood, was revealed to play an important role in the production of psychological symptoms that had not been recognized hitherto. Above all, a technique, a method of investigation had been developed that could be used to explore a wide range of mental phenomena which had been poorly understood before Freud's time. Nor were the applications of psychoanalysis restricted to the systematic study of psychopathological conditions; it provided an approach to the understanding of dreams, creativity, wit, and other normal mental phenomena as well.

Framework of Psychoanalytic Theory: The Theory of the Instincts and the Psychic Apparatus

Throughout his lifetime, Freud's thinking was characterized by a tendency to describe various aspects of mental functioning as successive series of contrasting phenomena. Moreover, he suggested that mental life, in general, was dominated by three polarities: the first, subject (ego) versus object (outer world), represented the polarity of reality; the second, pleasure versus unpleasure, was designated as an economic polarity; and the third, activity versus passivity, was identified as a biological polarity. In fact, this dualistic view reflects the essential nature of the instrument studied, the human mind. Yet it is possible that we are straitjacketed by this view in our attempt to understand the mind; in that event, a strict adherence to the dualistic approach should be seriously questioned. Psychoanalytic theory is founded upon dualisms to so great an extent, however, that it cannot be discussed accurately without thinking in such terms, and this discussion will not be an exception. Nevertheless, the possibility that a dualistic approach might provide a distorted view of the phenomena under consideration should be taken into account.

Basically, the body of psychoanalytic theory may be divided into the theory of the instincts or drives, on the one hand, and the psychic apparatus as it deals with these instincts, on the other. This part of the section is concerned with that part of the psychoanalytic theory which deals with the development of the sexual and aggressive instincts, in terms of their source, aim, impetus, and object, and with related phenomena. The next part of the section will focus on the formation and function of the psychic apparatus, or what is currently known as ego psychology.

More specifically, all human beings have similar instincts. The actual discharge of instinctual impulses

is organized, directed, or, if necessary, suppressed by the individual ego, which serves as the mediator between the organism and the external world. Historically and logically, the detailed attention to the instincts in psychoanalysis preceded the preoccupation with ego psychology. Obviously, one would not attempt to investigate an apparatus whose function it is to organize, direct, and suppress, without prior understanding of the precise nature of the phenomena which were organized, directed, and suppressed. However, to an increasing extent, the study of the ego as a product of the interplay of unconscious instinctual demands and environmental influences has become a dominant concern of psychoanalysts and behavioral scientists in allied disciplines, to the degree that several workers feel that there has been a concomitant deemphasis on the study of the deeper forces of the mind. The question is open to argument.

With specific reference to this presentation, no attempt has been made to order the discussion of these concepts on the basis of their importance. Nor will it be possible to discuss these concepts in strict chronological sequence, although their historical evolution will be indicated where this is possible. Finally, certain areas of psychoanalytic study, such as anxiety, symptom formation, the phenomenon of narcissism, the theory of the mind, and character development, may be discussed appropriately from two vantage points: In this part of the section these phenomena will be discussed in relation to the formation of the basic—and universal—instincts and drives. The following part of the section will focus on their relationship to the structure and function of the psychic apparatus, which permits psychoanalysis to understand individual differences among human beings from a causal and genetic point of view.

Development of the Instincts

Libido theory. There is some confusion as to what Freud meant by the term "libido." In brief, Freud regarded the sexual instinct as a psychophysiological process (as did everyone else), which, therefore, had both mental and physical manifestations. Essentially, he used the term "libido" to refer to "that force by which the sexual instinct is represented in the mind," and it is used here in this accepted sense, i.e., as referring specifically to the mental manifestations of the sexual instinct.

As mentioned earlier, Freud recognized that the sexual instinct did not originate in finished form (i.e., as represented by the stage of genital primacy). Rather, it underwent a complex process of development, during which it had many manifestations apart from the simple aim of genital union. The libido theory referred to the investigation of all of these manifestations and the complicated paths they might follow in the course of development.

Infantile sexuality. Of all of Freud's theories, the concepts he advanced with regard to the erotic life of

infants and young children undoubtedly aroused the most violent and continued opposition. Indeed, even today, many "sophisticated" psychiatric residents react with complete incredulity to the elucidation of sexual material in a clinical demonstration of a case of childhood neurosis. Freud's theory of infantile sexuality threatened to undermine one of the most cherished ideals of the 19th century, the innocence of children. Moreover, the belief that children, and especially infants, are somehow "above" sexual longings persists today; nor is this belief confined to the uneducated. Under the circumstances, the theory of infantile sexuality is certainly an outstanding example of the courage Freud demonstrated in his pursuit of scientific truth in the face of the most adverse public opinion.

Freud had become convinced of the relationship between sexual traumata experienced in childhood and later psychopathology as a result of his early investigations of the "actual neuroses" (i.e., hypochondriasis, neurasthenia, and anxiety neurosis). And these studies had, in turn, led to awareness of the importance of sexual factors in the etiology of the psychoneuroses. With increased clinical experience, Freud was able to reconstruct the early sexual experiences, responses, and fantasies of his patients. These data provided the framework for a developmental theory of childhood sexuality, which in the years since has been corroborated in many respects by direct observation. Apart from the data he had extracted from his clinical experience, Freud based his theory on the self-analysis he began in 1897 and continued for an undetermined period. The insights he acquired in the course of the analysis regarding his own erotic longings in childhood and his conflicts in relation to his parents clearly suggested that, in all likelihood, these phenomena were not restricted to the neuroses, that "normal" individuals underwent similar developmental sequences.

Freud had completed his formulations concerning all the essential phases of sexual development before the turn of the century. Nevertheless, *Three Essays on the Theory of Sexuality*, containing a full account of his startling views, was not published until 1905. Even more surprising is the fact that his detailed discussion of the sexual development of children (including the pregenital organization of the libido) and the libido theory itself appeared for the first time in the third edition of the *Three Essays*, 10 years later.

In essence, while Freud used the term sexuality in these essays in the familiar sense, to refer to the erotic life of the individual, he extended the general concept concerning those sensations and activities which are typically considered "sexual," and those parts of the body which are usually associated with eroticism. Freud noted that infants were capable of erotic activity from birth, and he described the various stages of sexual development during the first 4 years of life. The 5th year marks the beginning of the "latency

period," at which point sexual development comes to a halt (although this will depend on the individual) until the child reaches puberty when he is approximately 11 years old. At puberty there is renewed growth of the genital organs and a resurgence of the sexual drive, and the child begins his final preparations for the adult sexual role.

Phases of psychosexual development. The earliest manifestations of sexuality arise in relation to bodily functions which are basically nonsexual, such as feeding and the development of bowel and bladder control.

The oral phase. Erotic activity during this phase, which extends into the 2nd year of life, centers on the mouth and lips and is manifested in sucking, biting, and chewing.

The anal phase. As a concomitant of the child's increasing preoccupation with bowel function and control, the dominant erotic activity then shifts from the oral to the anal and rectal regions, from ages 2 to 4.

The genital or phallic phase. The genital phase of sexual development begins some time during the 3rd year of life and continues until approximately the end of the 5th year. Initially, erotic activity is linked both psychologically and physiologically with the activities and sensations associated with urination. However, Freud postulated that in boys phallic erotic activity was essentially a preliminary stage for adult genital activity. On the other hand, in contrast to the male, for whom the principal sex organ remains the same throughout, the female has two leading erotogenic zones—the clitoris and the vagina. The clitoris is preeminent during the infantile genital period of development. However, development is complicated by the fact that during or after puberty the transition must be made to vaginal primacy.

Karl Abraham, one of the most gifted psychoanalytic pioneers whose premature death was considered a great loss to psychoanalysis, further subdivided these phases of libido development. He divided the oral period into a sucking and biting phase, and the anal phase into destructive-expulsive and mastering-retaining phases. Finally, he hypothesized that the phallic period comprised an early phase of partial love, which was designated as the true phallic phase and a later, more mature genital phase.

Freud suggested, in connection with this elucidation of sexual development, that there were three phases of genital masturbatory activity: during early infancy, at the highest point of infantile sexuality, and during puberty. During the earliest months of life the genital region may be stimulated (in both boys and girls) inadvertently by the mother. However, masturbatory activity (i.e., stimulation of the penis in boys and the clitoris in girls) reaches its peak some time during the 3rd year of life and continues until the end of the 5th year.

As indicated earlier, for each of the phases of psy-

chosexual development described above, Freud delineated specific erotogenic zones, that is, various regions of the body which might be the source of erotic sensation.

Vicissitudes of infantile sexuality

The part instincts. During infancy and early childhood, for the most part, erotic sensation emanates from the mucosal surfaces of a particular body part or organ. More specifically, during the earliest years of life, the mucous membranes of the mouth, anus, or external genitalia are the appropriate primary focus of the child's erotic life, depending on his or her phase of development. Subsequently, in normal adult sexual activity, the genital zone becomes predominant. However, the pregenital or prephallic erotogeneity of the oral and anal zones still retains a place in preliminary mating activities, i.e., in the "foreplay" or "fore-pleasure" which precedes coitus, which, ideally, culminates in "end pleasure," i.e., orgasm.

Freud described the erotic impulses which arise from the pregenital zones as component or part instincts. Kissing, stimulation of the area surrounding the anus, or biting the love object in the course of lovemaking would be examples of activities associated with these part instincts. Early genital excitement may undergo displacement to the eyes, for example, and looking and being looked at (scotophilia) may be a source of pleasure. Ordinarily, in the course of development, these component instincts undergo repression or retain a restricted role in sexual foreplay. More specifically, normally, the young child is characterized by polymorphous perverse sexual instincts; that is, his total sexuality is undifferentiated and encompasses all of the part instincts. However, as mentioned above, in the adult these part instincts are expected to become subordinate to the primacy of the genital region. The failure to achieve genital primacy may result in various forms of pathology. If, for example, the libido becomes too firmly attached to one of the pregenital erotogenic zones, or a single part instinct is predominant, a "perversion," such as fellatio or voyeurism, which ordinarily would be limited to the preliminary (preparatory) stages of lovemaking, would replace the normal act of sexual intercourse. The persistent attachment of the sexual instinct at a particular phase of pregenital development was termed a "fixation."

Neurosis and perversion. Freud further discovered that in the psychoneuroses only a limited number of the sexual impulses which had undergone repression and were responsible for creating and maintaining the neurotic symptoms were of a "normal kind." For the most part, these were the same impulses which, in the perversions, were given overt expression. The neuroses, then, were the "negative" of perversions. However, the relationship between psychoneuroses and perversions is not nearly so simple as it might seem at first glance. Its more complex aspects

are elaborated on in detail below. For example, at this point in its development, Freud's theory could not account for the fact that in one case a part instinct might be repressed and contribute to neurotic symptom formation, while in another case the part instinct retained overt dominance over the individual's sexual activity in the form of a perversion. In other words, although the theory of sexuality encompassed the concept of fixation of the libido, insofar as it was limited to the description of various potential zones of libidinal stimulation and excitement, it was unable to explain the outcome of fixation in a particular case. The resolution of the problem had to await the development of later theories concerning the defense mechanisms, the functions of the ego and the superego, and the nature and role of anxiety in mental functioning.

Social and cultural implications of the theory of infantile sexuality. Despite the anger and general sense of outrage they evoked initially, Freud's investigations of the sexual development in early childhood had important social and cultural consequences. For one, they have given rise to a more enlightened approach to the child's sexual explorations and a more respectful attitude toward his expressions of sexual curiosity. Moreover, in general, our greater sexual freedom and the development of a more rational morality can be attributed to Freud's discoveries. Under the circumstances, it is rather ironic to realize that even today Freud's theory of infantile sexuality evokes strong resistance. (Indeed, it is even more ironic that such resistance should persist among professionals and laymen alike, in view of Freud's elucidation of its origins and nature as a concomitant of his investigations in this area.) Nevertheless, apparently his vivid case histories did successfully demonstrate the possible repercussions of undue sexual restrictions and harshness, especially in the critical stages of development. As a result, he was able to influence the sexual attitudes of successive generations, even where there was no real acceptance of the theoretic principles involved.

Development of object relationships. Current theories in psychoanalytic psychiatry have focused increasingly on the importance for later psychopathology of disturbances in early object relationships (i.e., the relationship of affect to an object outside one's self). And, concomitantly, those workers who emphasize the importance of "cultural" factors in development have criticized Freud for setting forth a timetable of infantile sexual development in a "social vacuum" without taking into account the impact on the child of the adults with whom he comes into contact. In fact, however, the criticism which has been leveled against Freud on this score is patently unjust. Even the most cursory examination will disclose that Freud's early writings on sexual development incorporated his basic concepts of object relationships as they evolved in relation to the sexual instinct, and

that he considered these phenomena closely interwoven. Nor is this surprising when one considers that the libido theory evolved from the crucial insight Freud acquired early in his clinical experience that the sexual fantasies of his adult patients typically centered on their early relationships with their parents. In any event, throughout his descriptions of the libidinal phases of development, Freud made constant reference to the significance of the child's relationships with crucial figures in his environment. More specifically, he postulated that the choice of a love object in later life, the love relationship itself, and object relationships in other spheres of activity would depend largely on the nature and quality of the child's object relationships during the earliest years of life.

Object relationships during the pregenital phases of development. At birth, the infant has no awareness of the external world of objects. At most, he is capable of an undifferentiated sensitivity to pain and pleasure. More precisely, hunger, cold, and pain give rise to tension and to a corresponding need to seek relief from these painful stimuli in sleep. At the same time, the human infant is more helpless than other mammals, and his helplessness continues for a longer period of time. He cannot survive unless he is cared for, and he cannot achieve relief from painful stimuli without help from outside. Object relationships of a primitive kind are established when the infant begins to grasp this fact. Because he is aware only of his own tension and relaxation and unaware of the external world, longing for the object exists only as long as disturbing stimuli persist and the object is absent. Once the object appears and the infant's needs are gratified, the longing disappears.

The oral phase. The infant's first awareness of an object, in a psychological sense, comes from his longing for something which is already familiar, for something which gratified his needs in the past but is not immediately available. Essentially, it is hunger which compels the infant to recognize the outside world. In this context, the infant's primitive reaction to the first objects, i.e., his desire to put them in his mouth, becomes understandable. Moreover, this reaction coincides with his first recognition of reality: the infant judges reality in terms of whether something will provide satisfaction (and should, therefore, be swallowed), or whether it will create tension (and, consequently, it should be spit out).

It is at this point that the mother becomes more than an anonymous agent, whose ministrations keep the infant alive. She is recognized as the source of nourishment and, beyond this, as the source of the erotogenic pleasure the infant derives from sucking. As such, she becomes the first love object. From the oral phase onward, sexual development, that is, the focus on successive erotogenic zones and the emergence of associated component instincts, will reflect the child's attachment to the crucial people in his environment and his feelings of love or hate (or an ad-

mixture of both) toward these important persons. For example, if a fundamentally warm relationship between mother and child has been established during this period, theoretically at least the stage will be set for the development of trusting and affectionate ties to others in later life.

At first glance, this "formula for success" would appear to be relatively simple and clear cut. However, in fact, the oral stage is not without its possible perils in terms of the course of future development. Apart from the adverse consequences which are typically associated with the mother's rejection or undue frustration of the infant's needs, distortions in the early mother-child relationship may have more subtle, but equally severe repercussions. As mentioned earlier, Abraham subdivided the oral stage into a sucking and biting phase. Inevitably, the frustration associated with the latter part of the oral period, and particularly with the weaning process, which, to the child, signifies the imminent loss of oral gratification, evokes biting and cannibalistic impulses toward the object. When such impulses are excessive, they may be a prelude to later serious impairment of object relations.

The anal-sadistic phase. In a broad sense, the infant's role during the oral phase of development is a passive one. That is, the onus is on the mother to gratify (or frustrate) his demands. In contrast, during the anal period, the child is expected, for the first time, to relinquish one aspect of his freedom: he is expected to accede to his mother's demand that he use the toilet for the evacuation of feces and urine. The primary aim of anal eroticism is the enjoyment of the pleasurable sensation of excretion. Later on, the stimulation of the anal mucosa through retention of the fecal mass may be a source of more intense pleasure.

The connection between anal and sadistic drives may be attributed to two factors. First, the object of the first anal-sadistic activity is the feces themselves, and their "pinching off" is perceived as a sadistic act. Subsequently, people are treated as feces were previously. The sense of social power which evolves from sphincter control constitutes the second sadistic element: in training for cleanliness, the child exerts his power over his mother by giving up, or refusing to give up his feces.

The first anal strivings are autoerotic. Pleasurable elimination (and at a later point, pleasurable retention) does not require the outside help of an object. At this stage of development, defecation is invested with omnipotence, and the feces, which represent the agent of such pleasure, become a libidinal object, so to speak, by virtue of their narcissistic evaluation. Although they have become external, they have "ego quality," for they represent part of what was once one's own body. Hence, there is a tendency to reintroduce what was once eliminated, in order to restore narcissistic equilibrium. Thus, the feces become an ambivalently loved object: They are loved and retained

or reintrojected, on the one hand; and they are hated and "pinched off" on the other.

Certain pleasurable anal sensations are associated with the mother's ministrations (e.g., diaper changes). This maternal care, in combination with the conflicts which surround toilet training, subsequently alters the direction of object strivings. However, as mentioned above, people are treated in much the same way feces were earlier. The compulsive neatness which is typical of patients who have regressed to this pre-genital phase of development is an expression of their wish to dominate. They exert power over things and people and force them into a rigid and pedantic system. Concomitantly, their feelings are characterized by the ambivalence referred to earlier, i.e., the tendency to control and retain the object, together with a desire to expel and destroy it.

The connection between anal eroticism and the physiological basis for ambivalence derives from the fact that during this stage in his development the child treats the object, i.e., feces, in a contradictory manner. He alternately expels the matter from his body and retains it as a loved object.

Finally, Abraham considered his subdivision of the anal-sadistic stage cited earlier of crucial importance, for at the dividing line between these two phases a decisive change occurs in the individual's attitude toward the external world. It is at this point that the tendency to preserve the object becomes preeminent and the capacity for object love begins (albeit in a restricted sense).

The phallic or genital phase: The Oedipus complex. Although some progress is made toward finding a love object during the pregenital phases of development, for the most part, the child's libidinal activity is autoerotic; that is, sexual impulses are directed toward his own body and discharged through masturbatory activity. The fundamental task of finding a love object belongs to the phallic or genital period, at which time the pattern for later object choices is set down; for now the child discovers the anatomical differences between the sexes. The events associated with this genital phase set the stage for the developmental predisposition to later psychoneuroses. Freud used the term "Oedipus complex" to refer to the intense love relationships which are formed during this period, together with their associated rivalries, hostilities, and emerging identifications. More precisely, the Oedipus complex represents the climax of infantile sexuality. The transition from oral eroticism via anal eroticism toward genitality, and the various associated stages in the development of object relations, culminate in oedipal strivings. An overcoming of these strivings, which are then replaced by adult sexuality, is a prerequisite for normal development; conversely, the neuroses are characterized by an unconscious clinging to oedipal tendencies.

The Oedipus complex evolves during the 3rd to the 5th years in children of both sexes. However, there is

some discrepancy in the development. Freud explained the nature of this discrepancy as follows. In boys, under normal circumstances, the Oedipus complex is resolved by the castration complex; that is, oedipal strivings are given up because of castration anxiety. In contrast, in girls, the Oedipus complex is evoked by the castration complex; more specifically, the girl turns to her father out of disappointment over the lack of a penis.

The castration complex. In boys, the development of object relationships is relatively simple because the boy remains bound to his first object, the mother. Moreover, the primitive object choice which first develops in response to the mother's fulfillment of the infant's basic needs takes the same direction as that which arises later in response to the attraction of the opposite sex. Thus, in the phallic period, in addition to the child's interest in the mother as the source of nourishment, he develops a strong erotic interest in her, and a concomitant desire to possess her exclusively. These feelings usually become manifest at the age of 3 and reach a climax in the 4th or 5th year of life.

With the initial appearance of the Oedipus complex in the phallic phase of development, the boy begins to "court" his mother almost as a lover would, expressing his wish to sleep in her bed, proposing marriage, and taking advantage of any opportunity to watch her dress or undress. Competition from his siblings for the mother's affection is, of course, intolerable. But, above all, he wants to eliminate his arch rival—her husband and his father. The child anticipates retaliation for his aggressive wishes toward his father, and these in turn give rise to severe anxiety. More specifically, he begins to feel that if he continues to show sexual interest in his mother, his penis will be removed. The idea of such deprivation in association with the male organ was identified by Freud as the "castration complex." In "The Passing of the Oedipus Complex," Freud further suggested that in the phallic period, the narcissistic fear about the penis is, in fact, stronger than the object relationship (i.e., the erotic attachment to the mother). Gratification of the boy's passionate love for his mother would endanger his penis. Confronted by the threat of castration, especially from his father, and the anxiety it evokes, the boy must finally "renounce" his oedipal love for his mother. And now he identifies with his father and incorporates within himself his father's prohibitions. In so doing, he manages to internalize, to "cover up" the castration complex, and it also remains free from external authority until it is reactivated at puberty.

The boy's love for his mother remains the dominant striving during this period of infantile sexual development. However, love and competition are not mutually exclusive: the boy loves his father too, and, at times, when he has been frustrated by his mother, he may hate her, or he may love both parents at the same time. In fact, the situation becomes even more complex in

the light of the psychoanalytic hypothesis concerning the bisexual nature of the libido. Thus, on the one hand, the boy wants to possess his mother and kill the hated father-rival; and, on the other hand, he loves his father and reacts to his mother with hostility when her demands on her husband interfere with the exclusiveness of the father-son relationship. The "negative Oedipus complex" refers to those situations where the boy's love for his father is prevalent, and the mother is hated as a disturbing element in this love. Obviously, under certain circumstances the reversal of the typical oedipal triangle may have serious implications for future development. It must be emphasized, however, that the negative Oedipus complex is normally present, to some degree, along with its positive, familiar orientation. The point is that under normal conditions, these conflicting feelings are able to coexist for a temporary period without provoking undue conflict.

The girl's situation. Understanding of the little girl's more complex oedipal situation came later, for it raised a number of questions which proved more difficult of solution. Despite the validity of Freud's basic propositions in this area, the further elaboration and clarification of his concepts had to await the researches of his able female colleagues, notably, Helene Deutsch, Ruth Mack Brunswick, and Jeanne Lampl-de Groot.

As in the boy's case, the little girl forms an initial attachment to her mother, as the source of fulfillment of her vital needs. However, unlike the boy, for whom the mother remains the love object throughout, the girl is faced with the task of shifting this primary attachment from the mother to the father in order to prepare herself for her future sexual role. Thus, essentially, Freud was concerned first with elucidating the factors which influence the little girl to give up her pre-oedipal attachment to the mother and form the normal oedipal attitude toward the father. Secondly, he was preoccupied with the factors which led to the dissolution of the Oedipus complex, in the girl, so that it might be replaced by adult sexuality.

The girl's renunciation of the pre-oedipal attachment to the mother could not be satisfactorily explained as a consequence of the ambivalent or aggressive qualities which characterize the mother-child relationship at certain phases of development, for boys participate in the same type of relationship. Rather, the crucial precipitating factor was found to lie in the anatomical differences between the sexes, or, more specifically, the girl's discovery of these differences during the phallic period. Until this discovery, apart from constitutional differences, and depending on the extent to which these are accentuated by variations in the parents' early attitudes toward a daughter, in comparison with a son, the girl's development parallels that of the boy. Fundamental differences emerge when she discovers, during the phallic period, that the clitoris with which she is endowed is inferior to its

male counterpart, the penis. Typically, the little girl reacts to this discovery with an intense sense of loss and injury and with envy of the male. And at this point, the mother, who had previously been an object of love, is held responsible for bringing her into the world less well equipped and engenders hostility so intense that it may persist. With the further discovery that the mother lacks this vital organ as well, her devaluation becomes even more profound. In an attempt to make up for her "inadequacy," the little girl turns to her father, in the hope that he will give her a penis, or a baby in place of the missing penis. The factors which lead to the dissolution of the Oedipus complex in girls, Freud's second concern, now appeared to be the following: the diminution of the girl's sexual love for her father because of his failure to satisfy her demands, and fear of the mother's disapproval.

Significance of the Oedipus complex. As mentioned earlier, Freud regarded the Oedipus complex as the nucleus for the development of later neurosis and symptom formation. Furthermore, the various admixtures of libidinal fixations, object orientations, and identifications with which the child emerges from the Oedipus situation exert a profound influence on the development of character and personality. This is a current concern of psychoanalytically oriented psychiatry. As such, the processes which enable the resolution of the Oedipus complex as the child emerges into the latency period clearly merit more detailed discussion than has been provided here. These processes are so intimately bound up with the development of the psychic apparatus and its structural components that it was considered appropriate to defer this discussion for presentation in the following part of the section, which is devoted to these areas of psychoanalytic theory. However, it should be emphasized here, once again, that in puberty there is a resurgence of incestuous oedipal feelings in both sexes, and the task of withdrawing libido from the parents and attaching it to other, more suitable love objects becomes of critical importance. Finally, with parenthood, the father and mother each reexperiences his early relationship with his own parents through identification with his child.

The nature and origins of anxiety

Initial formulations. Freud's first theory of anxiety emphasized its biological genesis in the sexual instinct. Thus, as a result of his early clinical studies in the 1890's, pathological anxiety was uniformly attributed to disturbance in sexual function. However, Freud distinguished between the etiological factors which produce anxiety in specific clinical entities. On the one hand, in those syndromes which he classified as the "actual neuroses" (i.e., neurasthenia, hypochondriasis, and anxiety neurosis), the causative factors have a physical basis. In contrast, he attributed the psychoneuroses, such as hysteria, primarily to psychological factors.

According to Freud, an increase in sexual tension (as a physiological phenomenon), leads to an increase in its mental representation, i.e., libido, together with various associated ideas and emotions. In the normal course of events, this sexual tension is discharged somatically through sexual intercourse, and, concurrently, its mental representations as well. However, in the actual neuroses, such as anxiety neurosis, abnormal sexual practices, i.e., coitus interruptus, prevent the proper somatic discharge of sexual tensions or "toxins" and, concomitantly, the adequate expression of the psychic elaboration of these sexual tensions. Freud maintained that it is this interference with the adequate discharge of the psychic component of sexual tension, i.e., its libidinal aspects, which gives rise to anxiety. Anxiety is also characteristic of psychoneurotic states, such as hysteria or obsessive-compulsive states, but here the interference with normal sexual functioning was attributed to psychic conflict or repression.

Freud held to this theory in its essential outlines until 1926, when he proposed certain fundamental revisions.

Modifications. Many workers have based their objections to Freud's first theory of anxiety on the fact that his postulates concerning the somatic or toxic aspects of sexual functioning (or malfunctioning) were naive. In fact, however, in the years since, endocrinological investigations have confirmed the existence of a variety of sexual "substances," i.e., hormones. Moreover, research findings in this area have disclosed that some of these so-called substances are even related chemically to those hormones which are involved in "fight-flight," or anxiety reactions.

Nevertheless, this theory does have certain inherent limitations. First, it contradicts a basic aspect of the psychoanalytic concept of the psychoneuroses: Freud postulated that in the psychoneuroses anxiety is the result of sexual repression, which, of course, implied that repression precedes anxiety. But what causes repression? Freud had also stated that repression arose in response to unbearable affects, which would certainly include anxiety. This, of course, implies that anxiety precedes repression and represents the basic contradiction which was the source of considerable controversy.

Second, the theory did not take into account anxiety which arises in response to realistic danger, i.e., so-called objective anxiety. Obviously, in certain situations the anticipation of external danger may cause somatic phenomena and subjective sensations of fear, which are indistinguishable from those which occur in neurotic states but are entirely unrelated to the accumulation of sexual tensions. Thus, anxiety can best be understood, not in terms of its associated sensation or its somatic expression, but in terms of whether it is precipitated by an external or an internal danger. In other words, as Freud came to realize, a comprehensive theory of anxiety must take into account its relation-

ship to the self-preservative goals of the organism: it must consider the *function* of anxiety. In a broader sense, the deficiencies associated with Freud's early theory of anxiety serve to underscore the inevitable limitations of an approach which tries to account for a phenomenon as complex as anxiety entirely on the basis of consideration of the instincts and their fate, without reference to the functions of the psychic apparatus or its relationship to the outside world.

Accordingly, in his later theory of anxiety, Freud dealt specifically with the limitations inherent in his early effort. His later theory did not discard the important relationship between frustrated sexuality and anxiety in certain neurotic conditions. Nor did it rule out the possibility that there was a direct somatic relationship between sexual conflict and anxiety, the precise nature of which had not yet been defined. However, these "economic" considerations were included within a broader theoretical framework.

The concept of narcissism. The concept of narcissism holds a transitional position in the development of psychoanalytic theory. On the one hand, it necessitated important modifications in the libido and instinct theories; on the other, it precipitated a detailed examination of the ego and its functions. Moreover, this concept has further implications which have not yet been fully explored for the understanding of psychotic patients and other patients who fail to respond to treatment.

Theoretical basis. Prior to the psychoanalytic application of the concept of self-love, the term narcissism was applied in a restricted sense to designate a sexual perversion of the type demonstrated by the Greek youth Narcissus, who fell in love with his own reflection. The first systematic discussion of narcissism appeared in Freud's writings in 1914 in his classic paper "On Narcissism." The phenomenon had provoked his interest as early as 1909, however. Moreover, on the basis of his clinical experience and his observations of the "psychopathology of everyday life," Freud had become aware of the need to expand his libido theory in order to accommodate the concept of narcissism.

In 1908, Freud observed that in cases of dementia praecox (schizophrenia) libido appeared to have been withdrawn from other persons, or objects, and concluded that this might account perhaps for the loss of contact with reality that was typical of such patients. He then speculated as to where this libido had been invested instead. The megalomaniac delusions of these patients appeared to indicate that the libido they had withdrawn from external objects was now invested in themselves, in their own egos. Concomitantly, Freud became aware of the fact that the phenomenon of narcissism was not limited to the psychoses; it might occur in neurotic and "normal" individuals as well, under certain conditions. He noted, for example, that, in physical illness and hypochondriasis, investment (or what he called "cathexis") of

the libido was frequently withdrawn from other objects or persons and from external activities and events. Similarly, he speculated that in sleep libido was withdrawn from outside objects and invested in the person's own body. It may be that in dreams the "more intense than real life" quality of the emotional experience results from libidinal cathexis of the fantasy representations of the persons who compose the dream images.

Freud was aware, of course, of the significant role of narcissism in the myths and beliefs of primitive people who attributed the occurrence of external events to the omnipotence of their own thoughts. Above all, even the most casual observation of young children will reveal the extent of their narcissism, their exclusive dedication to their own self-interest, and the tenacity with which they cling to the magical omnipotence of their thoughts.

Narcissism and the development of object relationships. Freud's observations of the narcissistic behavior of young children provided incontrovertible evidence of the role of narcissism in development and, in turn, led him to incorporate such considerations into his libido theory, outlined earlier in this section.

To begin with, while for obvious reasons the hypothesis is not testable by direct observation, Freud postulated that a state of "primary narcissism" existed at birth. That is, the neonate is entirely narcissistic; his libidinal energies are devoted entirely to the satisfaction of his needs and the preservation of his well-being. The libido which is thus invested in the infant himself was termed narcissistic, or ego libido. Later, as the infant gradually begins to recognize the person immediately responsible for his care as a source of tension relief or pleasure, libido is released for investment in that person (usually the mother). Freud called the libido that becomes available for attachment to others "object libido." Thus, essentially, the development of object relations parallels this shift from primary narcissism to object attachment, i.e., from infancy, when narcissistic libido is preeminent, to later childhood, when object libido predominates. However, it should be pointed out that some narcissistic libido is normally present throughout adult life; this is considered healthy narcissism and finds expression in the individual's "sense of well-being." Moreover, Freud observed that in a variety of traumatic situations (physical as well as psychological), e.g., actual injury or the threat of injury, object loss, or excessive frustration, libido would be withdrawn from objects and reinvested in the self. He called this renewal of libidinal investment in the individual's own body or self "secondary narcissism."

Applications to infantile sexuality. Discussion of the concept of narcissism inevitably gives rise to the central question of whether it differs essentially from autoeroticism. In fact, the difference between the two is a fundamental one: Autoeroticism refers to eroticism in relation to the subject's own body or its parts;

narcissism refers to the love of something more abstract—the self or the subject's ego.

Apart from such considerations, it should be noted that Robert Waelder has made an initial attempt to apply levels of self-love or narcissism to the developmental schemata of erotogenic zones, within the framework of Freud's theory of infantile sexuality: as it applies to the oral period, narcissism is expressed in the wish for affection and is defined as receptive narcissism; phallic narcissism designates the wish for admiration which is said to characterize this stage of psychosexual development.

Narcissism and choice of love object. Reference was made earlier to the crucial role of early object relationships in the later choice of love object. Freud found that further application of the concept of narcissism facilitated understanding of the basis for the choice of a love object in adult life. Thus, a love object might be chosen "according to the narcissistic type" that is, because she resembles the subject's idealized self-image (or his fantasied self-image), or the object chosen might be an "anaclitic type," in which case the object would resemble someone who took care of the subject during the early years of his life. Persons who themselves have an intense degree of self-love, especially certain beautiful women, have, according to Freud, an appeal over and above their aesthetic attraction. Such women supply for their lovers the lost narcissism that was painfully renounced in the process of turning toward object love. Finally, a homosexual object relationship represents still another example of a "narcissistic" object choice. In this case, the individual's choice of an object is predicated on sexual resemblance.

In summary, the concept of narcissism occupies a pivotal position in psychoanalytic theory. With the introduction of the concept of narcissism, it became obvious that the concept of the "individual," his "body," and his "ego" could no longer be used interchangeably, that further understanding and advances in psychoanalytic theory would depend on a clearer definition of the concept of self or ego. Attempts to implement such understanding brought into focus ambiguities in the concept of the ego which served to underscore the need for systematic study of its development, structure, and functions. The attention to narcissistic phenomena has also enlarged our understanding of a variety of mental disorders, as well as various normal psychological phenomena. Finally, it represents a kind of watershed in psychoanalysis for the theory of the instincts itself to which we now turn.

The theory of the instincts. When he began his work, Freud strove unceasingly to maintain psychoanalytic theory on a firm biological foundation. Only the lack of adequate scientific data induced him to relax his efforts on this score. His theory of the instincts represents one of his most important efforts to link psychological and biological phenomena, for Freud conceived of the instinct as a "borderline" con-

cept, between the mental and the organic spheres. Consequently, as mentioned earlier in connection with the term libido, Freud's use of the term instinct is not always consistent. At times, libido refers to the somatic process underlying the sexual instinct, and at other times, to the psychological representation. It has been suggested that this confusion stems, in part, from the fact that German cannot be translated accurately into English. *Triebe* are powerful, imperative strivings, such as sexuality and self-preservation, within living organisms, which are rooted in their physical nature. In contrast, the Darwinian word, "instinct" implies innate, inherited, unlearned, biologically useful behavior. Thus, the reader would do well to keep in mind the fact that Freud's *Triebe*, which has been variously translated as instinct, drive, or instinctual drive, must not be confused with the word instinct as it is used in zoology.

Freud provided his clearest definition of *Triebe* in 1915 in his paper "Instincts and Their Vicissitudes," when he wrote, "an 'instinct' appears to us as a concept on the frontier between the mental and the somatic, as the psychical representative of the stimuli originating within the organism and reaching the mind, as a measure of the demand made upon the mind for work in consequence of its connection with the body." This definition clearly points up the essential role of the instinct in psychoanalysis. Nevertheless, instinct theory remains a somewhat obscure area. The relationship between psychological and somatic processes is particularly difficult to elucidate; nor is this difficulty lessened by affirmation of the belief in the essential unity of mind and body. Psychoanalysts are, in brief, forced, just as Freud was, to delimit their theoretical constructs to the psychological parameters of human behavior. Recognition of this fact has caused an increasing number of analysts to turn to what ethologists and other students of animal behavior can teach about instincts.

The characteristics of the instincts. According to Freud, an instinct has four principal characteristics: source, impetus, aim, and object. This classification was stressed especially in his early writings when he was most concerned with the sexual instinct. In general the source of an instinct refers to the part of the body from which it arises, the site of its inception. The source, then, refers to a somatic process, the stimulus of which is represented in mental life as a drive or affect. In sexual life, the stimulus would refer to the process or factor which excites a specific erotogenic zone (the "source"). The impetus is a quantitative concept that refers to the amount of force or demand for work made by the instinct. The aim is any action directed toward satisfaction or tension release, such as the infant's activity in seeking the nipple. The object is the person or thing which is the target for this action. The object is the most variable characteristic of the instinct, insofar as it is appropriate to its task to the extent that its characteristics make satisfaction

possible. The subject's own body may serve as the object of an instinct in masturbatory activity, for example.

The classification of instincts. In the early years of psychoanalysis, as might be expected, the development of instinct theory was closely related to the clinical phenomena which Freud was investigating. From the beginning, he held to his dualistic classification of the instincts. Although initially he postulated an instinct of self-preservation, at this time (1890's) Freud was, as we have described, primarily concerned with the sexual drive, which reflected his preoccupation with the role of sexual factors in the etiology of hysteria and the psychoneuroses. Later, this relationship between the classification of instincts and clinical work became uneven. For example, in his classification of the life and death instincts, Freud concerned himself with abstract forces in nature, and his concepts in this area were not directly supported by clinical evidence.

Ego instincts. Because Freud's predominant interest was in the sexual basis of the neuroses, until approximately 1910, the self-preservative, or ego instincts, were rather neglected. However, his increasing interest in the phenomenon of self-love or narcissism led, in turn, to greater emphasis on the ego instincts. At this point, he saw narcissism as an essentially libidinal instinct; he called the remaining aspects "ego instincts," which he considered primarily nonsexual and devoted to self-preservation. Freud also felt that the ego instincts were closely associated with repression. Furthermore, at this time Freud also believed that mental conflict, which could produce symptom formation and neurosis, resulted from the clash between two instincts—the libido (or sexual) instinct, as opposed to the ego (or nonsexual) instinct. Only after he had evolved a comprehensive theory of the mental structure, and particularly the ego and the mechanisms of defense, did he abandon this conception.

The nature of aggression. Freud's discovery and early formulations regarding the ego instincts led him, in 1915, to reconsider the nature and role of aggression. Previously, Freud had considered aggression largely in terms of sadism, which he had defined as one of the sexual part or component instincts which were manifest at every level of psychosexual development. But clearly there were nonsexual aspects of sadism, and so for a time he included sadism among the ego instincts, citing, for example, the impulse to attack in order to protect oneself. Gradually, however, Freud was forced to realize that there were both sexual and nonsexual aspects of sadism. Thus, he differentiated between aggression and hate, which he assigned to the ego instincts, on the one hand, and the libidinal aspects of sadism which reverted to the sexual instinct, on the other. Sadism was further seen as the result of a fusion of sex and aggression, of love and hate, which might occur for example, in the case of thwarted desire.

But this classification gave rise to still another problem. On the basis of clinical evidence of the self-destructive tendencies of depressed patients, and self-inflicted injury among his masochistic patients, as well as his observations of the wanton destructiveness normally manifested by small children, Freud concluded that in many instances aggression or aggressive impulses were not self-preservative; therefore, they could not be properly assigned to the ego instincts. Thus, when Freud set forth his new structural theory of the mind in the 1920's, he gave aggression separate status as an instinct with a source which was largely in the skeletal muscles and the aim of which was destruction. Aggression could come about, it was true, through the frustration of libido, but in that event it was secondarily invoked, "on loan" to the sexual instincts. The elevation of aggression to the status of a separate instinct on a par with sexuality dealt a severe blow to any lingering romantic notion of the essential "goodness" of man, whose aggressive impulses were stimulated only if he was sufficiently thwarted or abused. This new formulation had other implications as well: attention then had to be given to the specific role of aggression in mental disorders and to tracing the steps through which it is "neutralized" or "detoxified." These processes have been investigated, by Hartmann and Waelder, respectively, only in the past 2 decades.

The life and death instincts. Freud introduced his theory of the dual life and death instincts, Eros and Thanatos, in 1920. As mentioned earlier, this classification of the instincts is more abstract and has broader applications than his previous concept of libidinal and aggressive drives. The life and death instincts were considered to represent the forces which underlay the sexual and aggressive instincts. As such, they represented the trends of biological organisms in general. Although Freud conceded that the death instinct was not, in itself, clinically verifiable, he felt that the validity of this concept was substantiated by certain observable phenomena. He pointed, in particular, to the tendency of individuals to repeat past behavior (a phenomenon he described as the "repetition compulsion"), even if such behavior had proven ill advised. Further evidence was to be found in the many examples of the individual's inexplicable need to suffer.

Freud defined the term "death instinct" as the tendency of organisms and their cells to return to an inanimate state. In contrast, the "life instinct," or Eros, referred to the tendency of particles to reunite, of parts to bind to one another to form greater unities, as, for example, in sexual reproduction. These forces are, therefore, analogous to catabolism and anabolism. Inasmuch as the ultimate destiny of all biological matter (with the exception of the germ cells) is to return to an inanimate state, the death instinct was thought to be the dominant force.

Apart from the fact that it implies a rather gloomy

view of life, the concept of the death instinct is the aspect of Freudian theory which has been criticized most severely, both by psychoanalysts and workers in related disciplines. This criticism has been based on the fact that, although there is an undeniable tendency toward cellular deterioration, it cannot be assumed from this that the total organism possesses a drive or instinct in that direction.

The pleasure and reality principles. In Freud's early formulations, the instincts were thought to be governed by certain regulatory principles, which were applied to all stimuli impinging on the organism, whether these stimuli emanated from within or without. Even at the time he wrote the "Project" in 1895, Freud had recognized the significance of the constancy principle, i.e., the tendency of the organism to maintain a particular level or state of equilibrium. And, along with the concept of the death instinct, Freud developed the "Nirvana principle," which postulated a tendency on the part of the organism to discharge internal tension and seek a state of rest. In 1911, he described two basic principles of mental functioning which derived from this need to maintain a state of equilibrium—the pleasure and the reality principles.

The pleasure principle, which he considered largely inborn, referred to the tendency of the organism to avoid pain and seek pleasure through tension discharge. In essence, the pleasure principle persists throughout life, but, inevitably, it must be modified by the reality principle. The demands of external reality, called the reality principle, necessitate the delay or postponement of immediate pleasure, with the aim, perhaps, of achieving even greater pleasure in the long run. The reality principle is largely a learned function; therefore, it is closely related to the maturation of ego functions and may be impaired in a variety of mental disorders which are the result of impeded ego development. Thus, here again, we come upon one of the theoretical propositions of Freud's "middle period" which underscored the need for a systematic psychology of the ego and its functions.

The theory of dreams

First recognition of the significance of dreams.

Today, dreams occupy a central position in psychoanalytic practice and theory and are the subject of expanding research interest. Nevertheless, their application in psychoanalytically oriented psychiatry and the value of dream interpretation in psychiatric treatment have not been clearly elucidated.

Freud first became aware of the significance of dreams in therapy when he realized that in the process of free association his patients frequently described their dreams of the night before or of years past. He then discovered that these dreams had a definite meaning, although it was disguised. And, finally, Freud found that encouraging his patients to freely

associate to dream fragments was more productive than their associations to real life events, insofar as it facilitated the disclosure of unconscious memories and fantasies.

Freud's monumental publication in 1900, *The Interpretation of Dreams*, included much of the data derived from his clinical experience in this area, as well as the insights he acquired by free association to his own dreams. On the basis of these data, he concluded that a dream, like a psychoneurotic symptom, is the conscious expression of an unconscious fantasy or wish which is not readily accessible to the individual in waking life. Thus, while dreams were considered one of the "normal" manifestations of unconscious activity, they were shown later to bear some resemblance to the pathological thoughts of psychotic patients in the waking state. The dream images represent the unconscious wishes or thoughts disguised through symbolization and other distorting mechanisms. Earlier, Freud had postulated the existence of a "censor" which excluded unconscious wishes during conscious states and which in sleep compelled the transformation of unconscious wishes into the disguised conscious form of the dream as experienced by the sleeper. Freud assumed that this censor was in the service of the ego; that is, he considered it a self-preservative function which was in accord with his belief that reason and volition presided over these functions. With the development of ego psychology, the activities of the censor, along with the manifestations of repression, displacement, and symbolism in waking life, have been included among those functions of the ego and superego which may lie outside the individual's conscious awareness.

Analysis of dream content. The analysis of dreams elicits material which has been repressed or otherwise excluded from consciousness by the defensive activities of the ego. The dream, as it is consciously recalled, is but the end result of the unconscious mental activity which occurs during sleep and which, because of its intensity, threatens to interfere with sleep itself. But, instead of waking, the sleeper dreams. We call the conscious experience during sleep (i.e., the dream), which the sleeper may or may not recall after waking, the "manifest dream," and refer to its various elements as the "manifest dream content." The unconscious thoughts and wishes which threaten to waken the sleeper are described as the "latent dream content." The term "dream work" is used to designate the unconscious mental operations by which the latent dream content is transformed into the manifest dream. Thus, the meaning of a dream actually refers to the latent dream content. The latent dream content which gives rise to the manifest dreams may be categorized as follows.

Nocturnal sensory stimuli. Sensory impressions, e.g., pain, hunger, thirst, urinary urgency, may play a role in initiating a dream. To illustrate, a sleeper in

a cold room, who urgently needs to urinate, may, instead of disturbing his sleep (and leaving his warm bed), dream that he has wakened, voided, and returned to bed.

The "day's residue." The second category of latent dream content comprises thoughts and ideas which are connected with the activities and the preoccupations of the dreamer's current waking life. Because of their continued activity in his unconscious, these thoughts, like sensory stimuli, tend to force waking. Instead, the sleeper may incorporate these thoughts and ideas into the manifest dream.

Repressed id impulses. In essence, however, the latent dream content derives from one or several impulses from the repressed part of the id, that is, from wishes which have their origin in the oedipal and pre-oedipal phases of development. Thus, nocturnal sensations and the "day's residue" play only an indirect role in initiating a dream. More specifically, a nocturnal stimulus, however intense, must be associated with one or more repressed wishes to give rise to a dream. Similarly, unless there is a strong link with the repressed, the concerns of waking life cannot, in themselves, give rise to a dream, however compelling their claim on the sleeper's interest and attention.

By virtue of the fact that in early childhood the psychic apparatus is still relatively immature, the relationship between latent and manifest dream content is best illustrated by the dreams of this stage of development. At this point we cannot distinguish between infantile and current conflicts, for they are one and the same. Nor is it possible to distinguish sharply conscious impulses from those which have been repressed, for the very young child's ego has not yet developed to the point where it has erected permanent defenses against the impulses emanating from the id. Thus, the classifications of latent and manifest content have less relevance with regard to the dreams of early childhood, insofar as latent content refers to unconscious material, and manifest content to that which is consciously perceived.

The significance of dreams. Throughout *The Interpretation of Dreams*, which is generally considered to be one of Freud's greatest contributions, he maintained that every dream represents a wish fulfillment. (And this hypothesis is documented by extensive clinical data, including the first complete analysis he made of one of his own dreams in 1895.) As mentioned earlier, manifest dreams are most clearly representative of the imaginary fulfillment of a wish or impulse in early childhood, before such wishes have been repressed. However, in later childhood and in adulthood, the ego defends itself against the unacceptable instinctual demands of the id, and these demands are repressed, to the degree that they appear in the manifest dream in disguised form. Nevertheless, in essence, the dream remains the same—the gratification of an id impulse in fantasy. Or, more accurately,

since motility is blocked by the sleep state, the dream enables partial (but safer) gratification of the repressed impulse.

Because this crucial wish fulfillment aspect of the dream is usually obscured by extensive distortions and disguises, it cannot be readily identified on superficial examination. And inevitably, just as Freud's theory of neurosis has been rejected by those workers who have not accepted his findings concerning infantile sexuality on which it is based, his theory of dreams has been rejected by those critics who have restricted their own investigations to the manifest elements of the dream.

The nature of dream work. Dream work comprises several processes which create the disguises and distortions which permit the translation of latent content into the manifest dream.

Dream formation. The latent content must find some means of representation in the manifest dream. Sleep brings a relaxation of repression, and, concomitantly, latent wishes and impulses press for discharge and gratification. Since motility is blocked, these repressed wishes and impulses must find some means of representation through mechanisms of thought and fantasy. Latent content achieves representation in one of two ways. First, thoughts, impressions, or memories must be found which can adequately serve to represent in visual terms these latent wishes or impulses. The individual's experience in the course of any single day provides an ample supply of such material. As mentioned earlier, when current psychological experiences are linked with repressed material, they are incorporated into the content of the dream as the "day's residue." Second, less frequently, nocturnal stimuli (e.g., hunger, pain, thirst) may be associated with repressed impulses and wishes and give rise to their representation in auditory, tactile, olfactory, or gustatory terms.

The unconscious wishes and impulses which press for discharge have been repressed because of their unacceptable nature. Because there is continued resistance to their discharge, these wishes and impulses must attach themselves to more neutral or "innocent" images, in order to pass the scrutiny of the dream censor. This is achieved by the selection of apparently trivial or unimportant images from the individual's current psychological experience, images which nevertheless are linked or associated dynamically with latent images, which they resemble in some respect. In order to facilitate the economic expression of the latent contents, and at the same time to maintain the disguise that is essential to escape the censor, the dream work employs several further mechanisms to enable these neutral images to represent repressed impulses and wishes.

Symbolism. For certain body parts or other highly cathected objects, the dreamer substitutes "innocent" images which resemble the original part in one or more essential features. For example, the snake is a familiar

symbol for the penis; or a house may symbolize the female genitalia or womb.

Displacement. The mechanism of displacement refers to the transference of emotions (cathexes) from the original object to which such emotions are attached to a substitute or symbolic representation of that object in the dream. Because it is neutral, i.e., is less invested with affect, this substitute object is more acceptable to the dream censor. Thus, whereas symbolism refers to the substitution of one object for another, displacement facilitates the distortion of unconscious wishes through the transference of affect from one object to another. At the same time, the aim of the unconscious impulse remains unchanged. For example, although the mother may be represented visually in the dream by an unknown woman (or, at least, one who has less emotional significance for the dreamer), the latent content of the dream continues to derive from the dreamer's unconscious attitudes of love and hate toward his mother. The greatest part of the distortion which enables the translation of latent impulse and wishes into manifest dream content is accomplished through the mechanism of displacement.

Projection. Through the process of projection, the dreamer's unacceptable impulses or wishes are perceived in the dream as emanating from another person. Moreover, the person to whom these unacceptable impulses are ascribed in the dream is often the one toward whom the subject's own unconscious impulses are directed. For example, the individual who has a strong, albeit repressed, wish to be unfaithful to his wife or sweetheart may dream that his "love object" has been unfaithful to him. He has thereby "projected" his own unacceptable wishes onto another person and made possible their expression in the manifest dream.

Condensation. Condensation is the mechanism by which several unconscious wishes, impulses, or attitudes are combined and find expression in a single image of the manifest dream. To illustrate, in a child's dream, an attacking monster may represent not only the dreamer's father, but also some aspects of his mother, and, finally, the monster may stand for his own primitive impulses as well. Conversely, a single latent wish or impulse may be given multiple representations in the manifest dream content. Clearly, then, condensation provides the dreamer with a highly flexible and economic device for facilitating, compressing, or expanding the manifest dream which is forged out of latent or unconscious wishes and impulses.

Affects in dreams. The affects or emotions which are associated with the latent dream content are also subjected to a variety of vicissitudes. They may not appear in the manifest dream at all or may be experienced in somewhat altered form. For example, repressed rage toward another person may take the form of annoyance or a mild dislike in the manifest dream,

or may even be represented by the dreamer's awareness that he is not annoyed. Or affect associated with the latent dream content may be transformed into its opposite in the manifest dream. A repressed longing may thereby be represented by a manifest repugnance, or vice versa; sadness may masquerade as joy, etc. In any event, these transformations of affect introduce another strong element of disguise into the manifest dream.

Secondary revision. Freud stated that dream formation preserves an example of the manner in which the primitive mental apparatus worked. As such, symbolism, displacement, and condensation are characteristic of developmentally early modes of thinking, or of the "primary process," as described below. In contrast, secondary revision, which is the final operation employed in dream formation, is the mechanism through which the absurd, illogical, and bizarre characteristics of the dream, which represent the distorting effects of symbolism, displacement, and condensation, acquire the coherence and rationality required by the subject's more mature ego. Secondary revision employs intellectual processes which more closely resemble those thought processes which govern states of consciousness; in brief, logical mental operations characteristic of the "secondary process" are introduced into the dream work.

Anxiety dreams. When Freud formulated his basic theory of dreams, he had not yet developed a comprehensive theory of the ego and of its development and functions. Consequently, his early studies of dreams emphasized their function in discharging or gratifying instinctual drives or wishes by representing their fulfillment in the dream's hallucinatory elements. However, dreams may also be approached from the standpoint of their function in avoiding tension or psychic pain. This is properly the domain of the ego, and the dream affords us an opportunity to study the structure and early development of ego functions. Freud realized only later that symbolism, displacement, condensation, projection, and secondary revision serve a dual purpose. On the one hand, they facilitate the discharge of latent impulses. On the other hand, they may be regarded as primitive defense mechanisms which prevent the direct discharge of instinctual drives and thereby protect the dreamer from the excessive anxiety and pain which would accompany such discharge.

Of course, these mechanisms which are employed to disguise latent content may fail. When anxiety pervades a dream or is so severe that it forces at least partial waking, this indicates some failure in the primitive defense operations of the ego. An element of the latent dream content has succeeded, despite extensive dream work, in forcing its way into the manifest dream in a form which is too direct or too readily recognizable for the ego to tolerate. The ego reacts to the direct expression of repressed impulses with severe anxiety.

Punishment dreams. In the punishment dream,

which is a related phenomenon, the ego anticipates superego (conscience) condemnation, if part of the latent content which derives from the repressed impulses should find direct expression in the manifest dream. More specifically, in anticipation of the terrible consequences of the loss of the ego's control over the instincts in sleep, there is a compromise between the repressed wish and the repressing agency, i.e., the superego. The demands of the superego are satisfied by giving expression to punishment fantasies.

Recent research on physiological functioning during sleep and dream states has important implications for psychoanalytic theory. Obviously, a detailed discussion of these investigations lies beyond the scope of this section. It should be mentioned, however, that perhaps the most fundamental finding to emerge from these experiments is that dreaming is a continuous process which consumes a considerable part of the sleep period in all subjects and seems to play an essential role in the integration of normal psychological functioning. Concomitantly, a shift in emphasis is perhaps required from regarding latent drives as initiating the dream process itself to investigation of the way the instincts and ego functions determine the form of particular dreams and shape them to their purposes.

Freud's early theory of the nature and function of the mind, which is discussed below, evolved in large measure from his study of the genesis, nature, and function of dreams.

Freud's Early Theory of the Mind

Historical antecedents. The originality of Freud's theories cannot be disputed. However, it is important, nevertheless, to recognize that his early ideas derived from the scientific and philosophical concepts of his day. It was pointed out, in the introduction to this section that Freud's earliest theory of the mind, as set forth in the "Project," which was published after his death, was based on the neurophysiological concepts of brain function advanced by the Helmholtz School, which, in turn, were derived from Newtonian physics. One of the unique aspects of Freud's contribution to the study of the mind was his effort to integrate empirical biological data with the kind of psychological understanding which, with rare exceptions, had previously been left to philosophers and writers. As demonstrated in the "Project," his earliest efforts at formulating a theory of the mind were in the language of physiology. And he attempted therein to interpret systematically such phenomena as consciousness, perception, memory, thought, judgment, motive forces, and defenses against pain or displeasure in terms of shifts in quantities of excitation between various systems of neurones. For reasons stated earlier, Freud was eventually forced to abandon this effort (although he continued to believe that psychical processes never operated independently of physiological ones and that the latter even preceded the former). However, he concluded that, until methods were developed which would permit verification of the interplay between the two spheres, psychical processes should be described in the language of psychology.

Although the relationship is more difficult to trace, Freud's psychological theories also have their antecedents in the contributions of 19th century psychology and the then related discipline of philosophy.

For example, several authors have called attention to the resemblance between Freud's basic formulation of the dynamic

unconscious and a similar concept developed 70 years earlier by the German philosopher, Johann Herbart. Moreover, while ordinarily Freud might not be expected to be familiar with Herbart's work, there is evidence that he was exposed to his theories during his last year at the Gymnasium. In summary, Herbart maintained that unconscious mental processes were dominated by a constant conflict of ideas of varying intensity. Ideas, according to Herbart, could be driven out of the mind by opposing ideas; but, far from being lost, they continued to assert themselves and would be treated by the subject as disturbing elements requiring self-preservative efforts.

Freud had also studied the writings of Gustav Fechner, whom he greatly admired, and whose psychology was based on Herbart's theories. Fechner, too, believed in unconscious processes which existed below "threshold" and needed to attain a certain intensity before they reached consciousness. The famous comparison of the mind with an iceberg nine tenths under water originated with Fechner. Fechner, in turn, had an important influence on Brücke, who maintained that "movements in the nervous system, give rise to ideas." In all likelihood, Freud had probably read the publications of some of Herbart's other followers as well, such as Wilhelm Griesinger, the prominent German psychiatrist, who believed that ideas could be absent from consciousness, and who associated the unconscious with impressions received from bodily organs. Other late 19th century writers and scholars, such as Theodor Lipps, professor of psychology at the University of Munich, wrote of the existence of unconscious mental processes. Fechner (and Herbart) exerted significant influence also on the ideas of Theodor Meynert, Freud's professor of psychiatry. Although, for Meynert, mind and brain were virtually interchangeable, he too was concerned with threshold and the circumstances under which ideas (excitations of brain cells) reached consciousness. Brain cells, according to Meynert, established connections through associations which were extended by means of the nutrition supplied by blood vessels. He also suggested the existence of a controlling agency which inhibited, or pressed back, the "bad" activity of the brain.

It is always difficult to weigh the influence of particular ideas upon the thinking of later writers. Certainly, the similarity between certain elements in Freud's early psychological theories and the earlier concepts of these men cannot be denied. The originality of Freud's contribution lies in the fact that, whereas previously these ideas were presented in the form of general theoretical statements, Freud elaborated a coherent theory of a dynamic unconscious based on detailed clinical observation of psychological phenomena and then tested the validity of his theory by applying it to other clinical problems.

Freud's topographical theory of the mind. The topographical theory, as set forth in the seventh chapter of *The Interpretation of Dreams* in 1900, represented an attempt to divide the mind into three regions, namely, the unconscious, the preconscious, and the conscious, which were distinguished from one another by their relationship to consciousness. Although the working model for this theory was similar in many respects to that set forth earlier in the "Project," the physiological language had, for the most part, disappeared. Accordingly, the data upon which this later theory was based derived from dream interpretation, analysis of the psychoneuroses, and the study of the psychopathology of everyday life,

e.g., the study of jokes, wit, slips of the tongue and other "errors."

Each of the three regions of the mind, which are sometimes referred to as the "system ucs," the "system pcs," and the "system cs," had unique characteristics which differentiated it from the others.

The unconscious. The unconscious contains repressed ideas and affects, and is characterized as follows.

1. Ordinarily, its elements are inaccessible to consciousness and can become conscious only through the preconscious, which excludes them by means of censorship or repression. Repressed ideas may reach consciousness when the censor is overpowered (as in psychoneurotic symptom formation), relaxes (as in dream states), or is fooled (in jokes).

2. The unconscious is associated with the particular form of mental activity which Freud called the "primary process" or "primary process thinking." The primary process has as its principal aim the facilitation of wish fulfillment and instinctual discharge; thus, it is intimately associated with the pleasure principle. As such, it disregards logical connections (which it readily short circuits), permits contradictions to coexist, knows no negatives, has no conception of time, and represents wishes as already fulfilled. (Primary process thinking is characteristic of very young children, for example, who are dedicated to the immediate gratification of their desires.)

The unconscious also employs the primitive mental operations of displacement and condensation, which permit rapid discharge of the mental energy attached to these repressed affects and ideas through the avenues of the preconscious and conscious systems. As defined earlier, displacement is the mechanism by which mental energy (cathexis) attached to one idea is shifted to another idea which encounters less censorship. Condensation is the process by which energy attached to more than one unconscious idea may be discharged through a single thought or image which embodies (in part, through symbolism) the characteristics of these several ideas. Condensation has thus the property of economy. The qualities of motility which are ascribed to the primary process also account for the fact that it is frequently linked to creativity.

3. Memories in the unconscious have lost their connection with verbal expression. Freud discovered in the course of his clinical work that repression of a childhood memory could occur if energy was withdrawn from it, and especially if verbal energy was removed. However, when words were reapplied to the forgotten memory trace (during psychoanalytic treatment), it became excessively cathected and could reach consciousness once more.

4. The content of the unconscious is limited to wishes seeking fulfillment. These wishes provide the motive force for dream and neurotic symptom formation.

5. The unconscious is closely related to the instincts. At the time this theory was developed, these were considered to consist of the sexual and self-preserved drives. Thus, it contains the mental representatives and derivatives of the instinctual drives, and especially the derivatives of the sexual instincts.

The preconscious. This region of the mind is not present at birth but develops in childhood, in a manner which parallels the course of ego development, as described in Freud's later structural theory. The preconscious is accessible to both the unconscious proper and the conscious. Elements of the unconscious can gain access to consciousness only by first becoming linked with words and reaching the preconscious. However, one of the functions of the preconscious is to maintain repression or censorship of wishes and desires. The type of mental activity associated with the preconscious is called "secondary process" or "secondary process thinking." In contrast to the primary process, such thinking is aimed at avoiding unpleasure, delaying instinctual discharge, and binding mental energy in accordance with the demands of external reality and the subject's moral precepts or values. It respects logical connections, and it tolerates inconsistencies less well than the primary process. Thus, the secondary process is closely allied with the reality principle, which, for the most part, governs its activities.

The conscious. The nature of consciousness was described in less detail in Freud's early theories, and certain aspects of consciousness are not yet completely understood by psychoanalysts. Freud regarded the conscious as a kind of sense organ of attention which operated in close association with the preconscious. Through attention, the subject could become conscious of perceptual stimuli from the outside world. From within the organism, however, only elements in the preconscious entered consciousness; the rest of the mind lay outside awareness. Prior to 1923, Freud also believed that the conscious controlled motor activity and regulated the qualitative distribution of psychic energy.

The dynamics of mental functioning. Freud conceived of the psychic apparatus as a kind of reflex arc, in which the various segments had a spatial relationship. The arc consisted of a perceptual or sensory end, through which impressions were received; an intermediate region, consisting of a storehouse of unconscious memories; and a motor end, closely associated with the preconscious, through which instinctual discharge occurred. In early childhood, perceptions were modified and stored in the form of memories.

According to this theory, in ordinary waking life, the mental energy associated with unconscious ideas seeks discharge through thought or motor activity, moving from the perceptual to the motor end. However, under certain conditions, such as external frustration or sleep, the direction in which the energy

travels along the arc is reversed, and it moves from the motor to the perceptual end. It thereby reanimates early childhood impressions in their original perceptual form and results in dreams during sleep and hallucinations in mental disorders. Freud called this reversal of the normal direction in which mental energy travelled in the psychic apparatus "topographical regression."

Although he subsequently abandoned this model of the mind as a reflex arc, the central concept of regression was retained by Freud and applied later, in somewhat modified form, in his theory of neurosis. This theory states that libidinal frustration results in a reversion to earlier modes of instinctual discharge or levels of fixation which were previously determined by childhood frustration or excessive erotic stimulation. Freud called this kind of reversion libidinal or instinctual regression.

Significance of the topographical theory. The topographical theory underscores, once again, the need for a more systematic concept of psychic structure. Its main deficiency lies in its inability to account for two important characteristics of mental conflict. First, Freud found that many of the defense mechanisms that patients employed to avoid pain or unpleasure, and which appeared in the form of unconscious resistance during psychoanalytic treatment, were themselves not initially accessible to consciousness. Obviously, then, the agency of repression could not be identical with the preconscious, inasmuch as this region of the mind was by definition accessible to consciousness. Second, he found that his patients frequently demonstrated an unconscious need for punishment. However, according to the topographical theory, the moral agency making this demand was allied with the anti-instinctual forces available to awareness in the preconscious.

These criticisms were among the important considerations which ultimately led Freud to discard the topographical theory insofar as it was concerned with the assignment of specific processes to specific regions of the mind. More precisely, Freud came to realize that what is more important is whether these processes belong to the primary system or the secondary system. Accordingly, those concepts included in Freud's early theory which have retained their usefulness refer to the characteristics of primary and secondary thought processes, the essential importance of wish fulfillment, the tendency toward regression under conditions of frustration, and, of course, the existence of a dynamic unconscious and the nature of its operation.

The Psychic Apparatus and Ego Psychology

At the outset of this discussion it must be emphasized that "id," "ego," and "superego" are abstract terms, the value of which lies in their operational referents. Each refers to a particular aspect of human mental functioning, for which no more useful term

has been found to date. However, unlike infantile sexuality or object relationships, id, ego, and superego are not empirically demonstrable phenomena.

Many workers have commented on the fact that Freud's attention was directed to the structure of the mind and the characteristics of ego functioning at a relatively late stage in the development of psychoanalysis. In fact, a careful review of the evolution of Freud's theoretical concepts will reveal that, from the beginning, he associated certain aspects of mental functioning with the ego, and others with the superego. However, during the years of his first great discoveries, he was concerned primarily with establishing the existence of unconscious mental processes and elucidating their nature and, concomitantly, with demonstrating the value of psychoanalysis as a potential technique for exploring the depths of the human mind. It is not surprising, therefore, that he was less concerned with the detailed study of those aspects of mental functioning which were normally accessible to consciousness, for they were already familiar to psychology; moreover, methods had already been established for their investigation. It was only when Freud discovered that all unconscious processes could not be relegated to the instincts, that certain aspects of mental functioning which were associated with the ego and superego were unconscious as well, that he turned to the study of these structural components.

Freud turned to the development of ego psychology in order that the progress of psychoanalysis might not be impeded by a lack of understanding of certain phenomena associated with this aspect of mental functioning. There is no question that his efforts have had important repercussions for the development of psychoanalysis—and for the understanding of personality and behavior in general. Ego psychology is not, in itself, associated with new insights which might conceivably approach the magnitude of Freud's earlier discoveries. At the same time, however, in the course of its development over the past 30 or 40 years (and particularly in the years since World War II), ego psychology has helped to refine psychoanalytic theory; more specifically, it has served to organize, to codify, to place in a systematic conceptual framework the vast amount of data derived from psychoanalytic investigation. In addition, contributions to ego psychology during this period have led to significant improvements in psychoanalytic treatment techniques.

The historical development of ego psychology.

The evolution of the concept of the ego within the framework of the historical development of psychoanalytic theory can be divided into four phases. The first phase, which ended in 1897, coincided with the development of early psychoanalytic concepts. The second phase, from 1897 to 1923, spanned the development of psychoanalysis proper. During the third phase, in the years from 1923 to 1937, Freud developed his theory of ego psychology and, concurrently, his later theory of anxiety. Finally, the fourth phase in

the evolution of the concept of ego psychology began with Freud's death and reflects the contributions of Anna Freud, Heinz Hartmann, Ernst Kris, David Rapaport, Erik Erikson, and other contemporary psychoanalysts who may be credited with the development of a general psychology of the ego.

First phase: Early concepts of the ego. In the initial phase in the development of psychoanalytic theory, the ego was not always defined precisely. Rather, it referred to the dominant mass of a person's conscious ideas and moral values, as distinct from those impulses and wishes which were repressed. Thus, the ego was considered to be concerned primarily with defense, a term which was soon replaced by repression, with which it was then considered to be synonymous. In the neurophysiological language of the "Project," the ego was described as "an organization... whose presence interferes with passage of quantities [of excitation]." Translated into the language of psychology, the ego constituted a defense which had been erected against ideas which were unacceptable to consciousness. These ideas, in turn, were found to be primarily sexual in nature; and, initially, it was thought that they had been engendered by premature sexual trauma and seduction. Because the memory of such traumata led to the arousal of unpleasant affects, they evoked a defensive response and repression of the original thoughts. However, the repression of ideas led to a damming up of energy and the production of anxiety. In a sense, then, the function of this "early ego" was contradictory. Its primary purpose was to reduce tension and avoid unpleasant affects associated with sexual thoughts; but in the process, it evoked another, equally unpleasant affect, anxiety.

It will be recalled that until 1897 Freud believed his patients' accounts of the traumatic sexual experiences they had suffered in early childhood. And he saw the ego, in its task of warding off the memories of these events, as motivated by considerations involving the individual's relationship with the real world, or, more accurately, with its ideational representations. With the collapse of Freud's seduction theory, investigation of this aspect of ego functioning was suspended. Only recently, with increasing interest in ego psychology, has the important role of the ego in mediating the individual's relationship with the outside world of events and human relationships become a focus of study once more.

Second phase: Historical roots of ego psychology. In the years dedicated to the development of "psychoanalysis proper" the analysis of the ego as such received little direct attention, for Freud during this period was concerned primarily with the instinctual drives and their transformations. Consequently, references to defense or defensive functions are much less frequent. However, as indicated earlier, there were areas of confusion in Freud's early theory of the instincts and contradictions in his theory of the mind; the clarification of these concepts required further elucidation of the function of the ego and the nature of its organization.

In regard to the sexual instinct, in 1915 Freud discussed the vicissitudes to which this instinct might be subjected as it sought expression. These included reversal into its opposite (for example, an active, sadistic impulse might be changed to a passive, masochistic one); turning upon the subject's own self (for example, the love for the object might be directed toward the self, instead); the instinct might be repressed; or, finally, the instinct might be subjected to sublimation. When they are approached from the standpoint of the ego, each of these vicissitudes might be viewed as a defense mechanism. The ego's relationship to reality is particularly relevant in this connection: As noted earlier, the concept of the secondary process implies the ability to delay discharge of the instinctual drives, in accordance with the demands of external reality, a capacity which was later ascribed to the ego. Progression to the reality principle from the pleasure principle in childhood involves a similar capacity to postpone gratification and thereby to conform with the requirements of the outside world. We have seen, too, that the important relationship of libido to a self which has not yet been completely defined, as postulated in the theory of narcissism, calls for a clearer understanding of this self or ego. According to the topographical theory of the mind, the preconscious, which, by definition, was accessible to consciousness, was held responsible for censorship (which in many instances was an unconscious operation), thereby requiring a new formulation of the agency performing this function. Another problem arose in relation to the ego or self-preservative instincts held responsible for repression: presumably, the instincts were responsible for defense, but surely this task belonged to the ego.

Finally, if neither the preconscious nor the ego instincts were solely responsible for repression or censorship, how was repression achieved? Freud tried to answer this question in 1915 by postulating that ideas are maintained in the unconscious by the withdrawal of libido or energy (cathexis). But in the manner characteristic of unconscious ideas, they constantly renew their attempt to become attached to libido—and reach consciousness. Thus, the withdrawal of libido must be constantly repeated. Freud described this process as “anticathexis” or “counter-cathexis.” But, again, if such counter-cathexis is to be consistently effective against ideas in the unconscious, it must be permanent and must itself operate on an unconscious basis. Understanding of the psychic structure (i.e., the ego) which could perform this complicated function was clearly called for and constituted still another indication of the need for the development of ego psychology.

The third and fourth phases: Development of ego psychology. During the third phase, Freud evolved his theory concerning the structural components of the mind, which was to be the foundation of ego psychology, and revised his theory of anxiety on the basis of these new formulations. The fourth phase refers to the major contributions to this area of psychoanalysis by Freud's followers. Both of these crucial phases in the development of ego psychology are discussed in detail below.

The structure of the psychic apparatus. From a structural viewpoint, the psychic apparatus is divided into three provinces, designated as ego, id, and super-ego, which are distinguished by their different functions. The main distinction lies between the ego and the id. The id is the locus of the instinctual drives. It is under the domination of the primary process; and, therefore, it operates in accordance with the pleasure principle, without regard for reality. The ego, on the other hand, represents a more coherent organization, the task of which is to avoid unpleasure and pain by

opposing or regulating the discharge of instinctual drives to conform with the demands of the external world. In addition, the discharge of id impulses is opposed or regulated by the third structural component of the psychic apparatus, the superego, which contains the internalized moral values and influence of the parental images.

The ego. It was pointed out earlier in this discussion that those conscious and preconscious functions which are typically associated with the ego, e.g., words, ideas, logic, did not account entirely for its role in mental functioning. The discovery that certain phenomena which emerge most clearly in the psychoanalytic treatment setting, specifically, repression and resistance, could themselves be unconscious, pointed up the need for an expanded concept of the ego as an organization which retains its original close relationship to consciousness and to external reality and yet performs a variety of unconscious operations in relation to the drives. Once the scope of the ego had been thus broadened, consciousness was redefined as a mental quality which, though exclusive to the ego, constitutes only one of its qualities or aspects.

No more comprehensive definition of the ego is available than the last one Freud was to give in 1938 in *An Outline of Psychoanalysis*:

Here are the principle characteristics of the Ego. In consequence of the pre-established connection between sense and perception and muscular action, the ego has voluntary movement at its command. It has the task of self-preservation. As regards external events, it performs that task by becoming aware of stimuli, by storing up experiences about them (in the memory), by avoiding excessively strong stimuli (through flight), by dealing with moderate stimuli (through adaptation) and finally by learning to bring about expedient changes in the external world to its own advantage (through activity). As regards internal events, in relation to the id, it performs that task by gaining control over the demands of the instincts, by deciding whether they are to be allowed satisfaction, by postponing that satisfaction to times and circumstances favorable in the external world or by suppressing their excitations entirely. It is guided in its activity by consideration of the tension produced by stimuli, whether these tensions are present in it or introduced into it.

Thus, the ego controls the apparatus of motility and perception, contact with reality, and, through the mechanisms of defense available to it, the inhibition of primary instinctual drives.

The id. Freud borrowed the term “id” from Georg Groddeck, an internist who became a disciple of psychoanalysis, but suggested, in *The Ego and the Id*, that it might have originated with Nietzsche. Originally, it stood for all that was ego-alien. Thus, in contrast to his concept of the ego as an organized, problem-solving agent, Freud conceived of the id as a completely unorganized primordial reservoir of energy derived from the instincts, which is under the domination of the primary process. However, it is not synonymous with the unconscious, since, as pointed out earlier, the structural viewpoint was unique in that it demonstrated that certain functions of the ego (i.e.,

the erection of defenses against the demands of the id) are unconscious, and that, for the most part, the superego operates on an unconscious level as well.

The superego. The origins and function of the superego are described in detail below. In brief, the superego is the last of the structural components to develop, resulting from the resolution of the Oedipus complex. As mentioned earlier, it is concerned with "moral" behavior, which is based, in turn, on unconscious behavioral patterns which were learned at early pregenital stages of development.

The structural model provides a useful means of expressing the nature of neurotic conflict. Essentially, neurotic conflict can be explained structurally as a conflict between the forces of the ego, on one hand, and the forces of the id, on the other. Most frequently, the superego participates in the conflict by allying itself with the ego and imposing demands in the form of conscience or guilt feelings. Occasionally, however, the superego may be allied with the id against the ego. This occurs in cases of severely regressed reactions, where the functions of the superego may become sexualized once more and take on the same impelling quality of the instinctual drives.

Finally, the external world may also participate in the neurotic conflict, in that it may be perceived by the ego as an instinctual temptation, or the "voice of conscience," or both.

The origins of the id. Freud postulated that the infant is endowed with an id, with instinctual drives which seek gratification, at birth. The infant does not, however, have the capacity to delay, control, or modify these drives. Similarly, in the matter of coping with the external world, it is completely dependent on the "egos" of other persons in its environment.

Origins of the ego. If we define the ego as a coherent system of functions for mediating between the instincts and the outside world, we must concede that the newborn has no ego. Developmental ego psychology is then faced with the problem of explaining the processes which permit the modification of the id and the concomitant genesis of the ego. Freud believed that the modification of the id occurs as a result of the impact of the external world upon the drives. The pressures of external reality enable the ego to appropriate the energies of the id to do its work. In the process of formation the ego seeks to bring the influences of the external world to bear upon the id, to substitute the reality principle for the pleasure principle, and thereby contributes to its own further development. In summary, Freud emphasized the role of the instincts in ego development, and particularly the role of conflict. At first, this conflict is between the id and the outside world; later, it is between the id and the ego itself.

More recently, Heinz Hartmann and his co-workers have expanded and modified this theory by postulating the existence of primary autonomous ego functions, the development of which is independent of the

drives and of conflict. More specifically, Hartmann and his co-workers, Ernst Kris and Rudolph Loewenstein, have suggested that the ego does not differentiate from the id, *per se*, but that both develop from a common matrix. It follows then, that the rudimentary apparatuses which underlie these primary autonomous ego functions, such as perception, motility, memory, and intelligence, are present at birth. This concept further implies that there may be congenital or genetically determined variations in ego functions. Although this hypothesis was, in fact, advanced by Freud in 1937, it has been greatly expanded and elaborated on by Hartmann and his colleagues over the past 25 years. Thus, a genetic view has been added to the theory of ego development.

In addition, Hartmann has elaborated on the role of these rudimentary ego apparatuses in the infant's coordinations with the object and the environment for the satisfaction of instinctual needs and drives. These early coordinations are the bases for what Hartmann has described as the adaptive function of the ego, that is, its function as mediator between external reality and the needs and demands of other psychic systems, i.e., id and superego. The adaptive functions of the ego are related to Hartmann's concept of ego development. The optimal functioning of the organism requires the balance of these controlling forces: ego autonomy from the demands of the id, and ego autonomy from the demands of the environment.

The evolution of the ego

The body ego. At first, the infant is unable to differentiate its own body from the rest of the world. That is, it cannot distinguish between its own proprioceptive and other subjective perceptions and reality, *per se*. Body and mind are one, in the sense that perceptual stimulation is a prerequisite for somatic development. The ego begins with the child's ability to perceive his body as distinct from the external world. From this point on, it is concerned with the ordering of reality into subjective and objective phenomena, and with awareness of the relationship between these phenomena and of other complex relationships between current apperceptions and their memory.

Developmental determinants. Much of contemporary psychoanalytic research has been devoted to the elucidation of those factors which facilitate or impede the development of ego functions. Investigations in this area (which have included the direct observation of infants) have provided considerable evidence of the relationship between gratification and frustration of drives and needs in the early months of life and the future "fate" of the ego. Concomitantly, the crucial importance for ego development of adequate satisfaction of the infant's libidinal needs by the mother (or mother surrogate) has been stressed repeatedly. However, although it is less clearly understood and appreciated, a certain amount of drive frustration in infancy and early childhood is equally important for

the development of a "healthy" ego. There is much evidence that maternal deprivation at significant stages of development will lead to the impairment of ego functions to varying degrees. But overindulgence of the child's instinctual needs will interfere with the development of the ego's capacity to tolerate frustration, and, consequently, with its ability to regulate the demands of the id in relation to the outside world.

Identification and introjection. Within this framework, psychoanalysis has described two psychic mechanisms which are specifically involved in the development of ego functions. The loss of the loved object, or of a particularly gratifying relationship with the object, is a painful experience at any stage of life, but it is particularly traumatic in infancy and early childhood, when the ego is not yet strong enough to compensate for the loss. Yet, in the early years of life, the child is constantly subjected to such deprivation. More specifically, while, in the normal course of events the young child does not suffer the actual loss of his parents, who are the primary objects at this stage of development, he must endure constant alterations in his relationship with them. Moreover, at each stage in his development, he must endure the loss of the kind of gratification which was appropriate to the previous phase of his maturation but must now be given up.

The child attempts to retain the gratifications derived from these earlier relationships, at least in fantasy, through the process of identification. By this mechanism the aspects or qualities of the person who was once the center of the gratifying relationship are internalized and reestablished as part of the developing ego. Freud considered identification to play a fundamental role in the development and enrichment of the ego and called the "character" of the ego a "precipitate of abandoned object-cathexes."

Identification begins in the oral phase of development, and it is closely associated with the oral incorporative mode of this early period. Thus, the image of the loved object may be "taken inside," much as the child first "took in" the food provided by the loved object. The psychological mechanism of symbolic incorporation, that is, the "taking in" of another person or of his or her qualities, is called introjection, and, in fact, this mechanism continues to influence character development long after the oral period.

There is some difference of opinion as to whether identification, as it applies to ego development, must be accompanied by introjection. Some authors believe, for example, that the expansion of the ego can result from direct imitation, without involving incorporation-introjection processes. On the other hand, Melanie Klein and her followers, who have studied the processes of incorporation and introjection extensively, credit very young infants with the capacity for complex processes of introjection and postulate that these mechanisms play a fundamental role at every stage of development. Clinical studies by the Kleinian

group of the mechanisms of incorporation and introjection have greatly enhanced our understanding of the distortions in these mechanisms in psychosis.

Freud also suggested that identifications may occur out of love, rather than loss, simultaneously with object cathexis; that is, identification may occur before it has become necessary to give up the object. An example of this form of identification would be the hysteric who assumes the traits of her lover, or the husband (or wife) who takes on the characteristics of his spouse. In these instances the mechanism of identification serves to strengthen the ego, just as it does in the early stages of development. In this connection, too, increasing attention has been given in recent years to the infant's very early identification with the primary object (i.e., the mother), the close relationship between this phenomenon and the child's initial differentiation of himself from the object, and, concomitantly, his progress from a state of primary narcissism to the beginning of early object relationships.

It must be emphasized that the types of identification described above lead to the strengthening of the ego and are compatible with the development of healthy object relationships. On the other hand, identification with the aggressor is a defensive maneuver, based on the child's need to protect himself from severe anxiety experienced in relation to the object. The child identifies with, and incorporates the characteristics of, the feared person, who is perceived as his attacker, and upon whom he is dependent, so that he may become allied with the aggressor rather than be his victim, in order that he may share in his power rather than be powerless before him. Such identifications may impoverish the ego by burdening it with negative introjects; their contribution to the formation of rewarding object relationships and the development of ego skills is questionable.

Again, mechanisms such as identification with the aggressor are significant in that they direct our attention to the importance of the characteristics and qualities of the object itself for the child's ego development. While Freud did not investigate this aspect of ego development in detail, it has been the focus of increasing attention in recent years, particularly in connection with the etiology of childhood psychosis.

Finally, a special type of identification with the parental imago occurs as a concomitant of the resolution of the oedipal conflict and gives rise to the formation of the superego, as described below. However, ego development does not, of course, end in the oedipal phase. The latency period, in particular, is an important "growth phase" for the acquisition of new ego strengths through learning, through the exploitation of motor skills, and through the development of a variety of object attachments and constructive identifications.

The significance of zones and modes in ego development. Erik Erikson has made a major contribution to the zonal-modal model of ego development. He

has postulated a parallel relationship between specific phases of ego or psychosocial development and specific phases of libidinal development (during which particular erotogenic zones are the loci of stimulation). This relationship may be projected to extend throughout the life cycle. Erikson's epigenetic theory of ego development describes the life tasks appropriate to specific phases of development. The characteristic successful or unsuccessful performance of these tasks has important implications for future development. For example, if task solution is successful in the oral period, basic trust will be established; if task solution is unsuccessful, mistrust will be the result, with concomitant impairment in ego functioning during the later stages of development. Autonomy versus shame and doubt are the extremes in the anal period; initiative versus guilt in the phallic phase; industry versus inferiority in latency; identity versus identity diffusion in adolescence; intimacy versus isolation in young adult life; generativity versus stagnation in adulthood; and integrity versus despair in maturity.

The functions of the ego. This discussion of ego functions is based on the preceding definition of the ego as a substratum of personality, comprising a group of functions which share in common the task of mediating between the instincts and the outside world. Thus the ego is not synonymous with self, personality, or character.

Any attempt to draw up a complete list of ego functions would be arbitrary at best. Invariably, the lists of basic ego functions suggested by various authors differ from one another, to varying degrees. This discussion will be limited to several functions which are generally conceded to be fundamental to the ego's operation.

The relation to reality. Freud always regarded the ego's capacity for maintaining a relationship to the external world among its principal functions. The character of its relationship to the external world may be divided into three components: (1) the sense of reality, (2) reality testing, and (3) the adaptation to reality.

The sense of reality. The sense of reality originates simultaneously with the development of the ego. The infant first becomes aware of the reality of his own body sensations. Only gradually does he develop the capacity to distinguish a reality outside his body.

Reality testing. This refers to the ego's capacity for objective evaluation and judgment of the external world, which depends, in turn, on the primary autonomous functions of the ego, such as memory and perception. Because of the fundamental importance of reality testing for "negotiating" with the outside world, its impairment may be associated with severe mental disorder. The development of the capacity to test reality (which is closely related to the progression from the pleasure to the reality principle), to distinguish fantasy from actuality, occurs gradually. This capacity, once gained, is subject to regression and

temporary deterioration in children, even up to grade school age, in the face of anxiety, conflict, or intense instinctual wishes. However, this should not be confused with the breakdown of reality testing referred to above, which occurs in adult psychopathology.

Adaptation to reality. This refers to the capacity of the ego to utilize the individual's resources to form adequate solutions based upon previously tested judgments of reality. Thus, it is possible for the ego to develop good reality testing, in terms of perception and grasp, but to develop an inadequate capacity to accommodate the individual's resources to the situation as perceived. Adaptation is closely allied to the concept of mastery, both in respect to external tasks and to the instincts. It should be distinguished from adjustment, which may entail accommodation to reality at the expense of certain resources or potentialities of the individual. The function of adaptation to reality is closely related to the defensive functions of the ego.

Control and regulation of instinctual drives. The development of a capacity to delay immediate discharge of urgent wishes and impulses is essential if the ego is to assure the integrity of the individual and fulfill its role as mediator between the id and the outside world. The development of the capacity to delay or postpone instinctual discharge, like the capacity to test reality, is closely related to the progression in early childhood from the pleasure to the reality principle.

Furthermore, this progression parallels the development of the secondary process, or logical thinking, which aids in the control of drive discharge. Thus, the evolution of thought, from the initially prelogical primary process thinking, to the more logical and deliberate secondary process thinking, is one of the means by which the ego learns to postpone the discharge of instinctual drives. For example, the representation in fantasy of instinctual wishes as fulfilled may obviate the need for urgent action which might not always serve the realistic needs of the individual. Similarly, the capacity to "figure things out" or anticipate consequences represents thought processes which are essential to the realistic functioning of the individual. Obviously, then, the ego's capacity to control instinctual life and to regulate thinking is closely associated with its defense function, discussed below.

Object relationships. The capacity for mutually satisfying object relationships is one of the fundamental functions of the ego. The significance of object relationships—and their disturbance—for normal psychological development and a variety of psychopathological states was fully appreciated relatively late in the development of classical psychoanalysis. The evolution in the child's capacity for relationships with others, which progresses from narcissism to social relationships within the family and then within the group, has been described by Anna Freud and Doro-

thy Burlingham in two books, *War and Children* (1943), and *Infants Without Families* (1944). Other writers have described the early stages in the relationship with the need-satisfying object and object constancy, which begins when the infant is 6 months old, and which under normal circumstances undergoes progressive development from then on. This process may be disturbed by retarded development, regression, or, conceivably, by inherent (i.e., genetic) defects or limitations in the capacity to develop object relationships. The development of object relationships is closely related to the concomitant evolution of drive components and the phase-appropriate defenses which accompany them.

The synthetic function of the ego. The synthetic function of the ego, which was described by Herman Nunberg in 1931, refers to the ego's integrative capacities; to its tendency to bind, unite, coordinate, and create; and to its tendency to simplify, or generalize. In brief, the synthetic function is concerned with the over-all organization and functioning of the ego, and it must enlist the cooperation of other ego functions in the course of its operation.

Primary autonomous ego functions. Although Freud referred to "primal, congenital ego variations" as early as 1937, this concept has been greatly expanded and clarified by Heinz Hartmann. As stated earlier, primary autonomous ego functions are based on rudimentary apparatuses which are present at birth; they develop outside of conflict with the id, in what Hartmann has called the "average expectable environment." Hartmann has included perception, intuition, comprehension, thinking, language, certain phases of motor development, learning, and intelligence among the functions in this "conflict-free" sphere. However, each of these functions might become involved in conflict secondarily in the course of development. For example, if aggressive, competitive impulses intrude upon the impetus to learn, this may evoke inhibitory reactions on the part of the ego.

The defense functions of the ego. It was pointed out earlier in this section that, in his initial psychoanalytic theoretical formulations (and, in fact, for a long time thereafter), Freud considered repression to be virtually synonymous with defense. More specifically, repression was directed primarily against the impulses, drives, or drive representations, and particularly against direct expressions of the sexual instinct, to conform with the demands of external reality. With the development of the structural view of the mind as comprising three provinces (id, ego, and superego), the function of defense was ascribed to the ego. However, only after Freud had formulated his final theory of anxiety, as described below, was it possible to study the operation of the various defense mechanisms, i.e., their mobilization in response to "danger signals." A systematic and comprehensive study of the defenses employed by the ego was presented for the first time

by Anna Freud. In her classic contribution on *The Ego and the Mechanisms of Defense*, Miss Freud maintained that everyone ("normal," as well as neurotic) employs a characteristic repertoire of defense mechanisms, albeit to varying degrees. On the basis of her extensive clinical studies of children, she described their essential inability to tolerate excessive instinctual stimulation and discussed the processes whereby the primacy of such drives at various developmental stages evokes anxiety in the ego, which, in turn, produces a variety of defenses. With regard to adults, Miss Freud's psychoanalytic investigations led her to conclude that while resistance is an obstacle to progress in treatment, inasmuch as it impedes the emergence of unconscious material, it also constitutes a useful source of information concerning the ego's defense operations.

The genesis of defense mechanisms. In the early stages of development, defenses emerge as a result of the ego's struggles to mediate between the pressures of the id and the requirements and strictures of outside reality. At each phase of libidinal development, associated drive components evoke characteristic ego defenses. Thus, for example, introjection, denial, and projection are defense mechanisms associated with oral incorporative or oral sadistic impulses, whereas reaction formations, such as shame and disgust, develop in relation to anal impulses and pleasures. Defense mechanisms from earlier phases of development persist side by side with those of later periods. When defenses associated with pregenital phases of development tend to become predominant in adult life over more mature mechanisms, such as sublimation and repression, the personality retains an infantile cast.

The repertoire of defenses that an individual characteristically employs to deal with stress-evoking situations makes an important contribution to "character." Character traits, such as excessive orderliness, are closely related to defenses but are distinguished from them by their greater role both in the over-all functioning of the personality and in situations which are not associated with specific conflicts.

While abnormalities in the development of the functioning of ego defenses, or defense mechanisms, may have a fundamental relationship to the etiology of various kinds of psychopathology, defenses are not, in themselves, pathological. On the contrary, they serve an essential function in maintaining normal psychological well-being.

Nevertheless, psychopathology may arise as the result of one of various possible alterations of normal defensive functioning. For example, in hysteria, the defense of repression is temporarily overwhelmed due to excessive sexual stimulation. This revival of previously repressed wishes calls for more desperate "piecemeal" efforts at renewed repression which result in the formation of conversion or phobic symptoms. On the other hand, the individual may show an exag-

gerated development and overuse of certain defenses, as if the danger posed by infantile sexual and aggressive impulses were as great in adult life as it was perceived to be in childhood. This kind of hypervigilance is characteristic of obsessional personalities and obsessive-compulsive neurotics. Or the development of the ego and its defenses may itself be faulty, with excessive reliance placed upon the denial-projection-distortion modes characteristic of the early oral or narcissistic phases of development. In that event, the defense mechanisms, while they permit limited functioning, particularly in the original family setting that may share these defensive patterns, cannot adequately equip the adult to meet the challenges of the external world, i.e., to form object attachments, engage in heterosexual relationships, or "cope" with vocational competition. When the defenses fail, there may be a breakthrough of direct instinctual expressions and a regression in the ego's capacity to control motility, as exemplified in the schizophrenias.

The classification of defenses. It is possible to list the defenses employed by the ego according to a variety of classifications, none of which is all-inclusive or can take into account all of the factors involved. For example, defenses may be classified developmentally, that is, in terms of the libidinal phase in which they arise. Denial, projection, and reality distortion would then be assigned to the oral phase of development, and to the narcissistic stage of object relationships. However, certain defenses, such as magical thinking and regression, cannot be pinpointed in this way. Moreover, certain basic developmental processes, such as introjection and identification, may serve a defensive function as well under certain conditions.

The defenses have also been classified on the basis of the particular form of psychopathology with which they are commonly associated. For example, within this frame of reference, the obsessional defenses would include denial and distortion. But, as pointed out above, defensive operations are not limited to pathological conditions.

Finally, the defenses have been classified according to whether they are simple (i.e., basic) mechanisms, or complex (in which event a single defense would involve a combination, or composite, of "simple" mechanisms).

A brief description of several basic and complex defenses, which are employed most frequently and have been investigated most thoroughly by psychoanalysts, is presented below.

Repression. Repression retains the central position it was accorded by Freud in relation to the defenses of the ego, and in the formation of neurotic symptoms. It results in "not being able to remember," in those instances when what is forgotten is truly unconscious. Repression is directed at id material—wishes, impulses, and affects—and is particularly prominent in the inhibition of unacceptable sexual impulses at a

phallic or genital level. Thus, repression is characteristic of hysteria, although it is used widely in other disorders as well. Finally, repression may be present in other defense mechanisms. For example, in sublimation, the original sexual drive may be repressed.

Displacement. Displacement refers to the shifting of emotion or drive cathexis from one idea or object to another that resembles the original in some aspect or quality. As a defense, displacement permits the symbolic representation of the original idea or object by another idea or object which is less highly cathected or evokes less pain. However, as mentioned above, in connection with Freud's theory of dreams, the unconscious aim of the associated impulse remains the same.

Reaction formation. The basic defense of reaction formation enables the individual to express an unacceptable impulse by transforming it into its opposite. For example, hatred of a crucial person will be transformed into overt expressions of affection. Reaction formation is characteristic of obsessional neurosis, but it occurs in other forms of neuroses as well, and if it is employed with sufficient frequency at an early stage in ego development, it may be manifested as a character trait.

Isolation. As opposed to social isolation, which refers to the absence of object relationship, isolation as a mechanism of defense refers to the splitting or separation of an idea, which is remembered, from the affect which accompanied it and is repressed.

Undoing. Undoing is an attempt to cancel out or nullify an act previously committed (in reality or fantasy) by certain counter-actions. This mechanism is characteristic, in particular, of obsessive-compulsives, whose expiatory acts, rituals, and ceremonials often represent unconscious efforts to undo some forbidden act or to cancel the effects of a wish to which they have attributed the magical power of action.

Rationalization. The individual may advance "rational" explanations (which may or may not be valid) in an attempt to hide from himself and others the actual (usually instinctually determined) motives for his behavior.

Intellectualization. This defense, which is closely related to rationalization, refers to the excessive use of intellectual processes to avoid affective experience and expression. Borderline schizophrenics, who are emotionally unstable, frequently relate to others (and themselves) on an intellectual basis in an effort to maintain their hold on reality.

Denial. The basic defense of denial is used widely in normal as well as pathological states. Its use may vary considerably, however. It may refer only to the affect associated with a particular idea or event. Or, on the other hand, there may be a massive denial of the experience itself, or its memory. In any event, this defense cannot relegate an idea or affect to the unconscious. Consequently, it is maintained at consid-

erable cost to the efficient operation of those ego functions which are related to conscious perception and the relation to reality. Consistent impairment of these functions, through the excessive use of denial, may be a precipitating factor in psychosis.

Projection. This mechanism is characteristic of psychotic states, especially paranoid syndromes, but it is also used widely under normal conditions. In projection, the individual attributes his own feelings and wishes to another person, because his ego is unable to assume the responsibility for these feelings or tolerate the painful affects they evoke. Projection is, therefore, associated with ego immaturity or vulnerability.

Regression. Through this mechanism, the ego attempts to return to an earlier libidinal phase or stage of functioning, when gratification was assured, in order to avoid the tension and conflict evoked at the present level of development. Once again, however, regression is a normal phenomenon as well. A certain amount of regression is essential for sleep and for orgasm in sexual intercourse. In addition, Ernst Kris postulated "regression in the service of the ego" as an essential concomitant of the creative process.

Counterphobic mechanisms. The ego attempts to alleviate phobic anxieties by excessive, and sometimes precipitous, activity in specific relation to the area of concern.

Withdrawal, avoidance, restriction of the ego. Anna Freud considered these mechanisms, which differ only slightly, preliminary to defense. Specifically, they attempt to deal with tension- or conflict-producing situations by enabling the ego to remove itself from these sources of anxiety instead of erecting psychological defenses to deal with them.

Introjection. As noted above, the process of introjection, whereby qualities of the loved object are internalized and become part of the subject's ego, plays a fundamental role in the early development of the ego. Introjection serves as a defense when it is used to obliterate the distinction between the subject and the loved object. Through introjection, the painful awareness of separateness, or the threat of loss that this implies, is avoided.

Identification. Identification, which plays an equally crucial role in ego development, may also be used as a defense under certain circumstances: identification with the loved object may serve as a defense against the anxiety or pain which accompanies separation from, or loss of the object, whether real or threatened. Identification may occur out of guilt, as well as love, in which event the subject identifies with a quality or symptom of the person who is the source of his guilt feelings for self-punitive purposes. Finally, the mechanism of identification with the aggressor described earlier may also be enlisted as a defense.

Acting out. In the psychoanalytic treatment setting "acting out" refers to the discharge or gratification of some aspect of an unconscious conflict through action,

without conscious awareness of the original elements of the conflict. Thus, acting out was perceived initially as a form of resistance to the treatment process. Its scope is sometimes broadened to include any substitution of action or direct gratification, including impulsive or destructive action, for remembering or talking about warded off feelings and thoughts. However, to avoid possible confusion, its use should be restricted to the living out in action of warded off memories, when the links between the action and the memory are obscure to the patient.

Sublimation. The function of sublimation extends well beyond that of a defense mechanism. It is, in addition, a fundamental outcome of the struggles among the various agencies of the mind and plays a major role in the individual's healthy psychological functioning in society. Essentially, sublimation refers to the process whereby the energy invested in a sexual aim is deflected to another aim, which is nonsexual and of greater social value. It is a defense, insofar as direct sexual gratification is renounced in favor of the other aim. Sublimation differs from other defenses, however, in that a true resolution of the conflict between the ego and the id may occur concomitantly with respect to the libidinal aim in question. In that event, sublimations may become secondary autonomous ego functions, insofar as they are independent of the drive or conflict.

Creative elaboration. The specific instinctual conflicts which arouse anxiety may be elaborated and disguised in dreams, stories, and fantasies which represent the id-ego protagonists in new relationships to each other. The drive energy is thus deflected from its original objects, and the gratification provided by the imaginative processes may be substituted for satisfaction of the original instinctual aim. This mechanism differs from sublimation in that it is not related to social values. Finally, creative elaboration may involve symbolism, identification, and other defense mechanisms.

The concept of the superego

Historical development. The concept of the superego, like the ego, has its historical origins in Freud's writings; the steps leading up to its formulation as a special agency of the mind can be traced to a paper written in 1896, entitled "Further Remarks on the Defense Neuro-Psychoses," in which he described obsessional ideas as "self-reproaches which have re-emerged in transmuted form and . . . relate to some sexual act that was performed with pleasure in childhood." The activity of a self-criticizing agency is also implicit in Freud's early discussions of dreams, which postulate the existence of a "censor" which does not permit unacceptable ideas to enter consciousness on moral grounds. He first discussed the concept of a special self-critical agency in 1914, when he published his exposition of narcissism. In "On Narcissism," Freud suggested that a hypothetical state of narcissistic per-

fection existed in early childhood; at this stage, the child was his own ideal. But as he grew up, the admonitions of others and his own self-criticism combined to destroy this perfect image of himself. In order to compensate for this lost narcissism when he had been his own ideal, or in order to recover it, the child "projects before him" a new ideal, or "ego-ideal." It was at this point that Freud suggested that the psychic apparatus might have still another structural component, a special agency whose task it was to watch over the ego, to make sure it was measuring up to the ego-ideal. The concept of the superego evolved from these formulations of an ego-ideal and a second monitoring agency to ensure its preservation.

In the following year, 1915, in *Mourning and Melancholia*, Freud speaks again of "one part of the ego" which "judges it critically and, as it were, takes it as its object." He suggests that this agency, which is split off from the rest of the ego, is what we commonly call conscience. He further states that this self-evaluating agency can act independently, become "diseased" on its own account, and should be regarded as a major institution of the ego. In 1921, Freud referred to this self-critical agency as the ego-ideal and held it responsible for the sense of guilt and for the self-reproaches which are typical in melancholia and depression. He had dropped his earlier distinction between an ego-ideal, or ideal self, and a self-critical agency, or conscience.

In 1923, in *The Ego and the Id*, Freud's concept of the superego included both these functions; i.e., the superego represented the ego-ideal as well as conscience. He also demonstrated that the operations of the superego were mainly unconscious; thus patients who were dominated by a deep sense of guilt lacerated themselves far more harshly on an unconscious level than they did consciously. The fact that guilt engendered by the superego might be eased by suffering or punishment was apparent in the case of neurotics who demonstrated an unconscious need for punishment. In later works, he elaborated on the relationship between the ego and the superego: guilt feelings were ascribed to tension between these two agencies, and the need for punishment was an expression of this tension.

In one of his last discussions of the superego in *Civilization and its Discontents*, in 1930, Freud expanded on its relationship to his evolving conception of the aggressive instinct: when an instinct undergoes repression, its libidinal aspects may be transformed into symptoms, whereas its aggressive components are transformed into a sense of guilt.

On another level, Freud related the development of the superego to the evolution of culture and to the relation of human beings to one another in society. In such moral precepts as "Love thy neighbor," which are aimed at controlling aggression, the "cultural superego" makes demands upon the individual from without, much as his personal superego dictates to

him from within. Freud believed that the cultural superego, which represents the ideals of civilization, evolved from the impressions left by the personalities of great leaders—"men of overwhelming force of mind or men in which one of the human impulses has found its strongest and purest, and therefore often its most one-sided, expression." While Freud recognized that some limits on individual satisfaction were necessarily imposed by the demands of civilization, he lamented deeply the degree to which the individual must renounce instinctual gratification in order to conform to the social requirements of the larger group. These ideas, which Freud posed very tentatively (recognizing that his application of individual psychology to society was merely by analogy), have been adopted and greatly extended (often on a rather superficial level) in various discussions of the "neurotic culture" of our time.

Origins of the superego. The superego comes into being with the resolution of the Oedipus complex. During the oedipal period, the little boy wishes to possess his mother; the little girl wishes to possess her father. However, each must contend with a substantial rival, the parent of the same sex. The frustration of the child's positive oedipal wishes by this parent evokes intense hostility, which finds expression not only in overt antagonistic behavior, but also in thoughts of killing the parent who stands in the way (along with any brothers or sisters who may also compete for the love of the desired parent).

Quite understandably, this hostility on the part of the child is unacceptable to the parents and, in fact, eventually becomes unacceptable to the child himself as well. In addition, the boy's sexual explorations and masturbatory activities may themselves meet with parental disfavor, which may even be underscored by real or implied threats of castration. These threats and, above all, the boy's observations that women and girls lack a penis convince him of the reality of "castration." Consequently, he turns away from the Oedipus situation and enters the latency period of psychosexual development. He renounces the sexual expressions of the infantile phase.

Girls, when they become aware of the fact that they lack a penis, that they have "come off badly," seek to redeem the loss by obtaining a penis (or a baby) from the father. Thus, as mentioned earlier, Freud pointed out that while the anxiety surrounding castration brings the Oedipus complex to an end in boys, in girls it is the major precipitating factor. Girls renounce their oedipal strivings, first, because they fear the loss of the mother's love, and, second, because of their disappointment over the father's failure to gratify their wish. However, the latency phase is not so well defined in girls as it is in boys. And their persistent interest in family relations is expressed in their play: throughout grade school, for example, girls "act out" the roles of wife and mother in games which boys scrupulously avoid.

Evolution of the superego. But what is the fate of the object attachments which are given up with the resolution of the Oedipus complex? Freud's formulation of the mechanism of identification is relevant here. During the oral phase, the child is entirely dependent on his parents. When he advances beyond this stage and must abandon his earliest symbiotic ties with his parents, he forms initial identifications with them (which, however, follow the anaclitic model; that is, they are characterized by dependence on another). The dissolution of the Oedipus complex and the concomitant abandonment of object ties lead to a rapid acceleration of the identification process.

One might think, following the model proposed above, that the child would identify with the parent of the opposite sex after he has been forced to renounce his oedipal object ties, and to some degree this may, in fact, occur. However, under normal conditions, the striving toward masculinity in the boy and femininity in the girl, leads to a stronger identification with the parent of the same sex. The problem is not simple; because of the bisexual potential of boys and girls, a child may emerge from the Oedipus complex with various admixtures of masculine and feminine identifications. Obviously, these identifications will have a great deal to do with his ultimate character formation and later object choices.

With specific reference to superego formation, these identifications with both parents become united and form a kind of precipitate within the ego, which then confronts the other contents of the ego as a superego. This identification with the parents is based on the child's struggles to repress the instinctual aims which were directed toward them, and it is this effort of renunciation that gives the superego its prohibiting character. It is for this reason, too, that the superego results to such a great extent from an identification with the parents' own superegos. Yet, because the superego evolves as a result of repression of the instincts, it has a closer relation to the id than does the ego itself. Its origins are more internal; the ego originates to a greater extent in the external world and is its representative.

Finally, throughout the latency period, and thereafter, the child (and later the adult) continues to build upon these early identifications through contact with teachers, heroic figures, and admired persons, who form his moral standards, his values, and his ultimate aspirations and ideals.

The child moves into the latency period endowed with a superego which is, as Freud put it, "the heir of the Oedipus complex." Its strictness at first may be compared to the imperative nature of the demands of the id before it developed. The child's conflicts with his parents continue, of course, but now they are largely internal, between the ego and the superego. In other words, the standards, restrictions, commands, and punishments which were imposed previously by the parents from without are internalized in the child's

superego, which now judges and guides his behavior from within, even in the absence of his parents.

Clearly, this initially punitive superego must be modified and "softened," so that eventually it can permit adult sexual object choice and fulfillment. Adolescence poses a unique developmental hurdle in this regard. With the heightening of sexual and aggressive drives which is characteristic during this period, there is a threatened revival of the abandoned incestuous ties to the parents and the undermining of the efforts of the superego. Often, the rebellious acting out behavior of teenagers can be understood in terms of instinctual release that the superego has failed to curb. However, their behavior may be deflected from the more threatening attachment to the parents to their representatives in the external world. In contrast, the superego of the ascetic, oversubmissive, or intellectual adolescent has responded to the threat posed by these heightened drives with renewed vigilance and intensified instinctual renunciation. The task of adolescence is to modify the oedipal identifications with the parents. Ideally, such modification will enable the choice of a love object which is not motivated entirely by the need for a parent substitute or based exclusively upon the need to rebel against their internalized imagos.

Current investigations of the superego. The exploration of the superego and its functions did not end with Freud, and such studies remain of active interest. Obviously, it is beyond the scope of this section to discuss this work in detail. However, reference should be made, in particular, to the fact that recent interest has focused on the difference between the superego and the ego-ideal, a distinction which Freud periodically revived and abandoned. Thus, at present, the term superego refers primarily to a self-critical, prohibiting agency which bears a close relationship to aggression and aggressive identifications. The ego-ideal, on the other hand, is a "kinder" agency, based, as pointed out above, on a transformation of the abandoned "perfect" state of narcissism, or self-love, which existed in early childhood and has been integrated with positive elements of identifications with the parents. In addition, the concept of an "ideal object" (i.e., the idealized object choice) has been advanced, as distinct from the "ideal self."

A second focus of recent interest has been the contribution of the drives and object attachments formed in the pre-oedipal period to the development of the superego. These pregenital (especially anal) precursors of the superego are generally thought to provide the very rigid, strict, and aggressive qualities of the superego. These stem from the child's projection of his own sadistic drives and his primitive concept of justice based on retaliation, which he attributes to his parents during this period. The harsh emphasis on absolute cleanliness and propriety that is sometimes found in very rigid individuals and in obsessional neurotics is based to some extent on this "sphincter morality" of the

anal period. Parenthetically, it should be noted that Melanie Klein's contention that the Oedipus complex, along with the superego, is well established within the 1st year of life derives from another theoretical framework and is not to be confused with the concept of pregenital precursors of the superego, as postulated by classical psychoanalytic theory.

Reformulation of the theory of anxiety. It was pointed out earlier that for many years Freud regarded neurotic anxiety as transformed libido and distinguished between such morbid distress and realistic fear of external danger. In contrast to this theory, which approached anxiety from the standpoint of the drives, the new theory, first described in 1926, attacked the problem from the standpoint of the ego. It set aside the biological approach to anxiety, which is now a subject of research chiefly in disciplines outside of psychoanalysis proper, and studied the function of this affect in relation to a variety of threats to the organism from within or without. Both "real" anxiety and neurotic anxiety were now viewed as occurring in response to a danger to the organism. In "real" anxiety the threat emanates from a known danger, outside the individual; neurotic anxiety is precipitated by an unknown danger; not necessarily external.

Danger situations. Freud distinguished two kinds of anxiety-provoking situations. In the first, for which the phenomenon of birth was the prototype, anxiety occurs as a result of excessive instinctual stimulation which the organism does not have the capacity to bind or handle. In this type of situation, which arises because of the helpless state of the individual, the excessive accumulation of instinctual energy overruns the protective barriers of the ego, and a panicky state or trauma results. These traumatic states are most likely to occur in infancy or childhood when the ego is immature; however, they may also occur in adult life, notably in psychotic turmoil or panic states when the ego organization is overwhelmed.

However, in the more common situation, which occurs after the defensive system has matured, anxiety arises in anticipation of danger rather than as its result, although the affect may be experienced subjectively as if the danger had already occurred. In these situations the emotion of anxiety serves a protective function signaling the approach of danger and may arise because the individual has learned to recognize at a preconscious or unconscious level aspects of a situation which were once traumatic. Thus, signal anxiety serves to mobilize protective measures which are then directed toward averting the danger and preventing a traumatic situation from arising. The individual may employ avoidance mechanisms to escape from a real or imagined danger from without or bring to bear psychological defenses on the part of the ego from within to guard against or reduce the quantity of instinctual excitation. According to this theory, neurotic symptoms, phobias, for example, indicate an

imperfection in the psychic apparatus: specifically, the defensive activity of the ego has not succeeded in coping adequately with the unwelcome drive. As a result, mental conflict persists, and the danger which actually arose from within is now treated as though it had its origins in the external world, at least in part. Thus neurosis is the result of a failure in the defensive function of the ego and results in a distortion of the ego's relationship to some aspect of the outside world. In psychosis, this failure of defensive function is more complete, and greater portions of external reality are perceived as dangerous; greater distortions of the ego become necessary in order to accommodate concomitant distortions in the view of the outside world.

Characteristic danger situations. Each stage of the child's development is accompanied by characteristic danger situations, "appropriate" to the issues which are pertinent to that particular phase. Thus, the earliest danger situation, which occurs when the child is most immature and helpless psychologically and physiologically, is the loss of the primary object, the person on whom he is entirely dependent. Later, when the value of the object itself is perceived, the fear of losing the object's love exceeds the fear of losing the object itself. In the phallic phase, the fear of bodily injury or castration is most prominent. And this too may be thought of as fear of a loss, in this instance, of a narcissistically treasured part of the body. In the latency period, the characteristic fear is that the parental representatives, in the form of the superego, will be angry with, punish, or cease to love the child. In each of these phases, anxiety arises in the ego. Freud also noted that, although each of these determinants of anxiety was appropriate to a particular period, they could exist side by side. Furthermore, the individual's anxiety reaction to a particular danger situation might occur after he had emerged from the developmental phase with which that situation was associated. The persistence in later years of anxiety reactions which were appropriate to various pregenital phases of development has important implications for our understanding of psychopathology.

Implications of the new theory of anxiety. The new theory of anxiety is of great potential value, in that it may help to further our understanding of a variety of psychological phenomena. At the same time, however, several fundamental questions remain unanswered. For example, we need to acquire further understanding regarding the conditions or circumstances under which the ego becomes overwhelmed by anxiety, beyond its precipitation by the anticipation of danger. Similarly, little is known about the normal psychology of anxiety; more knowledge is needed about the quantitative and qualitative factors which determine whether a given amount of anxiety (of a particular nature) will spur ego development through mobilization and stimulation of the individual's ego potential, or whether the same quantity of anxiety

(with the same quality) will impede ego development by drawing the existing ego defenses into excessive conflict formation.

It was in relation to his new theory of anxiety that Freud returned to the concept of defense, a term which he had once before abandoned in favor of repression. And it was his insight into the nature of anxiety which led to the formulation of the defense mechanisms cited above. Thus, he now saw repression as one (albeit the cardinal one) of a variety of possible defenses employed by the ego, which now also included reaction formation, isolation, undoing, etc. With the development of the new theory of anxiety, the ego was no longer a passive agency helpless in the face of the demands of the id and the outside world. Now it was credited not only with serving as a kind of advance guard which could signal danger ahead of time, but also with having at its disposal a variety of possible responses to danger from without or within which enabled the organism to meet the demands and threats of the drives and the outside world.

The Psychoanalytic Concept of Character

Historical development. The concept of character may vary widely in meaning, depending on whether it is used in a moralistic, literary, sociological, or general sense. The application of the concept in psychoanalysis has remained restricted, despite the fact that the theoretical propositions which have been advanced concerning the meaning of character have undergone an evolution which parallels the development of psychoanalytic thought. Thus, during the period when Freud was developing his theories regarding the erotogenic zones, he noted the relationship between certain character traits and particular bodily sensations or sexual components. For example, he recognized that obstinacy, orderliness, and parsimoniousness were associated with anality and with the pleasures derived from withholding or expelling feces; that ambition was related to urethral eroticism; generosity to orality, etc. And he concluded, in his paper on "Character and Anal Erotism," that permanent character traits represented "unchanged prolongations of the original instincts, or sublimations of those instincts, or reaction formations against them."

In 1913, Freud made an important distinction between neurotic symptoms and character traits: neurotic symptoms come into being as a result of the failure of repression, and the return of the repressed; character traits owe their existence to the success of repression (or, more accurately, the defense system), which has achieved its aim through reaction formation and sublimation. Later, in 1923, with increased understanding of the phenomenon of identification and the designation of the ego as a coherent system of functions, the relationship of character to ego development came into sharper focus. At this point Freud observed that the replacement of object attachments by identification, which "set up" the lost ob-

ject "inside the ego" also contributed to character formation. And 10 years later, in 1932, Freud emphasized the particular importance of identification with the parents for the construction of character, as well as superego formation.

Several of Freud's disciples made important contributions to the concept of character during this period. A major share of Karl Abraham's efforts was devoted to the investigation and elucidation of the relationship between oral, anal, and genital eroticism and various character traits. Wilhelm Reich made an important contribution to the psychoanalytic understanding of character in the 1920's when he described the intimate relationship between resistance in treatment and the character traits of the patient. Reich's observation that resistance typically appeared in the form of these specific traits anticipated Anna Freud's later formulations concerning the relationship between resistance and typical ego defenses.

Current concepts of character. The development of psychoanalytic ego psychology has led to an increasing tendency to include character and character traits among the properties of the ego, superego, and ego-ideal, although they are not synonymous with any of these. Concomitantly, the emphasis has been extended from an interest in specific character traits to a consideration of character and its formation in general. Thus, psychoanalysis has come to regard character as the pattern of adaptation to instinctual and environmental forces which is typical or habitual for a given individual. The character of a person is distinguished from the ego by virtue of the fact that it refers largely to directly observable behavior and styles of defense, and of acting, thinking, and feeling. The clinical value of the concept of character has been recognized by psychiatrists as well as psychoanalysts and, in fact, has become a meeting ground for the two disciplines.

The evolution of character. The formation of character and character traits results from the interplay of multiple factors. Innate biological predisposition plays a role in character formation in both its instinctual and ego Anlage. The interaction of id forces with early ego defenses and environmental influences, most notably the parents, constitutes a major determinant in the development of character. And various early identifications and imitations of other human beings leave their lasting stamp upon character. The degree to which the ego has developed a capacity to tolerate delay in drive discharge and neutralize instinctual energy, as a result of early identifications and defense formations, determines, for example, the later emergence of such character traits as impulsiveness. Finally, a number of authors have stressed the particularly close association between character traits and the development of the ego-ideal. In this respect the psychoanalytic concept of character parallels society's use of the term "character" in a moral sense.

The exaggerated development of certain character traits at the expense of others may lead to character disorders in later life; at other times, such distortions in the development of character traits produce a vulnerability or predisposition to the psychoses. These concepts are expanded in the following part of the section in relation to specific forms of psychopathology.

Psychopathology: The Psychoanalytic Theory of Neurosis

Psychoanalytic theories concerning mental disorder have undergone extensive expansion and modification since Freud discovered the free association method of investigation. However, these theories have retained their emphasis on the elucidation of etiological factors, rather than the mere description of symptoms. By 1906, Freud had succeeded in understanding the psychological processes underlying many mental disorders to a degree sufficient to permit him to classify them on the basis of psychopathology. At that point in his investigations, Freud's theories contained all of the major elements of present day psychoanalytic concepts of psychopathology: he had advanced initial hypotheses concerning the psychological mechanisms of neuroses, character disorders, perversions, and psychoses. Indeed, the investigations of Freud and his followers thereafter yielded only additions and minor revisions in his earlier theories on psychopathology.

Historical evolution

Early concepts. Cases of hysteria treated by the cathartic method, a modified form of hypnotherapy, led Freud to conclude that hysterical symptoms were caused by unconscious memories of events. These memories were accompanied by the strong emotions which had been elicited originally, at the time these events actually occurred, and which had not been expressed or discharged adequately. On the basis of this conclusion, Freud hypothesized that hysterical symptoms were the result of psychic traumata in individuals congenitally or genetically predisposed to the development of such phenomena. Although this theory differed from his earlier biological concept of neurasthenia, in that it provided a purely psychological explanation, it too proved to be an oversimplification.

At first, Freud believed that excessive masturbation or nocturnal emissions gave rise to the symptoms which were typical of neurasthenia, i.e., fatigue, listlessness, flatulence, constipation, headache, and dyspepsia. He distinguished anxiety neurosis, which was characterized principally by anxiety attacks, from the syndrome of neurasthenia. Anxiety neurosis was related etiologically to states of activity which produced sexual stimulation or excitement but did not provide an adequate outlet for discharge. He cited coitus interruptus or lovemaking without sexual gratification as examples. Thus, as late as 1906, Freud

believed that the symptoms of neurasthenia and anxiety neurosis represented the somatic effect of disturbances in sexual metabolism (which, most likely, were biochemical in nature) and referred to these as actual neuroses, as opposed to hysteria and obsessions, which he described as psychoneuroses. Of particular interest is the fact that these classifications stressed the etiology of these disorders, rather than symptomatology: Freud assumed that drive energies which should have been discharged in a sexual climax created a state of psychic tension too great for the ego to master, thus producing anxiety.

The relevance of clinical data for theory formation. As the free association method continued to provide new insights into the origins of psychopathology, Freud revised and expanded his theories. Psychic conflict was now recognized as an element in the production of psychoneurotic symptoms. This required that he extend his earlier theory of hysterical and obsessional symptoms as caused by a forgotten event of the past with concomitant emotions which had not been adequately discharged. Originally, Freud maintained that a psychic event or experience could be considered pathogenic if it was repugnant to the individual's conscious self, if, for example, it violated his ethical and moral standards to the degree that it must be consciously repudiated. Hysteria, most obsessions, and many phobias were understood in this way, although some phobias (such as agoraphobia) and some obsessions (such as doubting mania) were described as actual neuroses.

The theory of infantile sexuality. The fact that, almost invariably, in the course of treatment, his patients recalled a previously forgotten sexual experience which had occurred in childhood led Freud to hypothesize that mental illness was the psychic consequence of a sexual seduction by a child or an adult at an early stage in the patient's development. His assumption that sexual seduction had actually occurred proved incorrect. But the basic proposition that the roots of psychoneurosis lie in a disturbance in early sexual development remains unshaken and is the cornerstone of the psychoanalytic theory of neurotic disorder.

Further clinical study led to the conclusion that these memories of sexual seduction in childhood were actually fantasies, although the patients themselves believed in their reality. Reexamination of the data elicited through free association in this connection enabled Freud to formulate the theory of infantile sexuality, which stated that sexual interests and activities were a normal part of human psychic life from earliest infancy and were not limited to traumatic events. Nevertheless, despite these psychological findings, Freud continued to stress the importance of the patient's sexual constitution and heredity in the etiology of the psychoneuroses.

Progress in elucidating the precise nature of such constitutional factors has been very slow. In contrast, our knowledge of experiential etiological factors has increased. The discovery that infantile sexuality is a normal phenomenon narrowed the gap between the normal and the psychoneurotic and enabled Freud to elucidate the origins of the sexual perversions and their relationship to both normal and psychoneurotic functioning. The abnormal persistence in adult sexual

life of some component of infantile sexuality might lead to perversion. However, in the normal course of events, some components of infantile sexuality were repressed and others were integrated into adult sexuality at puberty, with genital primacy. Other insights followed: excessive repression creates instability, so that in later life there is a greater likelihood that precipitating events will cause a failure of repression. In that event, infantile sexual impulses will emerge from the unconscious, at least to some degree, in the form of psychoneurotic symptoms.

The psychology of dreams. Freud's study of dreams showed that the dream which the sleeper remembered, i.e., the manifest dream, represented a compromise between one or more repressed impulses and those psychic forces which opposed the entrance of such impulses into conscious thought and behavior. Neurotic symptoms represented a similar compromise with one exception: the latent, instinctual wish which underlay the manifest dream might or might not be a sexual one, but the repressed impulses which produced neurotic symptoms were always sexual. On the other hand, the meaning of neurotic symptoms, like the elements of a manifest dream, lies in their latent or unconscious content. They are disguised and distorted expressions of unconscious sexual fantasies. Part, or all, of the sexual conflict of the psychoneurotic patient is expressed in his symptoms.

Current concepts of neurosis. The theory of neurosis (used in the traditional sense to refer to hysteria, obsessional neuroses, and the phobias) is central to psychoanalytic concepts of psychopathology. Neuroses develop under the following conditions: (1) There is an inner conflict between drives and fears which prevents drive discharge. (2) Sexual drives are involved in this conflict. (3) The conflict has not been "worked through" to a realistic solution. Instead, the drives which seek discharge have been expelled from consciousness through repression or another defense mechanism. (4) The repression merely succeeded in rendering the drives unconscious; it did not deprive them of their power and make them innocuous. Consequently, the repressed tendencies have fought their way back into consciousness, disguised as neurotic symptoms. (5) Finally, an inner conflict will lead to neurosis in adolescence or adulthood only if a neurosis, or a rudimentary neurosis based on the same type of conflict, existed in early childhood.

Developmental schema of the etiology of neurosis

Early childhood. In the course of development, many vicissitudes may contribute to the future malfunctioning or malformation of the psychic apparatus. Maternal deprivation in the first few months of life may impair ego development in a manner that is particularly devastating to its integrative capacities. Failure to make the necessary identifications, either because of overindulgence or because of excessive frustration, interferes with the ego's task of mediating between the instincts and the environment, with consequent limitations of drive discharge and restric-

tion of the ego's capacity to obtain pleasure and assert itself usefully. Lack of capacity for equitable expression of drives, especially aggressive ones, may lead the individual to turn them onto himself, and to become overtly self-destructive. Inconsistency, excessive harshness, and/or undue permissiveness on the part of the parents may result in the disordered functioning of the superego. Instinctual conflict may impair the ego's capacity for sublimation, resulting in excessive inhibition of its autonomous functions. Severe conflict which cannot be dealt with through symptom formation may lead to severe restrictions in ego functioning, and the impairment of the capacity to learn and to develop new skills.

Puberty and adult love. When the ego has been weakened, a shock or traumatic event in later life which threatens survival (or appears to), especially when combined with external factors which further weaken ego resiliency, such as toxic conditions or exhaustion, may break through the ego defenses. A large amount of libido is then required to master the resultant excitation. But the libido thus mobilized has been withdrawn from the supply normally applied to external objects and from the ego itself, and this further diminishes the strength of the ego and produces a sense of inadequacy.

In summary, precipitating factors in neuroses are experiences which disturb the "balance" between warded off impulses and warding off forces. Increase in the warded off drive may be absolute, as at puberty or the climacteric, due to the physiological intensification of sexual drives at these times. Or there may be a relative increase in a specific warded off drive at the expense of other instinctual demands, as in the case of conscious or unconscious temptation or stimulation of a particular wish.

Disappointments or frustrations of adult strivings can revive infantile longings which may be dealt with through symptom formation or further regression. Decrease in the warding off forces due to fatigue, intoxication, sickness, or overexacting tasks may loosen previously effective defenses against drive derivatives and precipitate a neurotic, or even a psychotic illness. As long as the warded off instincts cannot be tolerated in consciousness, the ego has no choice but to form symptoms or to modify its aims so that the unfulfilled strivings become less urgent.

Secondary gains of neurosis. The reduction of tension and conflict through neurotic illness is the primary purpose or gain of the disorder. The ego, however, in "making the best of it," may try to gain advantages from the external world via the illness, e.g., by provoking pity in order to get attention and sympathy, by manipulating others, or even by receiving monetary compensation. Similarly, the patient may imply to others that his suffering entitles him to a compensatory reward of pleasure. These are the secondary gains of the illness.

Each form of neurosis has its characteristic and

predominant form of secondary gain. In phobias (anxiety hysteria), there is a regression to childhood, when one was still protected. Gaining attention through dramatic acting out and, at times, deriving material advantages are characteristic of conversion hysteria. Frequently, in compulsive neurosis, there is a narcissistic gain through pride in illness. In the organ neuroses (psychosomatic states), psychic conflicts are denied by projecting them onto the physical sphere. Finally, in the psychoses, the warding off of a painful idea, experience, or frustration in the outside world leads to severe regression which requires that the patient be taken care of, thus satisfying his extreme dependency needs.

Brenner has summarized the contemporary psychoanalytic concept of mental disorder as follows: "In terms of modern psychoanalytic theory, what we refer to clinically as mental disorders can best be understood and formulated as evidences of malfunction of the psychic apparatus to various degrees and in various ways. As usual, we can best orient ourselves if we adopt a genetic, or developmental approach."

Nosology

Conversion hysteria. Conversion hysteria provides a defense against overintense libidinal stimulation, by means of a transformation or conversion of psychical excitation into physical innervation. As a result, various alterations of motor function or sensation may occur. The innervation is not haphazard; it represents a genitalization of the particular part of the body associated with repressed unconscious wishes directed toward a love object. Fixation of the phallic stage of psychosexual development, a tendency to libidinize thoughts and images, and frustration in external life (in relation to strong unconscious fantasies) are etiological factors.

The change in physical function which occurs gives expression, in distorted form, to instinctual impulses which had been repressed previously. However, conversion symptoms are not simply somatic expressions of affects, but very specific representations of thoughts which can be retranslated, through the free association method, from their "somatic language" into words. The syndromes of conversion are unique in every individual; and in each instance the specific type of distortion is determined by the historical events which created the repression. The distortion mechanisms employed in dreams are employed in conversion hysteria as well, namely, condensation, symbolism, displacement, etc.

Pathogenesis and symptomatology. Usually, hysterical spells or attacks, which are rarely encountered in current clinical practice, are pantomimic expressions of rather complicated fantasies relating to the child's concept of his parents' sexual relations during the oedipal period. However, the hysterical seizure may also express pregenital actions which are regressive substitutes for the original oedipal fantasies. Some attacks are less specifically sexual and occur in the

form of convulsions; as emotional outbursts or "moods," which appear to be entirely unmotivated; or as screaming, crying, or laughing spells. Related to the seizures are various bizarre symptoms, including the sudden appearance or disappearance of normal physical needs; attacks of hunger or thirst; an urgent need to defecate or urinate; and difficulties in breathing.

In monosymptomatic conversions, the somatic innervation expresses the memory of an event which took place in the forgotten situation. For example, Breuer's patient, Anna O., had a paralysis of her arm whenever she was unconsciously reminded of her feelings for her father. (At the time her father died, she had been sitting at his bedside with her arm pressed against the chair at the side of the bed.) The motor disturbance represents a defense against an action, specifically an action which is associated with an objectionable infantile impulse. Hysterical pain may represent a signal or warning not to yield to the pleasant sensations which are associated with the memory of a painful episode. (Pain originally experienced by the patient himself recurs in the conversion symptoms as a substitute for the pleasant excitement once connected with it.) At times, the hysterical pains, imitated in the conversion symptoms, have been experienced, not by the patient but by another person with whom the patient identifies in producing his symptom. Freud's patient, Dora, illustrated hysterical identification with a rival by developing a cough like that of Frau K., with whom she unconsciously competed for Herr K. A female patient whose hysteria is due to her unresolved Oedipus complex may make an identification not with her rival, her mother, but with her beloved father. In this way the girl struggles to free herself of the frustrating love for the father; she may then seek to satisfy negative oedipal wishes by taking her mother as a love object. The most frequent form of hysterical identification takes place with an object with whom the patient has no genuine object relationship. It is formed on the basis of "identical ideological needs." Freud used an hysterical epidemic in a girls' school to illustrate this phenomenon: a girl reacts with a fainting spell to a love letter, and the other girls in the school get fainting spells as well. The unconscious meaning is: "We would like to get love letters too." Finally, there may be "multiple identifications" by a single patient, as exemplified by cases of "multiple personality" described in the literature.

Hysterical dream states are closely related to seizures. The day-dreams, which represent derivatives of the repressed oedipal fantasies, involuntarily take possession of the personality, thereby removing the patient from reality. A mixture of hysterical spells and hysterical dream states is represented by the conversion symptom of sleep-walking. The typical aim is the wish to participate in adults' sexual night life. Other alterations in states of consciousness, such as

amnesic or dissociative states, also result from the repression, or warding off, of an intolerable aspect of infantile sexual life which has been revived by current sexual stimuli. Hysterical disturbances of the senses represent an attempt to reject upsetting sexual perceptions.

Choice of neurosis. Somatic compliance symptoms described above illustrate that the entire cathexis of the objectionable impulses appears to be condensed into a definitive physical function. The choice of the afflicted region may be determined by the unconscious sexual fantasies and the corresponding erogenicity of the afflicted part, by physical injury or a change in a part of the body which increases its susceptibility, by the nature of the situation in which the decisive repression occurred, and by the ability of the organ to express symbolically the unconscious drive in question. Finally, as is well known, hysteria may imitate a wide variety of diseases, which complicates the clinical picture considerably.

Phobia. Phobia, which is often referred to as anxiety hysteria, is an abnormal fear reaction which is caused by a paralyzing conflict due to an increase of sexual excitation attached to an unconscious object. The fear is avoided by displacing the conflict onto an object or situation outside the ego system. After this displacement has occurred, the readiness to develop anxiety is bound to the specific situation which precipitated the first anxiety attack. If situations occur which duplicate or represent the original event symbolically, it will become manifest. The ego fights off the anxiety through states of inhibition such as impotence and frigidity or through avoidance of objects that have become connected with unconscious conflicts either through historical associations or through their symbolic significance.

Pathogenesis. The manifestations of phobias are protean. As the degree of displacement increases, the connection between the fear situation and the original instinctual conflict becomes more concealed. The feared situations or persons have a specific unconscious significance and in a distorted way symbolize either a forbidden gratification, a punishment for an unconscious impulse, or a combination of both. The advantage of the displacement is that the original offensive idea does not become conscious. In Freud's famous case history of "little Hans," the boy's fear of a horse instead of his father helped him to avoid hating his father, by whom he was threatened, and whom he also loved. Projection from an internal danger onto an external one such as a wolf, for example, which exists chiefly in the imagination, has another advantage: wolves are seen only in picture books, which need not be opened, or at the zoo, where one does not have to go very often. Although the objects or situations from which the phobic individual flees represent the threatening parents primarily, he is also in flight from his own impulses; even the fear of castration, which

is perceived as an external threat, arises primarily as a consequence of the child's own phallic impulses.

Symptoms. The patient's history, the nature of the drives warding off, and the mechanisms of defense employed determine the clinical symptoms. Phobias about infection and touching often express the need to avoid dirt and show that the patient has to defend himself against anal-erotic temptations. Fear of open streets and stage fright may be a defense against exhibitionistic wishes. Anxieties about high places, closed places, falling, cars, trains, and airplanes are developed to fight pleasurable sensations connected with stimulation involving the equilibrium.

As a rule, the first neurotic reactions in children have the character of anxiety hysteria. With regard to adults, typically, the onset of phobic reactions occurs at a time of crisis in the sexual life. Fixation at the phallic stage and sexual frustrations, the presence of an external factor which may weaken the ego, increases in libidinal excitement, and a particular susceptibility to anxiety reactions are the most common etiological factors.

Obsessional neurosis. The obsessional or obsessive-compulsive neurosis is characterized by persisting or urgently recurring thoughts and repetitively performed behavior which bear little relation to the patient's realistic requirements and are experienced by him as foreign or intrusive.

Pathogenesis. The obsessional neurosis comes about as a result of the separation of affects from ideas or behavior by the defense mechanisms of undoing and isolation, by regression to the anal-sadistic level, or by turning the impulses against the self. As a defense against a painful idea in the unconscious, the affect is displaced onto some other, indirectly associated idea, one more tolerable, which in turn becomes invested with an inordinate quantity of affect. As mentioned earlier in this section, Freud described obsessional ideas as self-reproaches which have reemerged from repression in a transmuted form. He also suggested that they relate to some sexual act which was performed with pleasure in childhood. Nevertheless, in early childhood, there are few indications of the development of obsessional tendencies. Moreover, usually, at the time such trends develop in latency, no self-reproach is attached to the memory of earlier pleasurable activities. However, a primary defense system (i.e., the superego) develops at approximately this point, which consists of general conscientiousness, a sense of shame, and self-distrust, now referred to as character defenses. A period of apparent health or successful defense functioning may occur before the onset of the illness. The period of illness proper is distinguished by the return of repressed memories in the form of obsessive-compulsive symptoms, that is, by the failure of the character defenses. The obsessional ideas which emerge are derivatives which express the warding off drives. Sometimes they preserve their char-

acter as impulses. Sometimes the original drive cannot be readily discerned, and the patient is aware only of ideas that must be thought about, which indicates that the energy associated with the original impulse has been diverted to a more neutral idea.

In other words, compulsions and obsessive symptoms are a condensation of both instinctual and anti-instinctual forces. In some instances, in obsessions related to incestuous or murderous ideas, for example, the manifest clinical picture reveals the direct instinctual aspect more clearly. In other instances (e.g., when symptoms obviously express the defensive or punishing commands of the superego), the anti-instinctual forces are predominant. Actually, the individual tries to protect himself from the threatened loss of his self-respect, which, in turn, is precipitated by the guilt feelings occasioned by the disapproval of the superego, rather than the loss of love or castration. As mentioned above, the onset of obsessive-compulsive neurosis occurs relatively late in childhood because it depends on the formation of the superego. The introjection of the parents into the superego explains the relative predominance of punitive and expiatory symptoms which affect the total personality of the patient.

A phobia may be transformed into an obsession: certain situations must be avoided by the phobic person, and he exerts great effort to ensure this avoidance, to the degree that in time these efforts assume an obsessive-compulsive character. Other obsessions may then develop which are so remote from the situation which was the original source of fear that the avoidance is assured. For example, touching rituals may replace taboos; washing compulsions take the place of the fear of dirt; social rituals supercede social fears; sleeping ceremonials replace fears of falling asleep.

It has already been stated that in the obsessive-compulsive neurosis, fixation of libido at the anal-sadistic stage has occurred. Concomitantly, ego development has been arrested at the accompanying stage of omnipotence of thought. Factors which result in frustration of post-anal-sadistic impulses (usually of a phallic nature) or which impede more mature ego functioning will lead to the precipitation of overt symptomatology. Defenses are first directed against the phallic-oedipal drives, but as regression occurs they are directed against the anal-sadistic impulses themselves. External circumstances which remobilize the repressed infantile sexual conflicts and disturb the hitherto effective equilibrium between the repressing and repressed forces may precipitate acute cases of the neurosis. The more frequent chronic type continues more or less without interruption from adolescence. However, particular external circumstances may precipitate exacerbations from time to time if the defenses become less effective, or the impulses defended against more unbearable. Freud's most important clinical study of this syndrome was his case his-

tory of the "Rat Man" ("Notes on a Case of Obsessional Neurosis").

Organ neuroses (psychosomatic disorders). Between the realm of organic disorders from known physical causes and the group of conversion disorders, there exists a large group of syndromes which are characterized by functional, and even anatomical, alterations. Originally, these were called "organ neuroses"; they are presently referred to as "psychosomatic disorders." Peptic ulcer, asthma, and ulcerative colitis have been regarded as typical examples of psychosomatic disorders.

The genesis of psychosomatic disorders. Many theories have been advanced to explain the origins of these phenomena. For one, psychosomatic symptoms have been described as affect equivalents, which represent dammed up emotions or their symbolic representation, which cannot be discharged through behavior or speech and which find expression instead along somatic pathways in the form of a structural or functional alteration in an organ or organ system. According to this theory, anger or sexual excitement, as well as anxiety, may be supplanted by sensations and other changes in the intestinal, respiratory, or circulatory apparatus. For example, cardiac neurosis is considered to be an anxiety equivalent. Although it has some validity, the theory of affect equivalents is generally regarded as an oversimplified explanation of the multitude of complex interrelationships between psychological and somatic processes which obtain in these disorders and which, as yet, are not completely understood. Furthermore, although all affects are carried out by motor or secretory means, the physical manifestations of any given disease may occur without a clearly established etiological relationship to specific mental or emotional experiences. The difficulties are compounded by the fact that the psychosomatic disorders, themselves, may bring about various pathological adaptive responses in the individual, i.e., the "pathoneuroses" described by Ferenczi, in which event it is difficult to determine whether the emotional disorder preceded the physical, or vice versa.

Current issues. The normal interrelationship between hormonal physiology and instinctual phenomena is a subject of much current study and interest. Unfortunately, space limitations preclude a detailed discussion of the rationale underlying this research. Briefly, those workers who are involved in such investigations maintain that, given a predisposition, or susceptibility, to psychosomatic disorders in a particular individual, the inhibition of specific affects may lead to certain hormonal secretions, to change in physical functions, and, eventually, to alteration in the tissues themselves. Different unconscious affects, as they occur in specific disorders, probably cause quantitative and qualitative differences in hormone secretion and thereby bring about in the vegetative

nervous system a complex combination of stimulatory (sympathetic) and inhibitory (parasympathetic) responses.

Character (personality) disorders. It was stated earlier in this section that, in its psychoanalytic sense, character refers to the ego's habitual mode of bringing into harmony the tasks presented by internal demands and the external world. When and how the ego acquires the qualities which enable it to adjust, first, to the demands of the instinctual drives and of external reality, and later to the demands of the superego could be the subject of a separate treatise. Concomitantly, the description of pathological character types may be complex and rather confusing in that discrete types without overlap rarely exist.

Definition. A particular character pattern, or type, becomes pathological when its manifestations are exaggerated to the point that behavior destructive to the individual or to others results or the functioning of the person becomes distorted or restricted, so that it becomes a source of distress to himself or others. Those character types which are of particular clinical interest are described briefly below. Character disorders are also known as personality disorders and are discussed elsewhere in this book under the latter designation.

Phobic characters. These individuals limit their reactive behavior to the avoidance of the situations which they yearned for originally. Thus, certain external situations are avoided, as is true of neurotic phobic behavior. In addition, however, internal reactions, such as rage or love, or all intense feelings may be subjected to phobic avoidance.

Compulsive characters. Reaction formations are characteristic of these individuals. Typically, they attempt to overcome sadism by kindness and politeness, to conceal pleasure in dirt by rigorous cleanliness. As the result of isolation there is a lack of adequate affective response and a restriction in the number of available modes of feeling. Object relationships are of an anal-sadistic nature.

Hysterical characters. Hysterical characters have been described as persons who are inclined to sexualize all relationships, who tend toward suggestibility, irrational emotional outbreaks, chaotic behavior, dramatization, and histrionic activity.

"Cyclic" characters. These persons exhibit periodic mood swings, from depression to varying degrees of elation. Cyclic characters are particularly concerned with unresolved oral needs and conflicts.

Schizoid characters. The schizoid character evidences a heightened narcissism and the withdrawal of libido from outside persons into his own thoughts and feelings. He may manifest an intense need for approval or an omnipotent narcissism which is independent of the opinions of other people and is associated with limitations and distortions in the reality testing function of the ego.

Impulse-ridden characters. Finally, the impulse-

ridden character, who is frequently encountered in psychiatric practice, habitually discharges tension or avoids inner conflict by urgent activity, which is sometimes of a destructive or self-destructive nature.

Perversions. Perversions are manifestly sexual in character. When the pathological impulses are released, orgasm is achieved. As we have noted, the sexual aims in adult perversions correspond to components of the sexual drives of children. But the genesis of perversion cannot be attributed solely to the hypertrophy of an infantile, partial instinct. Factors of anxiety at phallic and pregenital levels, bisexuality, identifications, structural considerations, and external circumstances all play a part in determining the genesis of perversion. These factors are described only very briefly below; the detailed discussion which they obviously require lies beyond the scope of this section.

Homosexuality. In essence, homosexuality may be considered a vicissitude of the Oedipus complex, in that the resolution of the oedipal conflict is based on the negative oedipal constellation. Specifically, the child has identified with the parent of the opposite sex and chosen the parent of the same sex as a love object. Narcissistic factors also play an important role in homosexuality: the choice of an object is based, in part, on its sexual resemblance to the individual himself.

Fetishism. Fetishism refers to the veneration of inanimate objects which symbolize parts of the body of an ambivalently loved person.

Transvestism. The transvestite finds dressing in garments which are characteristic of the opposite sex a source of sexual excitement.

Exhibitionism. Exhibitionism is the deliberate exposure, usually compulsive, of sex organs under inappropriate conditions.

Voyeurism. The voyeur achieves sexual gratification by watching the sexual activities of others.

In their extreme form, sexual submissiveness, sadism, and masochism represent perversions. These phenomena are discussed at length in the psychoanalytic literature.

Impulse neuroses. The impulse neuroses, which are related to perversions, involve impulsive actions which, though not necessarily overtly sexual, serve the purpose of avoiding or mastering some type of pregenital anxiety which is intolerable to the ego. Thus, the strivings for security and for instinctual gratification are characteristically combined in the impulsive action. Running away, kleptomania, pyromania, gambling, drug addiction, and alcoholism are well known examples of "irresistible" impulsive activities.

The Psychoanalytic Theory of Psychosis

Early concepts (1893–1923). The most important finding to emerge from the psychoanalytic clinical investigations of the neuroses was the existence of an unconscious mental life

and the description of its effects on conscious thought, symptoms, and behavior. On the basis of these data, Freud was able to demonstrate that the biological concept of adaptation was valid for all mental disorders. This concept led, in turn, to Freud's insight into the purposefulness of a psychosis. He suggested that psychosis might best be understood as the patient's mode of adapting to his emotional and realistic needs, to his physical health and intelligence, and to the environmental stresses with which he is confronted. Freud offered clinical evidence in support of this hypothesis by demonstrating that a definite psychotic symptom, hallucination, served a useful purpose.

In a broader frame of reference, Freud's greatest contribution to the psychology of psychosis came from his study of dreams. He pointed out that both the dream and psychotic thought were representative of a primitive type of thinking, characteristic of infancy and of the animistic stage of development which antedates mental differentiation of autistic and objective experiences. This application of the investigation of dreams to schizophrenic thought was elaborated on in detail by Carl Jung, and his formulations enabled other workers to demonstrate the validity of this basic concept, i.e., that delusions and hallucinations, like dreams, are prelogical forms of thinking. For example, in his paper on "The Influencing Machine," Viktor Tausk described a schizophrenic patient's delusion that he was magically influenced by a machine, and he showed that it derived from genital sensations.

Studies of paranoia. Understanding of the mental symptoms of paranoia was greatly facilitated by discovery of the existence of unconscious homosexuality and the mechanism of projection. Freud's theoretical formulations concerning this form of psychopathology were, of course, based on his clinical experience. In addition, however, he acquired considerable insight into its genesis as a result of his careful analysis of the autobiography of a patient (Schreber) who had recently recovered from a severe attack of paranoia, and whom Freud had never seen.

In brief, Freud postulated that in paranoia the need to project coincided with an unconscious need for homosexual love which, though of overwhelming intensity, was consciously denied by the patient. He also suggested that paranoid delusions represented sexual conflicts concerning persons of the same sex, which had been projected onto some other person or force, which was then perceived as persecuting.

Other workers emphasized the close relationship of paranoid symptoms to infantile fantasies, in which feces are personalized and considered animistically as dangerous beings which threaten the individual. In this connection, the relationship between paranoia and a stage of development at which the emotions are centered on a particular part of the object's body, rather than the total person, was demonstrated by Abraham. Abraham also noted that paranoid psychosis resembles certain phases of melancholia, in that the patient's fantasies indicate a desire to incorporate the object. However, paranoid psychosis differs from melancholia in that in paranoia the hostility is directed against a part of the object rather than the whole and also in the prominence of fantasies that this incorporated part object can be destroyed and eliminated by defecation. The concurrent demonstra-

tion of the relationship of very primitive fantasies of aggression to overwhelming anxiety and the need to project has facilitated further understanding of this clinical entity. One question remained open, however: the reason why the homosexuality of paranoid patients had become so intense and was so intolerable was not investigated by Freud or his co-workers.

The role of narcissism in psychosis. In his paper, "On Narcissism," Freud stated that psychosis was characterized by the patient's incapacity for normal emotional interest in other people and things. He did not agree that the psychotic process represents a total depletion of libido; rather, it involves a redistribution of those proportions of libido normally devoted to object love and self-love. The energy withdrawn from impoverished love relationships produces an abnormally excessive interest in the bodily functions and psychic attributes of the self. Concomitantly, the psychotic patient's use of language indicates an emotional interest in the verbal symbol, rather than the object the word represents. Many of the more obvious symptoms of psychosis are secondary to this primary loss of the capacity to love others; indeed, they are very rudimentary and primitive efforts to reestablish an interest in others.

Regression to functioning at an earlier stage of mental development is manifested not only in prelogical ways of thinking, but also in the fact that psychotic patients extract pleasurable experience chiefly from their own sensory experience, without requiring a reciprocal relationship between themselves and another person.

In summary, the conspicuous elements of the clinical picture in most psychotic states consist of fragments of the intact personality and incomplete phases of psychotic regressions, and efforts at restitution. Freud concluded that delusions, hallucinations, and certain forms of disorganized behavior were secondary phenomena which represented rudimentary efforts on the part of the patient to restore his lost feelings for objects.

Current concepts. Subsequent investigations have followed Freud's suggestion that the conflicts which result in psychotic adaptations occur primarily between the individual and his environment. In contrast, in neurosis, the conflicts are primarily within the personality, between unconscious infantile wishes and adult attitudes. Recent work has focused on the detailed analysis of the disturbances and disorganizations in ego functioning which have impaired the patient's relationship with reality. In brief, psychoses are seen as resulting from defects in the ego's integrative capacities; from the ineffectiveness of those functions essential to the capacity for establishing real relations with people for both pleasurable and egoistic reasons; and, finally, from the impairment of those functions essential to the control of intense infantile wishes by normal or neurotic mechanisms. Investigations of the ego's adaptive capacities have

shown that the psychotic, like the neurotic, needs to adapt in a way which will enable him to avoid anxiety. However, the psychotic person's adjustment depends on the more primitive types of defense, which normally predominate before a high degree of personality organization is attained. The most important among these primitive defenses are flight, shown in social withdrawal, and the simple inhibition of impulses, which is very apparent in many psychotic delusions. Obviously, these defense mechanisms are much less highly organized than repression or reaction formation, for example. Again, in contrast to the neurotic, the fear of detection by others, rather than the guilt of later childhood and maturity, is also more conspicuous in the social reactions of the psychotic. Finally, identifications, i.e., the adoption and organization of patterns with elements which were originally perceived as details of other people's behavior, play a very important role in psychosis. These derive from emotional relations and early reactions to other people which have played a conspicuous role in the development of the psychotic patient's ego's capacities.

The development of greater understanding and, perhaps, therapeutic techniques which bear a more specific relationship to etiological factors awaits the accumulation of further knowledge regarding the primitive ego of the child and the phases and mechanisms of its development. Recent studies of the development of the ego's capacity to transform primitive drives into socially useful functions (i.e., sublimation) and of factors which interfere with the development of this crucial ego function have enhanced our understanding of the pathogenesis of psychosis. With respect to treatment, modifications in the free association method have made possible an approach, not hitherto possible, to a variety of psychotic states, and to the problem of vulnerability and predisposition to psychosis. It must be pointed out, however, that many of these initial concepts are still in a state of transition.

Nosology

Hypochondriasis. The "actual neuroses" (the term Freud used to describe neurasthenia and anxiety neurosis) have ceased to be a significant part of psychoanalytic nosology. In fact, these clinical syndromes can be recognized as phases of ego regression or phases in the return to optimum ego functioning, yet they are referred to only rarely in the literature. Hypochondriasis, which Freud included among the "actual neuroses" originally, and the pathoneuroses may well be indicative, at least in certain instances, of phases of disorganization and reorganization of integrated ego functioning; the consensus of psychoanalytic opinion on this issue has not been determined. It is recognized, however, that hypochondriasis is an organ neurosis, although the physiological factor involved is still unknown. It may be assumed that certain psychogenic factors, e.g., a state of dammed up libido or anxiety

to which the individual responds with narcissistic withdrawal, create organic changes which, in turn, give rise to hypochondriacal sensations. Hypochondriasis rarely appears as an isolated neurosis; more frequently, it appears to complicate the picture of some other psychopathological condition, such as compulsion neurosis or depression, or it appears as a stage in the development of or recovery from psychosis. Sadistic and hostile impulses withdrawn from objects and represented in the form of organic complaints may play a particularly pronounced role in hypochondriacal syndromes. The typical hypochondriac is a conspicuously narcissistic, seclusive, monomaniacal person, often in a transitional state between reactions of a hysterical character and those which are delusional and clearly psychotic. It is hoped that further psychoanalytic study of infantile development will contribute to our understanding of these frequently encountered clinical states.

Melancholia. Initial insights into the internal origins of various forms of affective regressive states were advanced by Freud as early as 1915. In his paper on "Mourning and Melancholia," Freud emphasized the topographical regions and systems of the psychic apparatus which were involved in melancholic states, the regression of the libido, and the abandonment of the unconscious cathexis of objects. Freud's views differed in this respect from those of Abraham, who also stressed the importance of anal-sadism and maintained that its role in melancholia was comparable to that of anal eroticism in obsessional neurosis. Abraham also pointed out, however, that anal-sadistic impulses contribute to many other clinical syndromes as well. Freud, in turn, emphasized the fact that the pain in mourning was limited to loss of an external object. In contrast, in melancholia the ego itself is impoverished because it has experienced an internal loss. Thus, melancholic depressions may or may not be precipitated by an actual loss. As a concomitant of loss, the melancholic suffers a shattering fall in self-esteem. The ego itself seems poor and empty, and as such it is deserving of reproach by the superego. The early formulations of both Freud and Abraham concerning melancholia and depression emphasized the precipitating frustration in object love, accompanied by flows to narcissistic libido, which reinforced early oedipal disappointment, and early introjection of an ambivalently loved parental image. These concepts are still considered valid.

Depression. Abraham's continued investigations of his own and Freud's propositions within the framework of infantile libidinal development, and particularly in regard to the oral phase, led to further understanding of the mechanisms involved in depression. He suggested that the conflicts of depressed persons centered around oral and anal-sadistic impulses and pointed out that persons who were prone to depression often had a markedly obsessional underlying character.

Pathogenesis. On the basis of these hypotheses, Abraham formulated the concept of "primal depression," to designate severe narcissistic injury which had occurred in early childhood through disappointments in "love." Later, Rado studied the effect of various vicissitudes of the nursing situation on the infantile ego and postulated a relationship between the etiology of depression and oral frustration, on the one hand, and aggression, particularly at the oral level, on the other. More recently, Edith Jacobson has discussed the impact on the young child's ego formation of early disillusion about parental omnipotence, and subsequent devaluation of the parental images. Disillusion and devaluation of the parental images leads to "destruction" of the infantile self-esteem and gives rise to a primary depression which is repeated whenever the adult is similarly disillusioned. Thus, early ambivalent relationships with the parent figures may play a decisive role in the etiology of depression.

Other authors have expanded on this concept: Fenichel ascribed the general predisposition to depression to an "oral fixation, which determines the later reaction to narcissistic shocks" and added that "the narcissistic injury may create a depressive disposition because it occurs early enough to be met by an orally oriented ego," that is, an ego which depends on external oral-narcissistic supplies. Fenichel also discussed the possibility that shocks to the self-esteem in early childhood may secondarily create the decisive oral fixation, in the sense that the ego may become fixated to oral defense mechanisms. Much of the evidence cited by these authors in support of their hypotheses would seem to confirm Melanie Klein's theory that the achievement of a "whole" object relationship is regularly accompanied by anxiety, together with a definite and specific vulnerability to depression in the event of object loss. Zetzel, however, has argued that this view implies a greater incidence of infantile psychosis than actually exists.

The "mechanism" of depression. All persons experience periods of depression in the face of real or fantasied disappointments. However, the orally dependent person, who requires constant narcissistic supplies from outside, is most likely to manifest this reaction in its most severe form. The prototype of depression is the deprivation, suffered by the infantile ego, of vital narcissistic supplies. The availability of such "supplies," in the form of love, affection, and care, is most significant, in terms of future development, at the oral stage.

Later, with the internalization of the parental images, which signifies the passing of the Oedipus complex, the struggle to secure love from the need-satisfying object on an intrapsychic level takes place (i.e., the ego now seeks the approval of the superego). However, the child experienced this subsequently internalized need-satisfying object as frustrating and strict initially, and his attitude toward the object displayed a corresponding hostility. The qual-

ity of this early—and most crucial—object relationship gives the superego a critical and aggressive cast. The severe self-reproaches of depressed persons are another concomitant of the infant's hostility toward the internalized object and also represent the ego's efforts to win the favor of the superego through devaluation of the self. In summary, when early object relationships were defective, early intrapsychic conflicts may be revived. Once the mechanisms described above are set into operation by frustration and loss in adult life, they will give rise to depression.

Symptomatology. The symptom of depression is as ubiquitous as life itself; for it is a natural reaction to those events which must be counted among the normal vicissitudes of life. Consequently, it is the excessive duration and domination of the organism by depressive affect, rather than its occurrence, which is pathological. Both depression and melancholia are characterized by a decrease in self-esteem; a sense of helplessness; the inhibition of ego functions to varying degrees; and a subjective feeling of sadness or loss of varying intensity. It has also been described as a basic affective state in which the ego feels incapable of fulfilling its aims or aspirations, although these aims persist as desired (but "hopeless") goals. Finally, persons prone to depression often display a pseudo independence and self-assurance which, in fact, is a reaction to early severe deprivation and is intended to serve as a defense against future deprivation.

Manic-depressive psychosis. The manic-depressive person manifests a particular kind of infantile narcissistic dependency on his love object. To offset his feelings of unworthiness, he requires a constant supply of love and moral support from a highly valued love object, which may be an individual, or an organization or "cause" which he feels he "belongs to." As long as this object lasts, he will be able to function with enthusiasm and high efficiency. In fact, however, because of his strong self-punitive tendencies, the manic-depressive's object choice is masochistically determined and is bound to disappoint him. Thus, he, himself, sets the stage for his illness. All the ambitions and pursuits of the manic-depressive individual evolve from representations of the overvalued parental love objects, which extend, as it were, to the whole world. Consequently, when he is disappointed by the love object, ego functioning is impaired at every level.

The depressive phase. Often, the depressive phase of manic-depressive psychosis closely resembles paranoia, insofar as the patient's fantasies show a similar desire to incorporate the object. However, paranoia differs from depression in that hostility in the former condition is directed against a part of the object (breasts, penis, buttocks, hair, feces) rather than the whole, and also in the prominence in paranoia of fantasies that this incorporated part object can be symbolically destroyed and eliminated by defecation.

The depressive phase subsides and gives way to temporary elation, i.e., mania, (1) when the narcis-

sistically important goals and objects appear to be within reach once again; (2) when they have become sufficiently modified or reduced to be realistically attainable; (3) when they are renounced completely; or (4) when the ego recovers from its narcissistic shock and regains its self-esteem with the help of various recuperative agencies, with or without a change in object and goal.

The manic phase. Theoretical efforts to grapple with the problem of mania in psychoanalysis have passed through various stages. Initially, mania was approached from the libidinal standpoint; however, more recent studies have stressed the role of the structural components of the psychic apparatus and the importance of object relationships and their inner representations. Since the very purpose of manic flight is to avoid introspection, mania does not lend itself to fruitful psychoanalytic study. It is generally agreed, however, that mania represents a way of avoiding awareness of inner depression and includes denial of painful, inner reality, and flight into external reality; in other words, it is a denial of the sensations of depression by proclaiming specific opposites. Since the manic person does not want to become aware of his own feelings, he cannot permit himself to empathize with others; thus, he is emotionally isolated.

Lewin's work on elation focuses on the oral-libidinal and oral-aggressive elements in mania, which he expands into an oral triad of wishes to eat, to be eaten, and to sleep, all of which are linked up with the infant's experience at the breast. He describes, in structural terms, the fusion of ego and superego (ego-ideal) in elation, and the prominent use of projection, denial, and identification as major defenses. Lewin has also emphasized ego regression as a concomitant of elation, insofar as there is a return to the pleasure principle. Finally, he compares mania to a waking dream; in terms of the economics of elation, the abundance of energy characteristic of this phenomenon represents a concomitant depletion in the energy available for reality testing or coping with superego demands.

The schizophrenias. Psychoanalytic concepts regarding the schizophrenias continue to undergo modification and revision. Originally, Freud postulated that the onset of schizophrenia signified a withdrawal of libido from the outside world; this libido was subsequently absorbed into the ego (megalomania) or returned to the outside world in the form of delusions.

Recent clinical interest in schizophrenia has centered on the intense ambivalence which is characteristic of these patients, their retaliation anxiety, and the infantile ego mechanisms which they typically employ in their relationships with objects and the ultimate failure of which has resulted in the patient's decompensated or regressed state. Two stages are particularly conspicuous in the clinical picture of schizophrenic regression, as emphasized by Freud and

Fenichel: first, the break with reality; second, the attempts to reestablish contact with reality.

Clinical concepts. Object relationships in schizophrenia are based on the wish to possess the parental objects or their substitutes through fusion. Primitive introjective mechanisms, fixation at the early oral stage of libidinal development, and multiple impairment of ego functions have been demonstrated repeatedly. Frustration of basic libidinal needs or factors which weaken ego resiliency, such as physical illness, or increased demands on the patient's love or work capacity may precipitate the acute psychosis.

Poorly warded off homosexual and other pregenital impulses, particularly those of a sadistic and destructive nature, play an important role in schizophrenic regression. With the onset of the psychosis these early sources of libidinal excitation cannot be mastered and flood the ego apparatus. If the libido returns to the ego, a megalomaniac picture will result. If, on the other hand, the sadistic impulses are projected onto the external world, as is the case in paranoid schizophrenic states, the once ambivalently loved person or his representative will be perceived as the persecutor.

Psychophysiological concepts. Several workers have approached severe regressive states from the standpoint of a unified concept of psychophysiological functioning. Such an attempt to conceptualize schizophrenia as a psychophysiological entity has been made by Mann and Semrad. These authors, extending the work of Felix Deutsch, conceive of the conversion process as the pathway which may illuminate the dynamic interrelationship between mind and body. Concomitantly, they attribute schizophrenia to a defect in ego development which, in turn, is the consequence of the early failure of the conversion process to bind excessive instinctual excitation. Individuals vary in the face of severe psychophysiological distress in their capacity to manage or absorb affect through somatic conversion processes. If the capacity of an individual in this regard is exceeded, the need for further defenses arises, and these are then regressively invoked. Thus, the more immature or narcissistic ego defenses that are employed in schizophrenic psychoses are much more "body-oriented" than the more mature defenses. In the narcissistic defenses affect is concentrated upon the self to the marked exclusion of external objects. It is reasonable to assume, then, that the need for these defenses arises in inverse proportion to the success with which the conversion process can absorb affect.

Pathogenesis. Identifications, following the mechanism of "identification with the aggressor," are prominent in schizophrenic psychoses, and such identifications result in character traits which are related to the unconscious perception of the aggressor. In schizophrenia, the aggressor may well be experienced primarily as a foreign body in the patient's ego. The defenses available to the ego at this point in its develop-

ment, i.e., the narcissistic defenses, may also be affected in that they become intensified and specialized so that they emerge as a prominent executant series of patterns, in the form of denial, projection, and distortion. Such prominence seriously compromises the functioning ego in its interpersonal negotiations and eventually assures the frustration of its object needs.

Although the object with which the ego identifies is experienced as an aggressor and perceived as a foreign body, there is some ambivalence in this relationship. In this intense, symbiotic relationship, the object becomes a positive, pleasure-giving source as well. Indeed, these positive pleasurable aspects become the source of narcissistic supply and the major factor in balancing aggression, making it possible for the ego to remain intact. However, this stability is extremely vulnerable; it can be maintained only until such time as the individual loses, realistically or in fantasy, primary satisfying objects and/or, to a lesser extent, secondary substitutes for these objects.

Once this kind of loss has occurred, the previously balanced "poison" of the aggressor is liberated; now the ego is confronted anew with the problem of containing and controlling aggression, while libidinal problems assume a secondary position. We might say that at this point the conversion process has failed; the individual is thrown once more into a disorganizing and exhausting state of exquisite psychophysiological pain and must soon reach toward another solution. The total process may be acute and overwhelming, or it may be slowly regressive. In any event, this explains the fact that, invariably, schizophrenic reactions include distortions of the external world, in the form of a series of frightening, confusing, and distorted body perceptions.

Thus, one may describe the predisposition to psychosis as due to the tenuous and delicate balance between identification with the ego-ideal and identification with the aggressor. This balance is maintained by special ego defenses, by character disorder, or by disorders in psychophysiological functioning which enable symbolic expression of conflict, although the psychophysiological relationships are poorly understood. The special narcissistic defenses used by schizophrenic patients are molded into organized patterns of denial, projection, and distortion. The ego is altered so that it operates in a self-consoling manner; to do so, it must either deny the presence of sensation, deny responsibility for sensation, or lose the ability to distinguish between sensations which emanate from internal or external stimuli. Denial, projection, and distortion are themselves methods for altering sensory perceptions so that they may become ego-syntonic. Specialization of the narcissistic defenses becomes necessary because of the inadequacy of ego-ideal identification, which impairs the ego's capacity for repression and other, more mature defenses to varying degrees.

In summary, most frequently schizophrenic regres-

sion is precipitated by loss and frustration of object needs. Dynamically, the effect of loss results too readily in the supremacy of negative affect, thus dislocating the delicate balance between ego-ideal identification and identification with the aggressor. This inundation with negative feeling necessitates regression to the point of deepest fixation, the narcissistic position, where the patient not only is a potential victim, but also operates for self-consolidation. For only in this position can he achieve tension relief. The path of regression will vary according to whether the losses are acute and overwhelming, or slow and cumulative. It will depend, too, on the individual's structural organization. When the illness is correctly diagnosed, its course can be plotted accurately, and it is possible to demonstrate conclusively, especially in situations of chronic loss, an orderly progression or relinquishing of the more mature defense mechanisms.

Admittedly, the preschizophrenic ego is weak in terms of the development of more mature defense mechanisms. However, with the onset of psychosis, elements of more mature mechanisms which have become established become admixed with infantile patterns. This may account for the clinical confusion surrounding schizophrenias, which demonstrate not only many different kinds of mechanisms, but also various shadings of these mechanisms, giving rise to a confusion of terms, such as schizoaffective component, hysterical component, hypochondriacal component, neurasthenic component, etc.

In general, clinical evidence has shown that the acute onset of schizophrenia is related to increased intensity of the paranoid anxiety, the patient's feelings of omnipotence, and intolerable depressive anxieties, all of which had been previously warded off by narcissistic ego patterns of behavior. In addition, the patient typically demonstrates perceptual distortion, self-hatred, and reliance upon infantile and highly dependent patterns of object relationships.

Classical Psychoanalytic Treatment

The classical psychoanalytic treatment method is described in detail elsewhere in this volume. However, the therapeutic technique which Freud elaborated and which was later expanded by his followers is summarized briefly herein because of its crucial relationship to the evolution of psychoanalytic theory.

Evolution. In essence, modern psychoanalytic treatment procedures differ from those which Freud developed originally in just one fundamental respect. At first, Freud anticipated that recognition by the physician of the patient's unconscious motivations, his communication of this knowledge to the patient, and its comprehension by the patient would, in itself, effect a cure. But further clinical experience demonstrated the fallacy of these expectations. Specifically, he found that his discovery of the patient's unconscious wishes, and his ability to impart his findings to the patient, so that they were accepted and under-

stood, was not sufficient. For while this might permit clarification of the patient's intellectual appraisal of his problems, the emotional tensions for which he sought treatment were not alleviated. This led to a significant breakthrough: Freud now realized that the success of treatment depended on the patient's ability to understand the emotional significance of an experience on an emotional level, and retain that insight. In that event, if the experience recurred, it would elicit another reaction; it would no longer be repressed. And the patient would have undergone a change in his psychic economy.

Freud continually refined his technique, on the basis of his theoretical advances, so that psychoanalysis is now recognized as a specific method for reaching and modifying unconscious phenomena which give rise to conflict. More specifically, in order for a conflict to be considered a neurotic conflict, at least one aspect must be repressed. Psychoanalysis attacks repression and tries to bring repressed material back to consciousness, so that the patient, on the basis of his greater understanding of his needs, motives, etc., may find a realistic solution to his conflict. Freud elaborated a treatment method which attaches minimum importance to the immediate relief of symptoms, moral support from the therapist, or "guidance counseling." The goal of psychoanalysis is to pull the neurosis up by its roots, rather than prune off the top. In order to accomplish this, it is necessary to break down the deep pregenital crystallization of id, ego, and superego and bring the material of conflict near enough to the surface of consciousness so that it can be modified and reevaluated in terms of adult reality. This, above all, distinguishes the classical psychoanalytic treatment from psychotherapy.

The repression of the forces of conflict is accomplished by design, and the patient is unaware of the psychic mechanisms he has employed. By means of this isolation of his "basic" problem, the patient has protected himself from what seems to him to be unbearable suffering. No matter how it may impair his functioning, the neurosis is preferable to the emergence of unacceptable wishes and ideas. All the forces which permitted the original repression are mobilized once again in the analysis as a resistance to this threatened encroachment on dangerous territory. No matter how much the patient may cooperate consciously, and no matter how painful his neurosis may be, he automatically defends himself against the reopening of old wounds with every subtle resource available to him.

Treatment techniques

Free association. The cornerstone of psychoanalytic technique is free association. The patient is taught this method and instructed to use it to the best of his ability throughout the treatment. Occasionally, it is suspended for a rational review of the material elicited, and, indeed, these "intellectual" discussions

are indispensable interruptions. However, by psychoanalytic standards, their function in effecting therapeutic change is quite secondary.

Resistance. The most conscientious efforts on the part of the patient to say everything that comes to mind are never completely successful. Signs of resistance are apparent throughout the course of every analysis. The patient pauses abruptly, corrects himself, makes a slip of the tongue, stammers, remains silent, fidgets with some part of his clothing, asks irrelevant questions, intellectualizes, arrives late for appointments (or finds excuses for not keeping them), offers critical evaluations of the rationale underlying the treatment method, cannot think of anything to say, or censors the thoughts that do occur to him and decides they are banal or irrelevant and not worth mentioning.

The development of resistance in analysis is quite as automatic and independent of the patient's "will" as the development of the transference, and the sources are equally unconscious. However, the emotional forces which give rise to resistance are opposed to those which produce the transference. And, as a result, the analysis becomes a recurring conflict between transference and resistance, manifested by involuntary inhibition of the patient's efforts to freely associate which may last for moments or days. The significance of this conflict for analytic therapy is obvious. It is a repetition of the very same sexuality-guilt conflict which originally produced the neurosis itself. The transference may itself serve as a form of resistance, in that the wish for immediate pleasure in the analysis can circumvent the essential goals of treatment. Thus, the analysis of resistance constitutes the prime function of the analyst; it also accounts for the extended period of time required for psychoanalytic treatment. For, in fact, no matter how skillful the analyst, resistance is never absent (except perhaps in those patients who are seriously ill and would not be "eligible" for classical psychoanalytic treatment in any event).

The role of the analyst. Interpretation is the chief "tool" available to the analyst in his efforts to reduce unconscious resistance. As mentioned earlier, in the early stages in the development of psychoanalytic therapeutic techniques, the sole purpose of interpretation was to inform the patient of his unconscious wishes. Later, it was designed to help the patient understand his resistance to spontaneous and helpful self-awareness. In other words, in current psychoanalytic practice, the analyst's function as interpreter is not limited to "paraphrasing" the patient's verbal reports, but to indicating, at appropriate moments, what he is *not* reporting. Consequently, as a general rule, analytic interpretation does not produce immediate symptomatic relief (beyond the usual "honeymoon period"). On the contrary, there may be a heightening of anxiety and the emergence of further resistance.

In summary, the procedures unique to psychoanalysis help to circumvent resistance. The first of these is the patient's use of free association. The second is the passive role assigned to the analyst in the treatment setting. As described above, free association refers to the spontaneous expression of uncensored thoughts which supplement the patient's efforts to fathom his own mind by direct and logical intellectual thought. Free association is the path to the unconscious. As such, it is central to the classical psychoanalytic method, and the patient's eligibility for treatment depends on his willingness (and ability) to comply with this basic "rule" of treatment. The patient is obligated thereby to express verbally everything that comes to his mind, without selection or reservation. Ordinary rules of conversation, such as adherence to the topic under discussion, orderly presentation, or regard to the social conventions and amenities are abrogated.

The passive role of the analyst implies his avoidance of permissive, as well as authoritative expressions, and allows him to limit himself to interpretations offered at the proper time, of the patient's mental dynamics as these emerge in his free associations and to clarification of the way the patient's ego defense mechanisms operate to preclude free association (and thereby to preclude insight into his unconscious wishes and impulses). In this respect, the passive role of the analyst reduces the realistic features of the patient-physician relationship to a minimum.

If a correct interpretation is given at the proper time, the patient may react either immediately or after a period of emotional struggle during which he offers new associations. These new associations often confirm the validity of the previous interpretation and add significant additional data, disclosing motivations and experiences of the patient which the analyst could not previously have been aware of. Generally speaking, however, it is not so much the analyst's insight into the patient's psychodynamics which produces progress in the analysis. Rather, it is his ability to help the patient to gain this insight for himself, by reducing unconscious resistance to such self-awareness through appropriate, carefully timed interpretation. Psychoanalysis has shown that, at best, the therapeutic benefits produced by the pressure of the analyst's exhortations are only very temporary. The only pressure of lasting therapeutic value derives from the patient's awareness of his own instincts.

The dynamics of the therapeutic process. In the course of his analysis, the patient undergoes two processes, remembering and reliving, which constitute the dynamics of the treatment procedure.

Remembering refers to the gradual extension of consciousness back to early childhood, at which time the core of the neurosis was formed, for this stage of development marked the onset of the interference and distortion of the patient's instinctual life. Consequently, making the unconscious conscious is accom-

plished, in part, by the recovery of important childhood experiences through the patient's actual memory of these events, but more often in other ways, such as fantasy, inference, and analogy. In patients who have been analyzed successfully, this means more than a mere verbal autobiographical reconstruction. Inevitably, inner convictions and values, which were formed early in life, will be reevaluated and altered so that they will contribute to, rather than hinder, the patient's optimal functioning.

Reliving refers to the actual reexperiencing of these events in the analysis itself, in the context of the patient's relationship with the analyst.

The transference. Through free association, hidden patterns of the patient's mental organization, fixated at immature levels, are brought to light, comparatively free from disguise. These free associations refer to events or fantasies which are part of the patient's "private face." When they are shared in the analytic setting, the listener (analyst) is gradually invested with some of the emotion which accompanies them. That is, the patient displaces the feelings he originally directed toward the participants in these early events onto the analyst, who becomes, alternately, a friend or an enemy, one who is nice to him or frustrates his needs and punishes him, one who is loved or hated. Moreover, this tendency persists, so that to an increasing extent the patient's feelings toward the analyst replicate his feelings toward the specific people he is talking about or, more accurately, those his unconscious is "talking about." The special type of object displacement which is an inevitable concomitant of psychoanalytic treatment is called "transference."

As unresolved childhood attitudes emerge and function as fantasy projections toward the analyst, he becomes, for the patient, a phantom, composite figure who represents various important persons in the patient's early environment. Those earlier relationships which remained unresolved are reactivated with some of their original vigor. Gradually, the patient sees himself as he really is, with all his unfulfilled and contradictory needs spread before him. The conscious, scientific use of transference as a dynamic therapeutic force through the analysis of its unconscious sources is unique to classical psychoanalysis.

The combination of these two processes—remembering and reliving—enables the patient to gain deeper insight into the defects in his psychological functioning, in spite of himself.

The transference neurosis. Psychoanalytic treatment may be divided into specific phases. During the introductory phase, the patient becomes familiar with the free association method and the routine aspects of treatment; the ideas and feelings which are characteristic of the individual begin to emerge; and there is an increasing mutual understanding of the patient's assets and the life difficulties which have brought him to treatment.

The "transference neurosis" usually develops during the second phase of analysis. A patient who, at first, was eager for better mental health no longer consistently displays such motivation during treatment hours. Rather, he is engaged in a continuing battle with the analyst, and it becomes apparent that his most compelling reason for continuing his analysis is his desire to attain some kind of emotional satisfaction from the analyst. In other words, at this point in treatment, the transference emotions are more important to the patient than the permanent health he was seeking. It is at this point that the major unresolved, unconscious problems of childhood begin to dominate the patient's behavior. They are now reproduced in the transference with all their pent up emotion. The patient is striving unconsciously to recapture what he was actually deprived of in childhood.

The analytic situation is governed by the three outstanding characteristics of the instinctual life of early childhood: the pleasure principle (prior to effective reality testing), ambivalence, and repetition compulsion. The full comprehension and management of the transference neurosis is a test of skill which sharply differentiates those analysts who have received adequate training in classical psychoanalytic theory and technique from those who have not. One situation after another in the life of the patient is analyzed until the original infantile conflict is revealed. Only then does the transference neurosis begin to subside. Termination of the analysis dates from this time; but, again, it is a gradual process and is never complete with the last visit to the analyst. However, if exposure of the unconscious source of the patient's major problems was fairly thorough, thereafter, at times of emotional crisis, the patient can resolve, through association and without assistance, those areas of conflict which were not entirely worked through with the analyst. After a variable period, the temporarily accentuated awareness of the unconscious diminishes; useful repressions are partially reestablished; the former patient has less need of introspection; and he is able to deal with life on a more mature and satisfactory basis than was possible previously.

Modification in technique. There is no short cut; psychoanalytic treatment typically extends over a period of years and requires interminable patience on the part of both the physician and the patient. The classical analytic method, which, on the one hand, best serves the aims of therapy, also constitutes the best experimental situation yet devised for studying the more complex features of human nature. However, rigid adherence at all times to the fundamental mechanistic principles of psychoanalytic technique is impossible. For example, the immediate environmental situation may be so serious that the analyst must pay common sense attention to its practical implications. Those patients whose early childhood was extraordinarily deficient in love and affection must be given more praise and encouragement than is advo-

cated by strict analytic technique. Very narcissistic patients and borderline psychotics must establish strong personal feeling for the analyst before they can develop sufficient interest and motivation for treatment. At the same time, however, clinical evidence has demonstrated conclusively that every deviation from strict technique which such special conditions compel prolongs the length of treatment and increases its difficulties considerably.

The results of treatment. The therapeutic effectiveness of psychoanalysis presents problems of demonstration. Impartial and objective critics are handicapped in their appraisals by the fact that so many patients state that they have been "analyzed" when no such procedure was undertaken, or when it was undertaken by someone who exploited the use of the title "analyst," and who, in fact, had no understanding of the science and technique of analysis. Other patients remained in analysis only a very short time and then discontinued treatment themselves or were advised that they were not suitable candidates for such treatment. In any event, except for psychoanalysts themselves, professionals, as well as laymen, demonstrate varying degrees of confusion as to what psychoanalysis is and what it is not.

To begin with, no analyst can ever eliminate all the personality defects and neurotic factors in a single patient, no matter how thorough the treatment. On the other hand, mitigation of the rigors of a punitive superego is an essential criterion of the effectiveness of treatment. Psychoanalysts do not usually regard alleviation of symptoms as the most significant datum in evaluating therapeutic change. The absence of recurrence of the illness or of further need for psychotherapy is a more important index of the value of analysis. However, the chief basis of evaluation remains the patient's general adjustment to life—his capacity for attaining reasonable happiness, for contributing to the happiness of others, and his ability to deal adequately with the normal vicissitudes of life. More specific criteria of the effectiveness of treatment include reduction of the patient's unconscious, neurotic need for suffering; of neurotic inhibition; and of infantile dependency needs; and, on the other hand, an increased capacity for responsibility; for success in marriage, social friendships, and work; and for pleasurable sublimation and recreation relative to his potentialities. The most important criterion of the success of treatment is the release of the patient's normal potentiality which had been blocked by the basic neurosis for further development and maturation.

Indications and contraindications. Psychoanalysis is not the treatment of choice for all forms of mental disorder. It has proven most effective in the "common" psychoneuroses, in which definite symptoms predominate and motivate the patient to seek medical or psychiatric help. These include cases of conversion hysteria (including "classic hysteria"),

phobias without psychosis ("anxiety hysteria"), obsessive and compulsive neuroses, and neurotic depression.

Conversion hysteria. Conversion hysteria, which usually occurs in women, is characterized by bodily symptoms which resemble those of physical disease (e.g., paralysis, anesthesia, blindness, convulsions, pathological blushing, fainting, headaches and other types of pain), but which have no somatic basis. Unless these symptoms occur in very mild form, in an otherwise well adjusted personality, they are positive indications for analysis. The typical course of treatment in such cases is the early alleviation of symptoms and the recognition of basic conflicts produced by genital wishes. Analysis of these conflicts usually leads to fundamental changes in personality, in addition to permanent symptomatic relief. But a minority of cases of hysteria are very difficult to analyze or may even be unanalyzable. This applies particularly to cases of hysteria in women whose personalities are exceptionally infantile, and some chronic cases in which the pleasure derived over a period of years from "secondary gains" is too great to be renounced.

Phobias. Phobias (anxiety hysteria) produce a variety of symptoms in people whose personalities and conflicts are very like those of patients with conversion hysterias. Indications for the treatment of both these clinical entities are similar.

Obsessive-compulsive neuroses. This form of neurosis is more common in men. Treatment is usually much more difficult and protracted than treatment of other neuroses, and, not infrequently, such patients do not derive full benefits from analysis. On the other hand, however, these patients present serious disturbances in total adjustment, so that extended treatment is usually justified, even though the "cure" would not be considered complete by psychoanalytic standards.

Neurotic depression. This syndrome is well understood and often much helped by analytic treatment.

Other symptomatic neuroses. Overt sexual symptoms, such as impotence based on psychic factors, or impaired capacity for mature sexual love, usually represent the repression of fundamental conflicts in early object relationships and are usually permanently relieved through analysis. However, other symptomatic psychoneuroses, such as adult enuresis, tics, and stammering, may be much more resistant to modification. Yet, such symptoms are usually definite indications for psychoanalytic treatment; and treatment generally produces important alterations in basic personality problems, even though the chronically established abnormal muscle habits are not entirely cured.

Homosexuality. Sexual perversions often tend to be quite intractable, and the results achieved in the psychoanalytic treatment of overt homosexuality have been equally disappointing, on the whole. Thus, the indications for psychoanalytic treatment of pa-

tients whose homosexuality is accompanied by psychoneurotic difficulties are much the same as they would be for neurotics who are heterosexual, and the results of treatment, with respect to the neurotic symptoms of the homosexual patient, are quite similar. Alteration of an erotic preference for one's own sex is by no means assured. The more indications there are, either conscious or repressed, of some heterosexual interest in the past history of the individual, and the less completely he has adopted the psychological traits and habits of the other sex, the better is the patient's prognosis.

Psychoneurotic character problems. These clinical phenomena are closely allied to hysteria and the obsessive-compulsive neurosis in etiology and prognosis. Both hysterical and obsessive-compulsive characters display a variety of traits of definitely neurotic origin. When these are a conspicuous and persistent source of tribulation for the patient and the people in his environment, they constitute positive indications for psychoanalysis. A few of the more common of these traits are uncontrollable temper; chronic nagging and constant complaints about others or oneself; excessive diffidence or feelings of inferiority, an inclination to change one's occupation constantly, and repeated unsolved work problems; a succession of unhappy love affairs; an inability to concentrate at work or to finish a job; an inability to derive pleasure from recreation or avocation; and an inability to form friendships. Particularly common in such cases are complaints of marital discord, which is either the result of a neurotic choice of partner, or a neurotic reaction to a maturely selected spouse.

Today, neurotic character disorders are far more common than clear cut symptomatic neuroses, and these patients comprise a large portion of the population for whom analysis is recommended. Narcissistic characters are helped greatly, and even "transformed" by analysis, but the therapeutic prognosis is extremely variable. The more evidence there is of the presence of problems which are definitely psychoneurotic, in combination with narcissistic traits, the more favorable the prognosis for such patients. On the other hand, the prognosis is especially poor for analitic personalities who are very unassertive and readily accept entirely dependent and passive relationships. Mild schizoid characters may be helped by analysis, but they should never be treated by analysts who lack general psychiatric experience; this applies to paranoid characters as well. More serious psychological disturbances, such as alcoholism, drug addiction, psychopathic personality, and criminality, have been helped occasionally by analysis. But, too often, the benefits from therapy are limited because the infantile demands of these patients are almost unbelievably excessive. In fact, their ego functions are seriously impaired in that their sense of reality is defective; they lack the capacity to tolerate frustration and other tensions.

Classical psychoanalysis is a completely appropriate treatment method for the neuroses. Moreover, it can produce a far more complete and fundamental reorganization of the neurotic personality than any other psychotherapeutic technique currently in existence. On the other hand, this unqualified endorsement pertains only to the neuroses. In other forms of psychopathology, the usefulness of psychoanalysis as a treatment method is limited, depending on the extent and strategic location of neurotic elements in these conditions.

Psychosomatic illness. Certain organic illnesses ("reversible" somatic symptoms) are so common an accompaniment of psychoneurosis that cures incidental to the major problems of a neurosis are a common experience of practicing analysts. Chronic and intermittent constipation, anorexia, and other minor ailments of the digestive tract are regularly relieved as a secondary consequence of the analysis of personality problems. The alleviation of a variety of menstrual disorders, and sometimes of sterility of long duration, as a concomitant of the resolution of emotional conflicts surrounding female sexuality is common. Analysis frequently has a therapeutic effect on a variety of other common complaints as well, such as constant colds, headaches, insomnia, pseudo pregnancy, frequency of urination, and skin eruptions. The effect of psychoanalysis on asthma, thyroid disease, disturbances of stomach and intestine, and some skin diseases varies considerably from case to case. Possible reversibility of psychosomatic disease is a major consideration. If the disease process is irreversible, psychoanalysis may still be recommended with the aim of trying to slow the destructive process. However, the somatic process may be not only irreversible, but also impossible to halt. In such cases the misery produced by the somatic disease and the social incapacitation have become the major problems, and the original neurosis is of secondary significance.

Psychoanalytic treatment of psychosis. The effectiveness of analytic treatment of psychosis must be discussed with still less certainty. Classical psychoanalysis is clearly contraindicated. However, there is no question that skillful and prolonged psychotherapy can ameliorate or even permanently remove the more morbid features in some cases. But the question is still open as to whether psychoanalytic technique is as specifically indicated for the treatment of schizophrenia as it is for the psychoneuroses. Moreover, in general, paranoid psychosis is even less amenable to analytic therapy than many cases of schizophrenia (although in those cases where the paranoid process absorbs only a limited portion of the patient's intellectual and emotional life, the prognosis is considerably better).

Eligibility for treatment. The capacity for mature adjustment may be very limited in some individuals, even though they may not have a particularly severe

neurosis. Nevertheless, evaluation of their personalities indicates that no aspect of their functioning is really adult. Nor is there evidence of a strong drive to combat these infantile aspects.

Analysis is contraindicated in extreme cases of this kind, for no element of the personality will strive to utilize the treatment for eventual maturity; the patient will continue to regard the analytic session as an enjoyable hour during which he has someone's exclusive attention just as long as the analyst will put up with it. The psychoanalyst does not regard the secondary gain as the primary rationale for classical psychoanalytic treatment, but as an important obstacle to be circumvented in his work. Not infrequently, however, the secondary gain is so great as to seriously impede or entirely preclude successful analysis; in such instances, the patient has learned to derive so much satisfaction from these secondary gains that the advantages of illness outweigh his suffering.

During treatment, the patient must continue to derive some gratification from life, even though these gratifications may perpetuate his neurotic patterns. Sometimes, relationships which were conspicuous consequences of the neurosis cannot be renounced, even after the patient no longer requires the infantile gratification (and the suffering) they afford. No individual is a self-sufficient unit; his repressed impulses, as well as his mature emotions, constantly mingle with, stimulate, and respond to those of others. The infantile sadism of one partner responds to the infantile masochism of the other and demands it of him, despite the fact that after analysis, the masochist desires a more mature relationship, unconsciously as well as consciously. In other instances, however, analytic results have a favorable effect on the neurotic problems of the patient's spouse as well as on those of the patient, and there is a mutual improvement in marital adjustment.

Specific criteria. Several factors must be kept in mind in judging an individual's eligibility for psychoanalysis. Apart from the capacity for logical thought and a certain degree of ego strength, fundamental vigor of personality is a prerequisite. The analytic patient undergoes a difficult experience. From time to time, he must be able to accept a temporary increase in unhappiness, in the expectation of eventual benefits. The capacity to undergo such stress is an excellent indication of a person's capacity to face the real vicissitudes of life after analysis. When there is some question as to the patient's "qualification" in this regard, a short period of "trial analysis" in order to appraise the problems and potentialities of the patient more completely may be recommended. A youthful mind (either in terms of actual years, or a certain elasticity of functioning) is essential. Chronologic age is a rough measure of total life experience; the more mature a person's experience is, the more apt he will be to utilize the analysis. In general, however, treat-

ment will proceed more quickly to an effective result when patients are in their twenties and thirties. But it is also recommended in adolescence and middle age. The capacity to fight the neurosis is as great an asset in psychoanalysis as it is in life crises, and it varies as greatly among individuals, as does the degree of neurosis itself.

Finally, honest skepticism concerning analysis is usually a good prognostic sign, if it is not so extreme as to prevent the patient from making a determined effort to utilize the unique advantages this method offers. On the other hand, a naive, exuberant conviction at the beginning of treatment that the omnipotent analyst will point the way to an existence which will remain untroubled forever after, that analysis offers a magic formula which will automatically (and painlessly) "make everything right," forebodes very special difficulties after treatment is underway.

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Chapter 7

Cultural and Interpersonal Psychoanalytic Theories

7.1 ALFRED ADLER

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Introduction

(In Alfred Adler's first publication,) a pamphlet issued when he was 28, on the health hazards of tailors, he described two concepts which remained basic to all his later teachings. The first of these concerned the relationship of the individual to his social environment. The second focused on the interrelatedness of body and mind, i.e., the holistic approach. The expression of these two key ideas indicated Adler's awareness of the existence—and importance—of psychological components in all physical disease.

Relationship with Freud

Areas of agreement. Adler read Freud's *Interpretation of Dreams* with great interest and was invited to join Freud's weekly discussion circle in 1902. For a period of 9 years thereafter, Adler was Freud's co-worker, but his role was that of critic, rather than disciple. In 1907, he published his *Study of Organ Inferiority*, which received Freud's enthusiastic endorsement, and in 1910, Adler became president of the Vienna Psychoanalytic Society and co-editor of the *Zentralblatt für Psychoanalyse*. It is quite fascinating to observe how the thinking of Freud and Adler developed, based on their common interest in neurosis and psychosis. They were in agreement that the meaning of neurotic and psychotic symptoms must be understood by the physician; that the physician's knowledge of the patient's experiences in early childhood and his dreams might help to clarify the hidden meaning of these symptoms; and, finally, that the patient's understanding of the connection between these early experiences, on the one hand, and current dream content and symptomatology, on the other, could result in significant improvement, or cure, of his mental illness.

Dissension. Fundamental differences in the thinking of Adler and Freud began to emerge in 1908. Initially, these differences stemmed from Freud's focus on the pathogenesis of neurotic symptoms, as opposed to Adler's interest in their final goal, their purpose. In other words, in contrast to Freud's emphasis on causal explanation, Adler's basic orientation was finalistic and teleological. In a series of heated debates, each man tried to win the other over to his point of view, but the breach grew wider. The final break occurred in 1911 when Adler developed his own theory of personality, in which he redefined the unconscious and challenged the validity of Freud's concepts of basic drives and the phenomenon of repression as an essential prerequisite for the development of neurotic symptoms. Shortly thereafter, he left Freud's circle, together with eight colleagues, to establish the Society for Free Psychoanalytic Research. In 1912, Adler coined the term "individual psychology" to describe his school of thought, and in the same year he published *The Nervous Character*, which summarized his main concepts.

Basic orientation. The Ansbachers have organized and presented Adler's main contributions and theoretical hypotheses in several books and articles. Heinz Ansbacher, in his introduction to the recent edition of Adler's *Problems of Neurosis*, has evaluated the significance of Adler's work as follows:

Freud was revolutionary for his day in that he listened to every word of his patients, knowing that this would be valuable basic information for solving the puzzle of mental disorder. But he was scientifically conservative in that he firmly believed that the patient's inner psychological world was ultimately determined by objective causes that rested in his past. It was scientifically more revolutionary to proclaim, as did Adler, that the inner psychological world of the individual, which had such far-reaching consequences, was not objectively caused, but was ultimately the individual's own creation, and that the individual's course of life received its direction not from relatively objective drives, but from his highly subjective goals and values. And it was more difficult to accept [the fact] that the individual could be quite unaware of the goals and values which he himself had created or accepted than that he was the pawn of an unconscious which supposedly controlled his conscious self.

Theory of Personality

Adler's basic concepts concerning personality development may be summarized as follows.

Unity of the individual. Adler was the first theoretician to describe man as an organic purposeful system with the goal of self-realization and social survival. Thus, the unity of personality is emphasized from both an objective and a subjective viewpoint.) Theories which try to explain psychological processes objectively, as independent entities, or in the form of dichotomized categories, may be satisfying in their orderliness. In fact, however, they are limiting and artificial and do an injustice to the complexities and interrelatedness of life. (The individual (*in-dividuum* = indivisible) and his behavior must be understood as the result of interwoven, dynamic, somatic, psychological, and social processes. We have a need to perceive ourselves as a unit subjectively as well. This sense of unity and continuity is the basis for our sense of identity, for self-esteem and self-acceptance. This theory of the unity of self was developed further in Adler's concepts of life style and life goal,) described below.

Adler's concepts in relation to compensation are part and parcel of this holistic approach, which stresses the unity of mind and body, and their mutual influence on each other.) Useful illustrations of these formulations can be found in Kurt Goldstein's descriptions of the compensatory devices employed by brain-injured patients. For example, Goldstein observed that certain patients, after they have sustained an injury to the brain, never regain adequate functions, to any appreciable degree. Yet other patients with brain lesions which are similar, or even more extensive, are able to achieve an amazingly good adjustment to society. In brief, the patient's progress will depend on his premorbid personality and on his desire to recover.

Unified concept of motivation. The helplessness of the infant gives rise to universal feelings of inferiority which supply the motivation for a compensatory striving for superiority. The term "inferiority complex" describing real or imagined social, physical, or psychological inadequacies stems from this concept. Consequently, the dynamic force behind all human activity is the striving toward superiority, perfection, and totality.) The child wants to overcome his smallness and dependency in his desire for security, mastery, and self-esteem. This striving for self-realization is an integral aspect of life, just as is physical maturation.

Self-determination and life goal. The striving for superiority and success is subjective, in that it is based on man's awareness of himself, on his ability to remember past experiences and to project himself into the future. The individual's life goal is determined by his inventive and creative power; it is an expression of his uniqueness. Each individual develops his concept of self, and of the people and things

which surround him in his own unique, personal way. And his perception of objective realities will influence the formation of his future subjective goals.)

The specific kind of superiority the individual wants to attain and the methods he adopts toward its achievement derive from the particular circumstances of his own life, particularly his biological endowment and his early environment. Out of these biological and environmental factors, the adult has created the "fiction" of a self-ideal. He is only dimly aware of what he is striving for, in an effort to preserve his identity and maintain his self-esteem.

Adler's theory has been criticized for "over-simplification," or "reductionism," on the grounds that he "reduces" all sources of motivation to "feelings of inferiority" and the "striving for superiority." But these terms were used by Adler in a very broad sense. As can be seen from a study of his original writings, the concept of inferiority includes insecurity and anxiety. The striving for superiority implies the adult's search for meaningfulness, for the significance of life; it is the striving for perfection and completion.) Striving for superiority as the goal of life is specific and different for each individual. His subjective interpretation of the past and present will determine his ideas of the future; or, expressed differently, traces of the subjective past, present, and future are present in the individual's phenomenological field.

Life style. Adler's phenomenological explanation of personality development centers on the concept of life style. Life style is defined as the individual's active adaptation to the social milieu, which develops as a unique, personal product of his need for integration into that social milieu and for differentiation from it. The growing child selects from among his experiences, and especially from his own interactions within his family and his observations of their social relations with others, events which can fit into a consistent, coherent pattern. If he is to function effectively in life, order must emerge from confusion. Events which do not fit into a coherent pattern are considered unimportant and are forgotten. Concomitantly, we are unaware of thoughts and feelings which would painfully contradict our self-concept. Thus, Adler was convinced that conscious and unconscious processes are not in conflict but represent dual aspects of a unified relational system.)

Recent research on early infantile development has confirmed Adler's ideas on the earliest phases of development of the self in the infant's social interaction with his first immediate human environment, his mother. Charlotte Bühler has detected the "rudimentary beginnings of self-awareness" in the infant at the age of about 10 months, and she believes that identity as a self-perception occurs simultaneously with the perception of the other person (i.e., the mother) as a person.

(The life style develops in a step-by-step maturation.)

tional process. Children concentrate on and seem singularly preoccupied with the behavior of the adults who surround them. The nonverbal and verbal responses of these significant adults are observed, interpreted, integrated, and remembered—digested and assimilated might be an appropriate analogy. Escalona, in her detailed observations of infantile behavior, has said that a milestone in the course of personality development is the realization by the infant that his behavior, directed toward a person or object in the outer world, has elicited a response. These myriad, repeated, primary experiences constitute the minute pieces of the mosaic created by the child in the first 5 years of his life to form a relatively stable scheme of apperceptions. This individual, creative, goal-directed structuring of memory, perception, and cognition is the basis for the person's life style. The creative interpretation given to our experiences in childhood, the meaning we find in them, makes for mature freedom of choice and self-determination in later life.

A Social context and social feeling. Just as the partial functions of the individual must be understood within the context of the unity of personality, so the total person must be considered within the broader context of society. Adler's distrust of fixed and separate categories, of artificial entities, of dichotomized thinking, is again illustrated by the apparent contradiction between the name he chose for his theory, individual psychology, and his emphasis on the importance of the social milieu in which man functions. Both components, i.e., the individual (a lower system, less open, an indivisible entity) and society (a higher, more open system) are of equal importance in Adler's theory. Adler repeatedly emphasized the fact that individual psychology views and examines the individual within the framework of his social milieu, as a member of society; that the individual cannot be considered in isolation.

In fact, even the child sees himself as dependent on, and embedded in, a social situation or milieu. The infant develops his innate potentiality for social feeling as a by-product of the relationship between mother and child and their need for each other. And the educability of the child derives from growing social interest. Reason and intelligence develop with and through human interaction. If the child grows up under favorable circumstances, his early self-interest will be transformed into the desire for a socially meaningful life, and this goal will be attained in accordance with social reality. Adler conceptualized social feeling as a criterion for mental health: since man's greatest fears concern social isolation and vulnerability of the self through loss of self-esteem, a healthy life style is directed toward achieving competence and social success by working toward the goal of social usefulness. Perhaps Jules Masserman was expressing a similar idea when he spoke of man's ur-defenses against anxiety and dis-

integration; when he described feelings of mastery, of invulnerability of the self, and the conviction of man's kindness to man as "faiths necessary to mankind." Adler also pointed out that increased social feeling enhances man's intelligence, heightens his self-esteem, and enables him to adjust to unexpected misfortunes. When the individual experiences himself not in helpless and frightening isolation but as a useful and contributing member of the community, he shares with others common ethical and esthetic standards and ideals.

Theory of Psychopathology

Whether Adlerian theory is explaining normal or abnormal personality development, its concepts blend to form an integrated whole, and each concept can best be described in terms of its relation to all the others. Accordingly, the following brief account of Adler's theory of the etiology of neurosis and psychosis, their manifestations and dynamics, will be presented within the framework of the basic assumptions of individual psychology concerning normal development. These include the concept of a unique, self-consistent, active, and creative self (style of life); an open, dynamic system of motivation (the striving for a subjectively conceived goal); and an innate potentiality for social living (social interest).

Etiology of neurosis. A neurotic disposition stems from childhood experiences which are characterized either by over-protection or neglect, or by a confusing, alternating mixture of both. Out of these experiences, the growing child creates a negative self-image of helplessness, a conviction of his inability to develop mastery or to cope with the tasks of life. This distorted image of the helpless self is supplemented by his apperception of a social environment which is overtly hostile, punishing, and depriving, or subtly demanding and frustrating.

Thus, these early experiences provide misleading cues, which prevent the child from constructing an apperceptive scheme, a cognitive map, which is adapted to the tasks of social life. Instead of providing encouragement to engage in further efforts toward mastery and achievement, these experiences leave the child fearful and discouraged. Instead of experiencing the pleasures of trusting and loving relationships, the child becomes distrustful or manipulative. He develops a neurotic striving for superiority, to compensate for his exaggerated feelings of insecurity and anxiety. And his vulnerable self-esteem is buttressed by various forms of behavior. In brief, self-protection becomes his primary objective. Moreover, his self-centeredness and his uncooperative struggle for personal superiority to compensate for his exaggerated feelings of insecurity are substituted for the socially directed goal of a meaningful and useful life. Accordingly, problems are solved in a self-centered "private sense," rather than a task-centered "common sense" fashion.

Dynamics of neurosis. The neurotic individual cannot cope with problems or enjoy social life because, as a child, he interpreted and integrated his experiences so that they might serve a protective function, rather than provide adequate building stones for orientation and identity. Once his cognitive organization, his "private map," or inner psychological world has developed, it is difficult for such an individual to give up even the smallest segment of his distorted subjective creation. All the pieces fit together, and any change would disrupt the only adaptive pattern the individual has been able to construct from what appeared to be the crucial cues in his early environment.

In contrast, a life goal which is shaped positively by the child's healthy experience of growing mastery and achievement by the development of his potential capacities for learning, for creativity, and, above all, for the pleasures of social relatedness and love, will result in a flexible life style in which there is no fear of trial and error or of new experiences. Integration of these, correction of previous cognitive errors, and the learning of new patterns continue throughout the individual's lifetime. If, in essence, the life goal is shaped negatively, by fear and anxieties, by the need for protection and safety, then the individual's subjectivity becomes distorted, and his lack of awareness of objective reality serves to maintain a shaky and constantly threatened self-image. Lack of awareness is pathological, if and when the individual develops perceptual and conceptual constancies, or opinions, about himself and the world, based upon previous experiences which he wrongly assumes to have general validity. These faulty assumptions remain uncorrected, first, because he is afraid of facing new, corrective experiences. Second, he lacks "common sense"; that is, he avoids human contact which might clarify these distortions.

In many case histories and clinical examples, Adler elaborated on the "private logic" of such individuals as the neurotic, the psychotic, the criminal, and the addict. Private logic lacks reason or common sense. It is the basis for the formulation of a personal goal, as a product of the individual's misguided conflict with society, "on the useless side of life." "Common sense," on the other hand, is the basis for an essentially cooperative harmony between individual and society, and an innate potentiality for social living.

Diagnostic classification. Adlerian theory has always stressed the idiographic aspects of clinical observation, on the premise that rules and generalizations may become an obstacle to the understanding of the patient's creative potential. (Observation and description of the unique individual are, therefore, considered more important than diagnostic categories and classifications. For teaching purposes, however, Adler described four personality types. The first three—"the ruling," "the getting," and "the avoiding"—all lack social feeling and are unprepared to solve

life's problems. They differ only in the degree to which these characteristics are manifested. In contrast, the fourth type, "the healthy and socially useful person," is actively cooperative with and contributes meaningfully to society. From his cooperation and contribution, he derives feelings of usefulness and fulfillment.

Adler considered compulsion neurosis to be the prototype of all neuroses. In many case histories, he described the indecision and doubt, the striving for "god likeness," the depreciation of others, and the pedantic striving for accuracy as "safeguarding" or protective devices which are used by the neurotic individual in his attempt to attain a goal of personal superiority. While normal psychic life always involves "movement"—from one problem to another, from indecision to choice and decision, from conflict to solution in a variety of significant and useful styles—neurotic conflict is perpetuated by an evasion of these tasks.

Theory of psychosis. From Adler's viewpoint, psychosis, whether schizophrenic or manic-depressive, was due to a combination of somatic and psychological etiological factors. Importance is placed on understanding the psychotic's private logic, recognizing its coherence in either grandiose or depressing fantasies, despite a lack of "reason" or common sense.

Adler also pointed out that, while the neurotic may suffer from a sense of failure, whether real or imagined, the psychotic does not accept the ultimate criterion of social validity, and his fantasies compensate for his sense of utter hopelessness and despair of ever achieving significance in the real world.

Treatment

Child guidance. As mentioned earlier, Adler was convinced that the experiences in early life are the first training and testing ground in social behavior. The mother-child relationship is of crucial importance, and emotional closeness during infancy and early childhood provide the most intensive and immediate experience of love and fellowship that the child will ever have. Ideally, this love and dependency will pave the way for the child's optimistic, trusting, and responsible attitude toward people and society. Nursery school, kindergarten, and elementary school, with their opportunities for companionship and friendship, continue his training in social feeling and provide a testing ground for self-assertion and interaction.

Although he was aware of the multiple factors that contribute to the ultimate personality, Adler also emphasized the influence of the "family constellation," that is, the totality of interactions among all the members of the family, and, in particular, the significance of the child's ordinal position in relation to his siblings. In brief, Adler's theoretical approach permeated every facet of the child's growing

personality and, in addition, included a therapeutic concern for "the problem child," which focused on child guidance and education.)

The ideas outlined by Adler in this connection played a crucial role in the decision to organize child guidance clinics in Vienna at the beginning of this century; in a broader sense, they also influenced the organization of the Austrian school system and its educational "philosophy." More specifically, Adler maintained that close cooperation between family and school was an important principle in the treatment of disturbed youngsters. (Not only the child, but also his family and teachers were interviewed and counseled with various professionals present. These techniques were especially helpful in alleviating the child's feeling of isolation; in clarifying for the patient, for his siblings, and for the adults in his immediate environment, the interaction among all the people involved and the impact each had on the other.) An atmosphere of optimism prevailed, which derived from the knowledge that others had experienced and solved similar problems, and this optimism was reinforced by attitudes of helpfulness and acceptance. All of Adler's methods—diagnostic exploration of the child's familial and educational situation by questionnaires; family interviews and family treatment; the combined efforts of a "therapeutic team," consisting of a counselor, parents, teachers, truant officers (if necessary), and other representatives of society—are still in use in child guidance clinics in both Europe and this country.

Psychotherapy. Adler conceived of psychotherapy as an attempt to mobilize the patient's creative resources and help him to achieve cognitive reorganization. The goal of Adlerian psychotherapy is the reorganization of the patient's life style, which is a concomitant of a diminished sense of insecurity and a strengthened social feeling.) This leads, in turn, to a less rigid and more accurate appraisal of reality, to better relationships with others, and, finally, to the fulfillment of the patient's creative potentialities.

Therapeutic process. Therapeutic change is accomplished in several steps, which partly overlap and always dovetail.

Initial phase of therapy. A relationship is established between therapist and patient which enables the patient to experience "contact with a fellow man." The patient's mother may have failed to fulfill her duty to interpret society to the patient in childhood. In that event, the therapist must assume this responsibility as the first step in the therapeutic process, although he will be heavily handicapped in his attempt to convince the adult patient to correct a scheme of apperceptions which he developed in childhood.

Second phase. The therapist, and then the patient, learn to understand the patient's life style and goal. The therapist's understanding of the patient is, in

fact, essential if a reconstructive relationship is to develop and persist throughout therapy. On the other hand, the patient's increased insight into his motivations, intentions, and goals contributes to, but is not a prerequisite for, therapeutic change; his insight may follow and not necessarily precede changes in behavior.

Third phase. The patient's inferiority feelings and fears diminish; he develops a positive self-image; and, concurrently, his social feeling is strengthened.

Fourth phase. The patient is encouraged to select and try out new ways of relating to people and to enjoy new methods for coping with the tasks of life.

The third and fourth steps in the therapeutic process may occur with or without insight. Adler believed that insight was not a necessary precondition for cure in all cases. He suggested that in some cases the neurotic's self-centeredness might give way to a healthy interest in others, either because of a favorable change in the patient's external situation or as a result of the therapist's encouragement and the diminished anxiety achieved in therapy. Again, inevitably, new social experiences will bring about slow changes in perceptual organization and concept formation even when the patient does not comprehend the dynamics of his behavior. Although this kind of perceptual reorganization is undoubtedly due to the therapeutic experience, it is similar to the noninsightful learning which takes place before the patient enters therapy.

Psychotherapeutic techniques. "Encouragement" was Adler's main weapon in combating the schizophrenic's life style. The patient's exaggerated sensitivity can be overcome by the therapist's kindly and consistent interest in him, despite his bizarre and contradictory behavior. As a result of this experience in human relatedness, the patient becomes more hopeful that he will achieve some of his goals; and he learns to feel less isolated and begins to feel that he is part of society.)

In the one-to-one relationship, or in the therapeutic milieu of a group or an institution, the therapist must combine acceptance of the patient as he is with the therapist's awareness of the kind of person the patient can become once the neurotic pattern and goals have been removed and the patient's potentialities have been freed to develop. The therapist's assumptions of the possible healthy self in the patient's future will, of course, influence his attitudes toward the individual patient. (In a broader sense, however, such an awareness will also influence the establishment of desirable social norms in a given therapeutic group or milieu.) If both therapist and patient understand and accept what Adler termed the "logic of man's communal life," and what Erikson has called the "societal meaning in frustrations," then even a delinquent or psychopath can be reeducated in a proper therapeutic environment. This would imply an en-

environment in which he feels accepted as a full member of society, fully responsible for his actions and able to learn new ways to correct his failures.

In individual psychotherapy, the patient's behavior is interpreted as a unitary field of interweaving psychological forces, all of which are directed toward achievement of his life goal. The therapist must be attentive to details and sensitive to the clues offered by the patient's verbal and nonverbal communications. These must be combined into a meaningful whole, which forms the image of the patient's life style. This combining of parts or fragments to form a whole is, needless to say, a difficult and challenging task for the therapist. It may be helpful, therefore, to delineate four types of observation which are generally regarded as particularly important in the creative reweaving of the fabric which constitutes the patient's life style.

Early recollections. Reports of conscious memories of childhood demonstrate that the child makes active choices from the multitude of experiences to which he is exposed daily and that some incidents are regarded as particularly important and memorable. The nature of these memories—whether pleasant or unpleasant, whether the child's participation in the experience was active or passive, the role played by each person in his environment—will determine the child's (and subsequently the adult's) apperceptions and expectations. In other words, these early recollections can be used as a projective test, in order to infer a great deal about the patient.

Family constellation. An understanding of the patterns of interaction and dynamic group forces and the structure of the patient's original family enables reconstruction of the matrix from which the adult has formed his picture of "reality." Thus, his impressions of his environment will depend, in part, on whether he is an only child, or the first, middle, or youngest child, an only boy among girl siblings, or vice versa. The term "masculine protest" refers to the attitude of a boy or girl who is raised in a patriarchal culture, in which the "real man" is respected and admired and the feminine role connotes submissiveness and immaturity. In contrasting the biological concept of "penis envy" with the social construct of "masculine protest," Adler again anticipated some of Erikson's work on this topic.

Dreams. In wakefulness and in sleep, all psychic activities serve to strengthen the individual's sense of self-worth and protect against damage to his self-esteem. Thus, "conscious," "semiconscious," and "unconscious" processes contribute to the unity of life style and serve a single life goal. The understanding (and interpretation) of dreams is meaningful only in this context. Sexuality and sexual strivings are part and parcel of the individual's life style. To reduce all dream content to its sexual implications precludes an understanding of the dream-

er's orientation to his own future. In his dreams, the patient reveals his imagined or fantasied solutions to his pressing problems and his expectations for the immediate future. His dreams also reflect the patient's self-concept and his concepts of the nature and meaning of life.)

Behavior in the therapeutic situation. The patient frequently misunderstands and makes an unconscious effort to restructure the therapeutic relationship. This may be attributed to the fact that the patient experiences the therapist's attitude and personality in accordance with his (the patient's) life style, and his response to the cues from the therapist will be determined by his life goal. To illustrate, a dependent patient may try to "prove" his helplessness in order to manipulate or exploit the therapist. The distrusting, guarded patient continues to protect himself against the humiliation and hostility he encountered as a child. The patient who needs to feel superior to compensate for real or imagined handicaps continues to compete with and test the therapist.

Adler considered the Freudian concept of transference as misleading. He maintained that the patient's sexual involvement with the therapist was an unnecessary obstacle to therapeutic progress. On the other hand, despite his safeguarding operations, the patient expects his therapist to be trustworthy, reliable, warm, able, and interested in his welfare in the here-and-now situation. Adler was convinced that every human being, with his aptitude for social interest, needs and wants this kind of relationship.

The therapist understands the patient's resistance to change as a fear of giving up the attitudes he developed in childhood as part and parcel of his life style. An active approach, based on the therapist's empathy and expressed awareness of how much courage the neurotic patient requires to seek creatively an alternate choice for his life goal, will restore the patient's faith in himself, help him to realize his strength and ability, and foster his belief in his own dignity and worth. Without encouragement, neither insight nor change is possible.

During this process of reeducation, therapeutic neutrality should be replaced by the therapist's firm insistence on his right to his own values and his respect for the patient's right to be different. The therapist may have religious values or ethical subgroup values which differ from those of the patient. His frame of reference concerning sexual morality and the structure of roles within the family setting may differ from that of the patient. He must be able, nonetheless, by thinking about these issues objectively and rationally, to recognize the patient's integrity and accept his values, if these are genuinely held and are directed toward social feeling.

If the patient's uncertainty regarding ethical values arouses guilt feelings, it is particularly important for the therapist to discuss the question of right and

wrong from his own viewpoint, as well as from that of the patient. Once the problem of values has been resolved through such therapeutic cooperation, the next step in the progression is to encourage the patient to use his guilt feelings as a motivation for change. Neurotic guilt is destructive; active remorse is purposeful and constructive.

The therapist's rapport and empathy with the patient, his optimistic attitude with regard to the possibility of change, and his responsive and responsible actions increase the patient's belief in his own worth. Emphasis upon the past may perpetuate and strengthen neurotic attitudes. An explanation of persistent neurotic symptomatology which focuses on the purpose it serves is a useful therapeutic aid in unlocking the static feedback mechanism of early experiences, which has created a vicious circle of distorted apperceptions, leading to behavior which is motivated by irrational anxiety and discouraging any attempt to correct faulty expectations and concepts.

Current Status of Adler's Individual Psychology

As this section has attempted to indicate, Adler's basic thinking differed profoundly from Freud's. Whereas Freud created a theory in which man's psyche was divided into discrete, sharply defined entities, Adler explained human nature in terms of continuous, interweaving processes. His field approach led to the concepts of life style, implying the continuity and unity of the living organism, and of social feeling, emphasizing the embeddedness of the human organism in society. These viewpoints anticipated many later developments in psychology and psychiatry.

Harry Stack Sullivan's "self-system" has much in common with the Adlerian concept of life style. Sullivan's ideas concerning the importance of the patient's social environment and the effect on the individual of his social relationships, and vice versa, are congruent with Adler's concepts. Karen Horney acknowledged the similarities between her own system and Adler's. And, again, Adler's concept of motivation as movement toward an unconscious, subjective goal corresponds to the notion in Gestalt psychology that the future is "part of the actually present phenomenal field." As Cantril stated more recently, "Our perception depends in large part on the assumptions we bring to any particular occasion; it is 'transaction with the environment.'" Or, phrased differently, "We seem to give meaning and order to sensory impingements in terms of our needs and purposes, and this process of selection is actively creative." In these two sentences, we find the Adlerian concepts of the style of life, the scheme of apperceptions, and goal-directedness expressed. Similarities in the concepts elaborated by Adler, on the one hand, and by Kurt Lewin, Gordon Allport, Kurt Goldstein, Martin Buber, and the theories of phenomenol-

ogy and existential and humanist psychology, on the other hand, have been pointed out frequently.

The comparisons and parallels cited above are an indication that Adler's conceptual framework consists of strong, bold outlines which allow other scientists to fill in their own detailed viewpoints and preferences. Adler staked out the ground, as it were, for the development of present day integrative approaches. Because he was intuitive, his system in no way contradicts modern thinking and has not required revision. Adler's conceptual scheme provided a useful instrument in his daily practice. As a physician and psychiatrist interested in the cure and prevention of mental disorders, his efforts were directed to the kind of social action which would be described as "community psychiatry" today. He established child guidance clinics, trained teachers in the dynamics of classroom mental hygiene, discovered methods to reeducate juvenile delinquents, and demonstrated methods of family diagnosis and treatment to workers in the helping professions.

Adler contributed to the field of psychotherapy by stressing the methods and success of short term therapy. The techniques which he advocated for this purpose were confrontation of the patient with the self-defeating and self-deceptive attitudes which made him cling to his symptoms; the purposeful use of interviews and explanations; the therapist's active engagement with the patient; and his hopeful outlook toward the possibility of cure, based on the conviction that every human being, even the psychotic and psychopathic, would prefer to be socially useful and accepted. And, because the techniques and attitudes developed and elucidated by Adler have markedly increased the impact of the therapeutic situation and have, thereby, made it possible to shorten the period of treatment, therapy has become available to many who could not afford it otherwise.

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7.2 KAREN HORNEY

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What is known as the Horney theory systematizes the concepts formulated by Karen Horney during the last 15 years of her life, between 1937 and 1952. These were set down, in part, in five books and in numerous journal articles and, in part, were presented in formal and informal discussions and lectures. In this 15-year period, Horney's ideas were modified. This discussion will refer to the final version of the theory as it is elaborated in her last published volume, *Neurosis and Human Growth*. Other modifications which have occurred as ideas and which were only implied in Horney's original work have subsequently been clarified, defined, and elaborated by her colleagues and successors. Remaining gaps continue to be filled, and the Horney theory expanded through its application to areas of psychiatry which were not dealt with previously.

The need for this new theory was based on three categories of clinical observation. (1) The difference in the symptomatology of neurosis which was characteristic of the 19th century as compared with the symptomatology which predominated during the 20th century, and differences in the symptomatology which was typical of Europe, as compared to that typical of the United States. These differences indicated the need to ascribe greater importance to the influence of sociocultural factors on individual development. (2) The fact that the variation in symptoms from one patient to another could not be adequately explained on a purely biological basis. This raised questions about the validity of certain generally accepted postulates, such as the existence of immutable instinctual drives and developmental phases, or sexual conflict as the root of neurosis. In brief, these questions underscored the need for a more individualistic yet more holistic view of psychic organization. (3) The dissatisfaction with current therapeutic results. Many patients, after a "successful" classical

psychoanalysis, continued to suffer from residual symptoms, such as discontent, depression, or disturbing personality traits, despite the seemingly good insight they had achieved into their unconscious mechanisms. This apparent paradox demanded a reevaluation of the nature of neurosis and the process and goals of therapy.

Accordingly, the Horney theory differs from the classical (Freudian) theory in several respects. These differences are cited throughout this section and described in further detail in the specific context in which they arise. For the convenience of the reader, they may be summarized briefly as follows. Horney did not accept the libido theory and the postulates derived therefrom (stages of psychosexual development, the Oedipus complex, the economic concept of a fixed quantity of libidinal energy, libido-cathexis, infantile fixation, and regression). While recognizing the importance of sexual drives, she did not hold these to be universally uniform or immutable in development; nor did she consider them the cause of neurosis. In their place, cultural factors and disturbances in interpersonal and intrapsychic development were seen to be the cause of disturbances in sexual functioning and of neurosis in general. Horney also rejected the topographical hypothesis of the psyche (id-ego-superego), and, in its place, postulated a more holistic, dynamic concept of the self. A different emphasis was placed on the significance of childhood events; these were not seen to be a direct, relatable cause of adult neurotic symptoms, nor were infantile attitudes necessarily the prototypes of adult behavior, through the repetition compulsion. Rather, infantile attitudes were seen as initiating neurotic development, which then becomes self-perpetuated. Concomitantly, Horney rejected the concept of transference in its narrow sense, since childhood attitudes, as such, are not carried over into analysis. In its place, the doctor-patient relationship was conceptualized as a complex of current interpersonal attitudes, expectations, etc. The goals and techniques of this psychoanalytic psychotherapy are also different from those of Freudian therapy; but these differences will be discussed later on.

Horney theory accepts the Freudian concepts of psychic determinism and unconscious motivation (although Horney's concept of the unconscious was broader than "the unconscious" of classical psychoanalytic theory, and the motivating factors are different); of emotional conflict as the cause of neurotic anxiety and defensive maneuvers (although the conflictual polarities are broader, and may be conscious or unconscious); of repression; of resistance; and of the value of dreams in therapy (although these, too, are seen in a broader, dynamic sense).

Horney was primarily an experimental clinician, concerned mainly with therapy. Her theories evolved from observations of her patients, and were confirmed by further observations. The Horney theory reflects

this clinical orientation. Thus it includes a philosophy of human nature and morality; theories of human motivation; concepts of normal and pathological personality organization and functioning; and the elaboration of a therapeutic technique.

Theory of Personality Organization and Functioning

The term "personality structure" (which is used interchangeably with character structure) appears often in Horney's writings but is not defined in psychological terms. Its meaning can be inferred from the clinical context in which it appears, however. Thus, the concept has no static model; rather it is used holistically, functionally, and dynamically.

Holistic view of personality. Holistically, the individual is seen as a unit within a social framework, ever influencing and being influenced by his environment. Particular aspects of personality functioning which are symptomatically significant may appear in the foreground or may be focused upon for clinical purposes (e.g., physical or emotional factors, intrapsychic conflicts, environmental maladjustments, specific attitudes or behaviors, sexual or work functions), but this isolation is artificial. Such factors can be truly assessed only in terms of the total individual gestalt.

Functional aspects. Functionally, personality may be said to consist of the total attributes which characterize the constantly changing organization of the individual. These include his biological and social needs, behavioral traits, feelings, attitudes toward others and self, self-evaluations and concepts, social values, expectations, inhibitions, and conflicts. The normal personality is defined in terms of generic tendencies, as contrasted with the neurotic. Greater value is placed on some attributes than on others. They vary at different times; some are more easily expressed and experienced; some exert a greater influence on behavior; some are more conscious; some are more subjective, others more objective.

Dynamic viewpoint. The dynamic viewpoint postulates that each attribute has a peremptory force: it is simultaneously created by the individual and acts upon him, demanding satisfaction, producing strivings, or pressing toward action. One attribute may reinforce or conflict with another.

Personality, then, constantly changes in observable ways, in definite directions, with definable rhythms. (This concept has been emphasized by Kelman in his continuing studies of the psychoanalytic process.) It is partly because of this holistic, functional, dynamic view of personality developed by Horney that Freud's structural theory of personality and his economic theory of a fixed quantity of psychic energy were held untenable. The Freudian concept of the ego, for instance, is considered essentially a reification of dynamic principles, forces, and subjective experiences. On the other hand, Freud's concepts of unconscious

motivation, activity, and determinism were accepted by Horney. However, her view of the motivating factors, acting consciously or unconsciously, was quite different from that of classical psychoanalytic theory. According to the Horney theory, motivating factors derive from current personality attributes described above, rather than from infantile libidinal strivings which are carried over from childhood through the repetition compulsion.

Triple concept of self. Originally, Horney sometimes used the terms "personality" and "self" synonymously. Basically, however, personality refers to just one aspect of the self, and in the later version of her theory, the term "self" almost completely replaced the use of the term "personality." Understanding the triple concept of self is crucial to the understanding of Horney theory in general.

The actual self. The actual self refers to the individual as the sum total of his experience. Temperamental factors (need variations, behavior patterns, primary emotional reactions, abilities, talents, imagination, and humor) are recognized as contributors, whose determinative role is not elaborated. However, their role is less important in neurotic development than are neurogenic, environmental, and intrapsychic factors. A recent modification of the theory by Rubins stresses the importance of such factors as body image, self-concept, identity, and some temperamental qualities, in the maturational process. Vicissitudes in this maturational process modify the healthy and/or neurotic pattern in characteristic ways.

The real self. The real self is defined as a central inner force or principle common to all, yet unique in each individual. It is not conceived as a predetermined homunculus with specific attributes, but a source of constructive growth, spontaneity, energy, interest, effort, decision, clarity and depth of feeling, and resourcefulness.

Thus, the real, or central, self is equated with healthy integration and the sense of harmonious wholeness. Recent developments in Freudian ego psychology, such as the synthesizing functions of the ego, and the autonomous, conflict-free sphere of ego functioning, have taken into account some faculties of the central self, as they were outlined by Horney in this concept.

Horney maintained that, given such optimal environmental circumstances as parental warmth and acceptance, and a certain amount of healthy friction, the child who is normal physiologically and neurologically will develop a healthy personality. This view implies an optimistic, nonjudgmental philosophy of human nature and morality. Thus, according to Horney, "there exists inherently in Man, evolutionary constructive strivings—by his nature and with his own accord, toward realization of his own potentialities, and...he will evolve a set of values therefrom. The criteria of what is moral hinge on what

encourages optimal growth as a human being, as contrasted with what is destructive or obstructive." This statement opposes the notion of the death instinct, in that the individual's destructive tendencies are considered to be neurotic, rather than innate.

The idealized self. The idealized self, which is the third concept, is solely a neurotic manifestation and will therefore be discussed below, in connection with Horney's concept of psychopathology.

(Theory of Psychopathology)

Redefinition of neurosis. Horney's holistic orientation requires a redefinition of neurosis, with attention shifted from specific symptoms to total personality disturbance. Accordingly, Horney conceived of neurosis as a disturbance in the total personality which (1) has its source in distorted parent-child relationships, and is subsequently self-perpetuated; (2) is characterized by distortions in the individual's relationships with others and self, which stem from emotional conflicts and anxiety, and unconscious dynamic intrapsychic efforts to avoid the disintegrative effect of these conflicts; and (3) results in discrepancy between potentials and achievement, in rigidity and suffering, and in impairment of function in most areas of living.

The rigidity of neurotic reactions, and their capacity to induce conflict and anxiety are due to the compulsive quality of the attitudes from which they derive. These attitudes have a driven quality and "must be abided by regardless of the individual's real wishes, feelings or interests, lest he incur anxiety, feel torn by conflict, be overwhelmed by guilt feelings, feel rejected by others." Such attitudes toward self or others are designated as neurotic trends and may include needs, traits, drives, and expectations. Other criteria of compulsiveness would include indiscriminateness, insatiability, and exaggerated reactions to frustration.

It is evident that the formation of the neurotic personality involves both intrapsychic and interpersonal (cultural) factors. Horney was one of the first psychoanalysts to stress the importance of cultural influences (although, in her final volume, she accorded greater weight to intrapsychic processes).

Cultural determinants of neurosis. Cultural influences form the framework of neurosis in several ways. As culture bearers, parents determine the child's generic values, self-concepts, and some behavior patterns. However, whether the child conforms to these influences or rebels, imitates, adapts, etc., will ultimately depend on intrapsychic processes. If they conflict with the child's natural tendencies, cultural influences may blur or otherwise undermine his identity. In a broader sense, cultural influences will determine what is considered healthy or neurotic for a particular society. They will also influence the formation of the idealized self, although the specific characteristics will be neurotically determined. Finally,

specific neurotic conflicts may be reinforced by or reflect similar conflicts between cultural values; for example, competition and success versus brotherly love and humility; alleged freedom of action versus the limitations imposed by society; the stimulation of desires as opposed to the real difficulties which may interfere with the satisfaction of such desires.

Psychodynamics of the neurotic process. Early childhood experience, in the over-all sense, is considered to play a crucial role in the genesis of neurosis. This is not to be confused with direct causality, however. That is, neurotic symptoms cannot be attributed to specific infantile experiences in a one-to-one relationship through the repetition compulsion, as postulated in classical psychoanalytic theory. The adult does not simply repeat childhood reactions; individual neurotic growth patterns have been superimposed on these childhood reactions. To illustrate, the final form of the small snowball which is pushed and grows larger as it rolls down a hill will depend on the slope of the hill, temperature, thickness of the snow, and the strength with which it is pushed. Thus, the form which the snowball will ultimately take cannot be related directly to the push itself. Similarly, the infant may be subjected to a wide variety of neurotically determined parental attitudes, including excessive expectations, overstrictness, "smother love," or rejection, to mention a few. To counteract these distortions in parental attitudes, the infant will develop those reactions and traits which can best insure feelings of security and safety. Despite a universal biological dependency, infants can react to parents in many ways. These possible reactions have been grossly classified as (1) "moving toward," by accepting love, closeness, and realistic dependency; (2) "moving away," into solitude, privacy, and self-containment; and (3) "moving against," through friction, self-assertion, and protest.

Genesis of anxiety and conflict. The child who is exposed to rejecting parental attitudes will react with vague feelings of loneliness, helplessness, and fear of the potentially hostile world that surrounds him. This reaction is called basic anxiety. To avoid this anxiety, he develops attitudes toward his parents which are either compulsively submissive, aggressive, or detached. These attitudes have been called neurotic trends, or drives. When one predominates, the others are repressed but continue to exert a dynamic force. Their expression may alternate or be modified by traumatic external events, personal experience, cultural demands, the development of other neurotic mechanisms, or changes in the instinctual drives, particularly the sexual. Anxiety, then, is the mainspring from which these attitudes (i.e., neurotic trends) gain their intensity and pervasiveness. The existence of such attitudes, which are simultaneously contradictory and compulsive, becomes intolerable and incompatible, creates basic intrapsychic conflict which generates further anxiety. Generally, by early adoles-

cence, this constellation of attitudes is grossly defined in the personality structure, although it may continue to change.

The preceding description challenges the classical psychoanalytic theory of psychosexual development, including the concepts of fixed biological phases of development which are related to specific body regions, the sexual nature of child-parent relationships (Oedipus complex), and regression. In contrast, Horney attributed excessive preoccupation with a genital (or other) organ function to a parental attitude, e.g., maternal overconcern or rigidity regarding this function. She ascribed the adolescent's feelings of sexual attraction for the parent of the opposite sex or homosexual tendencies to parental seductiveness or unconscious rejection of the child's given sexual role, rather than to inherent libidinal tendencies. Sexuality, *per se*, and the conflicts surrounding it, were not considered causes of neurosis. On the contrary, neurosis may cause disturbances in sexual feelings, attitudes, and behavior. This viewpoint has been elaborated in numerous articles by Weiss on compulsive sexuality, and by Gershaman on homosexuality.

There is an admitted gap in the application of these principles of childhood development to the individual child and adolescent. Horney was not a child analyst. Her formulations were developed through reconstruction of the childhood history of adult patients. Only recently has her theory been adapted and applied to this younger age group. Thus, some of her colleagues engaged in this area of practice have described variations in parent-child interactions, and consequent modifications in the attitudes of the child. Maturative phases have been schematized and related to the neurotic process by others. Recently, Rubins described characteristic changes in the clinical picture of the neurotic personality in adolescence. These changes are precipitated by aggravation of the neurotic conflict by increased social demands; by intensification of neurotic self-idealization (often with extreme fluctuations), as confusions over identity emerge; by the threat to a previously successful neurotic solution posed by newer reality situations; and by an increasingly acute awareness of the alienation from self.

Characterological defenses against neurotic trends. To allay anxiety and resolve the conflict between neurotic trends, the child—and, later, the adult—must institute further protective measures, an evolution which is the basis for the self-perpetuated neurotic development. These measures consist of characterological defenses or solutions to conflict (in contrast with the symptomatic defense mechanisms usually described by the Freudian school, such as repression and denial, which are more limited and focused). There are three general types of solutions or approaches to inner harmony: major, comprehensive, and auxiliary.

Major solutions. The three major solutions, self-

effacement, expansiveness, and resignation, extend and expand the original compulsive trend into a way of life. The patient may have some awareness of his use of these solutions, but their ramifications, intensity, resistance to change, and their implications in terms of his general adjustment are largely unconscious. According to each orientation, the neurotic assumes certain characteristic personality traits, needs, attitudes toward others and self, values, fears, sensitivities, and inhibitions.

Self-effacement. In the self-effacing solution, love has the greatest appeal for solving life's difficulties. The individual is, in fact, compelled to be loving and lovable, self-sacrificing, compliant, sympathetic, dependent; he sees these qualities as having high value. He needs to be loved, to give in rather than argue, to please, to be approved of. He is oversensitive to and fears criticisms, rejection, abandonment, to the degree that he may anticipate these reactions without justification. Concomitantly, he inhibits any expression of aggression, initiative, competitiveness, striving toward success; he considers these negative traits. As might be expected, he can readily admit to weakness or unimportance; he overidentifies with underdogs. Unconsciously, he identifies with his despised self; in contrast, other people are always superior, nicer, more competent or intelligent. His attitudes often cause him to be taken advantage of, and he unconsciously invites such treatment.

In its extreme form, this solution may be manifested as morbid dependency and is often characterized by neglect of self so severe as to result in self-elimination. Helplessness has great appeal; consequently, unconscious acting out through illness, suicide, or sexual perversion may occur. (It should be noted that sexual masochism refers to only one aspect of this generally masochistic attitude which involves the total personality.)

Expansiveness. The expansive solution requires mastery over life and over others in the neurotic sense of domination and self-glorification. Certain personality traits have positive values for such an individual. These include hardness, strength, efficiency, domination, aggression, shrewdness, ambition and success, and insensitivity to the feelings of others. In brief, he needs to control, have his way, compete and outdo, and gain prestige. He shuns affection, sympathy, and trust as weaknesses; he is afraid to admit to error or imperfection, even illness, for these represent negative values. He sees himself without limits, confident and superior. He mistrusts others and sees them as potential competitors.

The three subforms of the expansive orientation are based on the particular aspects of the idealized self-image with which the individual identifies.

The narcissistic-oriented person identifies with his glorified attributes. This differs from the concept of narcissism postulated by classical psychoanalysis: the person is not in love with himself (libido cathected

onto his own ego), but with an irrationally glorified concept of his self.

The perfectionist-oriented neurotic identifies with the irrationally high standards he has set and is driven to live up to them. Unconsciously, he may experience himself as perfect and look down on others with contempt; but, at the same time, he is constantly threatened by a fear of failure or by awareness, however subtle, that his high opinion of himself is exaggerated.

The arrogant-vindictive neurotic identifies with his proud self. Irrational pride is common to all neuroses, but it is most intense and evident in these individuals who are obsessed by their need for power and domination. It renders the individual most vulnerable to hurt pride reactions, leading to vindictiveness (acute or chronic), and the need for retaliation and triumph. Sadism, in this context, refers to the vindictive satisfaction which is associated with fulfillment of the neurotic need to subject others to pain or indignity. While this need may be related to sexual activity, this is only one area of its expression.

Resignation. The solution of resignation differs somewhat from the other two in its dynamic motivation. Self-effacement and expansiveness emerge after direct repression of contradictory orientation. The resigned person, on the other hand, not only strives for freedom from conflict, but for freedom from all emotional feelings; therefore, both of the preceding orientations must be repressed. They continue to exert a conflictual effect from within, however, which may emerge when the resignation is dealt with in therapy. The traits of resignation are mostly negative; aloofness, reduction of material wants, detachment. The individual's needs are for privacy, not to compete, not to be involved or committed; he wants to be self-sufficient and independent. And, concomi-

tantly, he fears influence, obligation, intrusion, coercion, pressure, change, which he may feel to emanate from others, even if this feeling is without foundation. His need for detachment renders emotional ties intolerable; anticipated closeness, through sex and marriage, may cause anxiety. All awareness of such attitudes as love or aggression is inhibited. The attitude toward self is one of objective interest and numbness, and others are experienced as strangers. The resigned orientation may take one of three forms.

Persistent resignation includes the traits described above, plus inertia, disinterest, aversion to activity (although routine or sporadic work may be well done), and feelings of futility.

In the rebellious form, passive resistance becomes active and is directed against environmental factors or inner restrictions.

In the third form, shallow living, the degree of futility, hopelessness, and emptiness is extreme. To avoid it, the person is driven to constant activity and distraction in sex, sociability, participation in others' ideas. Detachment then deteriorates into unrelatedness; emphasis is on fun without real enjoyment or on prestige or opportunistic success without any sense of accomplishment; or the person may become a well adapted automaton.

These orientations do not describe a character "typology." They indicate forms of development, related groupings of attitudes and peremptory traits which may not be concretized as behavior. They are seldom present in pure form; there may be admixtures or shifting, as more conscious solutions are found to be inadequate and others are substituted. Thus, we see the pseudocompliant individual who is dependent in order to manipulate others, or the basically resigned person who presents a facade of submissiveness or dominance or alternates between these facades.

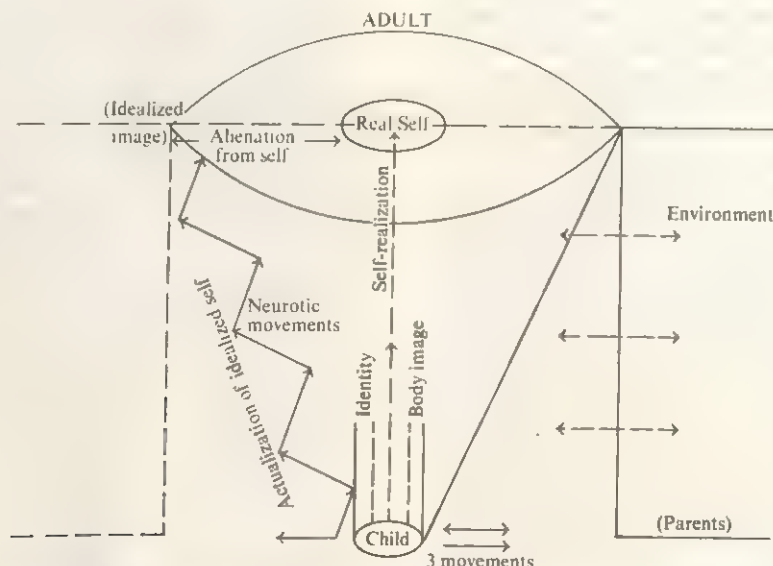


FIGURE 1. Schematic representation of neurotic development according to Horney theory (modified).

Actualization of the idealized self. Even after the major solutions described above have been applied, conflict still exists. The attempt to attain a greater degree of unity, however spurious, requires the more comprehensive solution of self-idealization. This process involves the actualization of the idealized self. Fundamentally, it is a means of avoiding psychic conflict by rising above it. Initially, the glorified image is conscious, limited to certain activities and aspects of self; it is often experienced in fantasy or daydreams, especially in children and adolescents, with awareness, at first, of its irrational, imaginary, exaggerated nature. However, it progressively encompasses more of the personality, becomes more organized, and partly or totally unconscious. "Eventually the individual comes to identify himself with this integrated idealized image... it becomes an idealized self" which he is driven compulsively to live up to and maintain. This is so because it satisfies needs, permits avoidance of anxiety and other painful feelings, promises fulfillment of imagined capacities, transforms weakness into virtue, and provides a feeling of identity and unity. Its precise nature in an individual is determined by "his own special experiences, his earlier fantasies, his particular needs, his given faculties... and his special solution for his basic conflict." It is irrational and unattainable, aiming toward the ultimate and absolute. It involves specific trends, attitudes, and values: "compliance becomes goodness; love [becomes] saintliness; aggressiveness becomes strength, leadership, heroism, omnipotence; aloofness becomes wisdom, self-sufficiency, independence." It may also involve elements of the body image. Indeed, selective inclusion of parts of the body image in this self-glorifying and self-denigrating process may be an explanatory factor in specific psychosomatic symptoms. (See Figure 1.)

Auxiliary solutions. The total neurotic superstructure remains fragile, giving rise to disruptive feelings of strain and tension. Additional auxiliary measures to preserve inner harmony, sometimes designated as pseudosolutions, become necessary. Only five of the many auxiliary solutions postulated in Horney's earlier work were retained in the final version.

Externalization consists of experiencing inner processes or feelings as occurring outside the self. It is broader than the traditional (i.e., Freudian) concept of projection, in which the individual ascribes his own rejected personal tendencies to others. It may be total, i.e., seeing all one's qualities in others; or active, converting one's self-contempt to a contempt for others, or anger at one's own faults to anger at these same faults in others; or passive, with inner coercion felt as coercion by external authority. The tendency may be so complete as to constitute a vicarious way of life, i.e., experiencing one's self only in and through others. It is particularly evident in those individuals who show a paucity of inner emotional experiences. In such cases, idealized attributes, as well

as the actual qualities of self, may be externalized so that a spurious sense of identity and worth is derived through identification with another person who is seen as ideal. This has been advanced as one of the mechanisms involved in homosexuality.

Compartmentalization (also called psychic fragmentation) is the experiencing of self as consisting of unconnected parts, and of one's attitudes as without interrelationship (either cause-effect or contradictory).

Alienation from self is both a defensive measure and a consequence of the neurotic process. It is active, achieving (among other results) the relief of tension by blurring those real self attributes—genuine wants, feelings, and beliefs—which conflict with neurotically idealized qualities.

The measure of automatic control, which is largely unconscious, checks the generation of impulses and feelings and their expression. Instead, these impulses and feelings may be expressed somatically. Physical manifestations may include muscle tightness, constipation, facial tension or tension headaches, breathing spasms, etc. It may apply to all feelings, but selectively permit the expression of some, such as crying, in neurotically exaggerated forms.

Supremacy of the mind (intellectualization) refers to the use of intellect to avoid experiencing emotional conflict. More specifically, it enables the person to observe objectively what occurs within. Thus, he may accumulate information about himself without applying it to his life. Above all, he values the mystic power of knowledge: "to know is to be able to control." This mechanism, which involves logic and reasoning, may prevent free association in therapy. It may also trigger panic when the individual is abruptly threatened with loss of control by approaching sleep or anaesthesia, or intoxication, or when he is forced to "let go" in sexual activity.

Neurotic claims. Movement toward actualization of the idealized self is expressed differently to the outside world than to the self. The neurotic expects to be treated by the outside world in accordance with his glorified self-concept. Irrational needs, based on fears, inhibitions, and feelings of deprivation, are thus transformed into claims. Unaware of his self-exaggeration, he is not conscious of the excessiveness of his expectations, or that the feeling that he is entitled to certain privileges is inappropriate. Such claims are general to all neurotics, or specific for each solution. Neurotic individuals may feel they are entitled to special consideration or deference; that they should be exempt from the consequences of their actions; that they are not vulnerable to illness or mishap; that they are immune to aging or death. They may believe they deserve utter obedience from others; "understanding" or love, regardless of their own attitudes. This egocentricity reveals itself in the expectation of fulfillment without proportionate effort or consideration of

the feasibility of one's goals. The clinical effects of long standing claims may be chronic; the neurotic patient feels he has been treated unfairly and must "get back at" the world; or these claims may produce chronic inertia, envy or depression, or, eventually, a feeling of doubt as to what rights he really does have.

Neurotic demands on self. The neurotic molds and drives himself to live up to his irrational self-concept through a system of shoulds, musts, demands, and expectations, whose specific nature varies with the neurotic structure. These inner dictates grossly determine what the person should or should not be, know, feel, do. They are largely, though not always, unconscious. In any event, the "tyranny of the shoulds" exerts intense pressure on the individual, although there may be some variation in degree of intensity.

The neurotic's reactive feelings about what is, in effect, an inner authority, may vary. He may actively accept authority, welcoming a regulatory system which holds in check repressed feelings the emergence of which might be feared as disintegrative. On the other hand, he may feel ambivalent, or passively resist, or actively rebel against such an inner authority. This, in turn, renders him hypersensitive to coercion from external authority. Indeed, his transformation of a rational, guiding external authority into an irrationally coercive one may be due in part to the externalization of intense inner dictates. Finally, his attitudes toward authority may be in conflict. The awareness of his need for such authority may conflict with his resentment against it. He may be compulsively submissive in one situation and assume an authoritative, dominating role in another.

This construct has been compared with the classical psychoanalytic concept of the superego, but there are differences between them. In Freudian theory, the superego represents internalized parental-cultural values; it would correspond to conscience. The "shoulds," however, do not constitute a genuine moral code, nor do they represent an attainable ideal. Aimed at some form of irrational perfection, they are always neurotic. The distinction between genuine morality and neurotic pseudo morality and guilt due to failure to reach the absolute has been clarified by Weiss in his papers on psychoanalysis and moral values. Even some religious practice, generally considered to express man's optimal moral code, has been found to be motivated by compulsive, egocentric attitudes, rather than genuine religiosity.

Pride system. The idealized image achieves intense value and hold on the individual as it becomes invested with pride. Genuine pride in realistic achievement would provide a solid feeling of self-worth, but the neurotic's false pride, based on exaggerated self-concepts and spurious values, is brittle, vulnerable to challenge or threat, as when a claimed attribute is disproved by reality. Neurotic pride may take various forms, specific for each individual. These include

pride in prestige, intellect, will power, strength, honesty, lofty standards, lovability, appearance, and sexual prowess. The typical hurt pride reaction consists of shame (failure from within) or humiliation (action from without). This may be automatically, often unconsciously, transformed into secondary feelings of embarrassment, guilt, vague irritability, or degrees of anger, ranging from sullen dislike to rage and hate. When anger must be repressed, fear, anxiety, or psychosomatic symptoms may appear as the only apparent conscious reaction. These reactions may occur not only in response to actual events, but in response to anticipated ones as well. They are followed by automatic attempts to restore pride such as a need for vindictive triumph; withdrawal and loss of interest in the situation; denial or distortion of the event; or exaggerated humor.

The neurotic feels contempt for what he is, for his actual self. Pride and self-hatred, two sides of the same coin, form the pride system. The actual attributes toward which contempt and rejection are directed comprise the despised self. They are evidence of the failure to achieve the idealized self and must be repressed. The degree of self-hatred may be extreme, although awareness may include only feelings of inferiority, ugliness, guilt, sinfulness, etc. It can manifest itself in six gross forms: (1) relentless demands on self ("shoulds"); (2) merciless self-accusation through moral condemnation, self-reproach, or self-blame; (3) self-contempt (and self-disparagement), often as a result of comparison to others; (4) self-frustration, by imposing taboos on positive activity, enjoyment, hope, striving, etc.; (5) self-torture, through masochistic behavior or dreams, or externalized as sadism; and (6) self-destructive behavior, e.g., accident-proneness, smoking, addiction, recklessness, psychosomatic illness, possibly psychoses, or actual suicide.

Central inner conflict. Self-hatred is also directed in a unique and often intense way against the real self. Since positive tendencies are particularly threatening to the neurotic idealized self-image, they must be avoided or denied. Taboos are imposed on such qualities as enthusiasm, spontaneity, productive effort, curiosity, and creativity. Although present in all neuroses, this becomes more evident during the final phases of analysis when such attributes are emerging and the restrictive neurotic superstructure is weakening. This produces a special form of intrapsychic discord, a central inner conflict. Its appearance gives the analysis a special quality. All the patient's symptoms become more intense, but they are less rigid and less threatening and incapacitating. Anxiety may increase periodically, but the patient seems better able to handle it, to stick with it, to work it through. Psychosomatic symptoms may appear or reappear, but they shift rapidly. Previous defensive trends may emerge again but they recede as the patient becomes increasingly aware of their source, significance, and

effects. There is greater awareness of assets, a growing ability to take chances, explore, be spontaneous, accept one's limitations and actual assets.

Alienation from self. Of special importance for understanding Horney's theory of psychopathology is her concept of alienation from self, particularly in view of its recent clinical applications, e.g., to the sexual perversions, to the problem of identity which has become an area of interest in every discipline, and to the phenomena of depersonalization and psychoses. Alienation is an active defense, as well as the outcome of the over-all neurotic process. The various neurotic mechanisms—compulsive distorted self-concepts, shoulds, claims, self-hatred—all combine to lead to this result. It is a process in which the individual moves away from his experiential center and genuine identity, to create a pseudo identity and pseudo self.

Some manifestations are objectively observable; others are subtle and subjective. Some patients lose awareness of physical activities or body attributes. They may exhibit dullness of eyes or face, few spontaneous body movements, or poor coordination. They may be unaware of visceral sensations. There may be numbness of limbs or an attitude of impersonality toward the body, "la belle indifférence." There may be a lack of capacity to feel, of awareness of feeling, or of depth of feeling. The patient may be angry, happy, or sad, without being aware of it, so that he will even express astonished denial if it is pointed out. Some patients are shocked to see themselves in a mirror, or to hear their voices recorded. They may have no emotional response to beauty, art, or other stimuli. They may complain of emptiness, deadness, haziness of feelings, thoughts, or relations with others. They may speak of "one" or "you" instead of "I," and describe inner experiences in terms of external events. This vagueness may extend into curious dissociated states bordering on the split personality or trance. Particularly severe forms are the amnesias or depersonalization states.

The vagueness may be experienced as a feeling of discontinuity with the past; these patients may have few or hazy memories, or feel little connected with their childhood. There may be a blurring of body image or identity in all its aspects—size, gender, color, body configuration. There may be lessened energy, ranging from unsustained effort to complete inertia, although, at times, there may be neurotically driven hyperactivity in some areas. Directive powers weaken, and indecision and uncertainty become increasingly apparent. Or the patient may be unwilling to assume responsibility for his actions. Primary distortions of the maturational growth process (i.e., formation of body image, self-concept and identity) may produce characteristic modifications of this alienation from self. The degree and nature of such alienation may be of special significance in explaining the etiology of certain forms of schizophrenia.

Symptom formation. With emphasis on the whole

patient (character structure)—course of development, process, patterns, intrapsychic movements—the isolated pathological symptom recedes in importance. Neurotic symptoms are characterological; they are classified as distorted attitudes, or areas of living in which such distortions become manifest. So-called "typical" symptoms—anxiety, fear, somatic manifestations, sexual dysfunction—are not considered in terms of their biological origins. Specific symptoms are produced by disturbances of personality; they can be studied only in these terms and understood only in the context of the total personality. The character structure and its vicissitudes must be kept in focus at all times. The symptoms are indicative not only of pathology but also of the adaptive measures employed to provide a degree of integration and unity, however shaky.

Anxiety. It is debatable whether the first basic anxiety could be considered true anxiety. Its precise nature requires further research. However, once the neurotic trends are established, true anxiety is generated. The development of the neurotic superstructure extends the possible area of emotional conflict between opposing trends, the idealized and despised selves, contradictory shoulds, and real self and neurotic attributes. Conflict and anxiety are intimately related, but the anxiety-producing conflict can no longer be seen simply as ego versus id. The Horney-oriented analyst, when confronted with anxiety in a patient, must ask: "What is endangered, and what is endangering it?" In effect, any pride-invested aspect of self that has subjective compulsive value may be endangered, either by a contradictory internal tendency, or by disapproval from without.

The absence or presence of anxiety is not an absolute criterion of pathology for several reasons. First, emergent anxiety may be repressed due to excessive control, pride in serenity, or some other neurotic attitude. It may not even arise, owing to feelings of alienation. Or other emotions, such as rage, humiliation, or embarrassment, may replace it in apparent direct response to threat. Second, not all anxiety is neurotic. Healthy, constructive, normal anxiety may be evoked in response to positive movements, or when genuine values are threatened, and it is essential for mobilizing constructive activity. In lieu of the term "normal anxiety," Kelman has introduced the concept of tension with a mean variation for each person; neurotic anxiety occurs when the mean limit is exceeded. Instead of normal or neurotic anxiety, the concept of rational versus irrational sources of anxiety has been postulated.

Fear. Whereas anxiety is the imminent coming to awareness of a threatening, conflict-producing factor, fear is the reactive feeling to the very possibility of such emergence. Fear may be generalized; it may focus on exposure of pretense or duplicity, on failure, on injury to pride, on change in the status quo, on loss of control, etc. Other fear may be more directly

related to special neurotic attitudes: fear of success in the self-effacing neurotic; of love in the ruthless; of closeness in the detached; of ridicule in the narcissistic. Fears may occur in special situations, such as public performances, exams, work; or a fear of closeness may arise in connection with sex. The classical phobias are but symbolized projections of general fears onto specific objects or situations.

Panic. Panic is due to the sudden collapse of a major aspect of the idealized image accompanied by the sudden threatened emergence of intense repressed conflictual drives.

Psychosomatic symptoms. Psychosomatic symptoms arise with the emergence of a repressed conflict, acutely experienced as a dilemma, or a repressed affect (anger, anxiety, joy, humiliation, sadness) which cannot be totally experienced. Such symptoms are nonspecific: the same symptom may be related to different affects, while different ones may relate to the same affect at different times. These affects, in the specific psychological inner configuration of the moment, are externalized onto the unconscious body image, parts of which act as a focus through having been distorted in the self-idealizing, self-denigrating neurotic process. Personality factors—such as pride in strength; control and invulnerability to illness; conflict between shoulds, e.g., “proper” emotional reactions and intellectualism; inability to participate in emergent anxiety—may contribute to the somatization. Psychosomatic symptoms are also seen to have an adaptive (restitutive) as well as a constructive function.

Areas of maladaptive functioning. Specific areas of maladaptive functioning have been studied, such as work, interpersonal relationships, and sexuality.

Difficulty in work may take many forms: impaired relations with one's superiors seen as authority, or with one's co-workers; inability to accept or delegate responsibility; inhibition in productivity, due to excessive self-demands and fear of failure; over- or underevaluation of capacities; excessive rebellion against rules or limits, resulting in poor organization of time or procrastination; over-reaction to routine problems of creating, with resultant anxiety; distractibility or inability to concentrate; or compulsive hyperactivity with scattered interests.

Sexual dysfunctions are explainable in terms of neurotic attitudes. Compulsive use of sex to satisfy neurotic needs to dominate or submit, or for closeness, is characteristic. Sexual hyperactivity (promiscuity, Don Juanism) may be motivated by inability to form deep relationships, by narcissistic standards of performance, or an insatiable need for triumph. Focal sexual psychosomatic impairments—premature ejaculation, dyspareunia, frigidity, impotence—may be due to unconscious needs to frustrate the partner, inhibitions due to rebellion against perfectionistic demands, or to a fear of letting go. Homosexuality is explained by a combination of factors: intense hatred

of one's gender attributes, derived from early parental rejection of the child's sexual role and exacerbated by neurotic self-devaluation; actualization of neurotic dependency, domination, or distance needs without related heterosexual conflicts; identification with one's idealized image (in the partner); and experience of a more unified identity in an external context.

Other areas similarly studied include schizophrenia, the adolescent psychiatric disorders, drug addiction, loneliness, the nature of creativity, group relations and therapy, mental retardation in children, and determination of individual reactions to therapeutic drugs. These are new directions in the application of the Horney theory.

Principles of Treatment

Horney did not enunciate an explicit technique. The theory was still evolving; clinical application was limited; and it was, and still is felt that therapeutic techniques depend largely on the analyst's personality and must be adapted to the needs of each patient. Some guiding principles were formulated, however, and these have since been expanded with increased clinical experience.

The theory's redefinition of neurosis, its holistic-dynamic concept of self, and its growth-oriented approach required redefinition of the nature of the analytic process and its goals, with some practical implications, as follows.

With less attention to isolated symptoms, symptom relief is no longer a primary therapeutic goal of the analyst: a decrease in underlying symptom-producing conflictual elements will improve symptoms. The patient, however, seldom wishes basic personality change; this is too frightening at first. He wants to remove symptoms and difficulties but maintain the status quo.

Nor is social adjustment a therapeutic goal. Viewed psychologically, it often embraces compulsive conformity with little regard for the real self. The apparently well adjusted “successful” neurotic who actually lives a life of “quiet desperation” is the antithesis of the goal of greater self-realization.

The concept of “curing” neurosis makes no sense, since past development cannot be undone. But removal of stifling, distorting influences allows growth potentials to expand; in effect, the neurotic outgrows the neurosis. The aim is movement toward self-realization, rather than attainment to a specific degree of a certain kind of healthy attitude. The constructive must outweigh the obstructive. This goal is dynamic, relative, and qualitative, rather than fixed, absolute, or quantitative.

Neurosis is a self-perpetuating process, motivated by needs to maintain a distorted unconscious form of personality in order to gain a degree of unity and identity; it is not a simple repetition of infantile attitudes. Emphasis in therapy is on the present, placing recall in a different light. Childhood is important for

understanding of the formation of the neurosis and following changes in character structure and neurotic solutions as encompassed in the adult personality. Nevertheless, recovery of childhood memories is not a primary therapeutic goal but merely helps to expand awareness of current emotional experience as experienced in the past. Present experiencing permits past recall; past recall does not determine present experiencing.

Knowledge by the analyst of the patient's personality, and what is occurring dynamically therein at every moment, is essential.

To make conscious that which is unconscious is still a basic goal. Conscious knowledge must include not only information, but total awareness of inner happenings—past and present feelings and attitudes—now and in all their ramifications, as they affect the person's life and being, and as they affect others.

Gross movements during analysis take three forms: disillusionment, reorientation, and mobilization of constructive forces. These cannot be easily separated and usually occur to some extent at the same time. The first predominates at the beginning, the last toward the end.

Therapeutic techniques. Technique consists of optimal ways and means of applying these principles to produce the greatest possible progress toward these goals. Setting short term goals is as important as setting long term ones, and sometimes more so, depending on the patient's condition. Immediate goals might be simply to create a supportive relationship with another interested human being to hold the patient's personality together, if imminent disintegration, panic, or psychotic break threatens; to go along with or even reinforce some neurotic goals in order to strengthen motivation for continued analytic work (particularly important for adolescents); to define and emphasize constructive assets (although doing this too early may be ineffective or even unfavorable); or simply to educate the patient as to what constitutes analytic work.

A formal distinction between analysis and therapy was never clearly spelled out in the context of the Horney theory. Horney used the terms synonymously, often as psychoanalytic therapy. "Brief" psychotherapies directed at symptom relief or social adjustment are held to be of limited and temporary value only. Brief psychoanalysis with a predetermined time limit, intended to stimulate the patient's efforts, has been found ineffective in producing greater change faster. In fact, change may often be due to neurotic "shoulds," leading to intensified pride in achievement of spurious success.

Whether the treatment can be termed analysis is not determined by formal rules such as daily sessions, use of the couch, or the number of years the patient remains in treatment. Nor is it contradicted by use of short term goals, since these temporary strategic

therapeutic maneuvers may be preparation for, or part of further analysis.

Use of the couch. This is not essential; the seated vis-a-vis position may be equally, or more effective. It should be the patient's choice; and, eventually, he should feel free to use either. However, the choice may have healthy or neurotic implications for both patient and analyst and serves as the basis for analyzing attitudes. For example, the patient may choose the face-to-face position because he depends on the reactions of others, seeks approval or closeness, or wants to dominate the analyst by staring him down. On the positive side, facing the patient may provide the analyst with a better means of observation. Lying on the couch may be experienced by the patient as submission, humiliation at being lower (i.e., inferior), having to do what he should, exposing himself, being distant or sexually vulnerable, or losing control. It can serve the patient positively by permitting greater attention to his feelings without distraction.

Frequency of sessions. Frequency of sessions is another variable. Once weekly is usually inadequate, since the time lapse between sessions allows for dilution of emotional experiences and loss of continuity. Three times a week is usually optimal, though this may be increased if anxiety demands it. Some patients may make more progress on a once-weekly schedule than others do who are seen three times a week.

Fees. Requiring the patient to pay an adequate fee and assume responsibility for broken appointments is essential, not necessarily because of the feelings of sacrifice engendered but to indicate the value of the time, effort, service, and responsibility. Attitudes about payment must be analyzed as an aspect of general handling of money, or an expression of the patient's feelings toward the analyst. Compulsive promptness or lateness of payment, forgetting whether payment is to be made on a session or monthly basis, handing it to the analyst obviously, or mailing it unobtrusively can be indices of attitudes of compliance, resistance, perfectionism, claims for special treatment, needs for distance, etc.

Free association. Free association is desirable but not essential. It does not imply uttering everything that comes to mind, as classically stated, but refers to uncensored, spontaneous reporting of all inner experiences (sensations, feelings, thoughts, dreams, etc.), at the same time that attention is directed on such productions. This is seldom done early in analysis, since neurotic tendencies are implicated in speech, and spontaneity and involvement with self are impaired. Speech may be defensive (rambling), or combined with compulsive intellectualism (use of logic and reasoning). Freely speaking may be experienced as "letting go," giving up control, closeness to the unconscious—and, therefore, may be threatening. As analysis proceeds, however, the capacity for free association usually increases.

The analytic situation is a cooperative process of interrelatedness, functional in that its purpose is working, in which the analyst carries the greater responsibility. It is a constantly changing relationship, each partner influencing and reacting to the other. The patient's attitudes toward the analyst involve more than transference of child-parent attitudes. The analyst is experienced in complex ways, derived from the patient's unique neurotic needs, expectations, and claims, which change at different times. The analyst may be felt as a loving or revered god or magician; as a punitive judge; as a confessor, teacher, competitor, tool, co-worker, or friend. Each attitude carries unconscious claims for change through the magic clue or the analyst's power, i.e., without personal effort, or through absolution, i.e., learning a lesson or being a good patient.

Analyst's role (counter-transference). The analyst plays an active role in the treatment, in the sense of emotional participation, in contrast to the detached, evaluating observer with the classical "mirror" function. There is a repeated emotional movement between the patient and the analyst which requires understanding, tolerance, and compassion, despite disagreement. Attention must be comprehensive, wholehearted, feelingful, and productive. The analyst's reactive feelings can help indicate unconscious maneuvers of the patient. However, he should be able to distinguish his own neurotic residual feelings. Such neurotic remnants as arrogance and pride, the need to dominate or be self-effacing, to please or avoid friction, or his own detachment may cause him not only to select particular patients, but also to overlook or have difficulty in handling those attitudes in his patients which are present in himself. His relationship with the patient will be governed by his relationships with others.

The analyst's help may take many forms. His mere presence provides general human help. His interest, willingness to understand, faith in possibilities, acceptance of weakness or hostility without criticism or recrimination, and firmness against cajolery furnish a kind of relationship different from any the patient has previously experienced. The analyst attempts in various ways to encourage the patient's interest and involvement. He tries to stimulate awareness of neurotic trends, their intensity and extensity, mutual contradictoriness and destructive potential, their nature as immediate feelings and as past experiences. He utilizes intuitive impressions and detailed observations, notes contradictions between statements, attitudes, values, patterns of the analysis from moment to moment, hour to hour, daily, weekly, and yearly. He notes themes communicated symbolically at various levels of the patient's associations (reality; interpersonal, including analytic; and intrapsychic). He employs dreams as indicators of uncon-

scious processes. All of these may at times be conveyed as interpretations.

Interpretations. The analyst's interpretations may stimulate, uncover, focus attention, summarize, repeat, express understanding, and serve as background. Their spirit should be questioning and tentative, intended to stimulate. They may be explicit remarks or implicit signs: grunts, smiles, encouraging gestures. For maximal progress, regardless of anxiety or relief induced, they should be relevant to the most significant issue consciously or unconsciously raised by the patient; meaningful, according to his present condition and traits; timely, for constructive use at the moment. Positive patient reactions include taking the interpretation seriously, finding it pertinent, working further with it. Negative reactions might be lack of understanding, undue anxiety or hostility, pseudo-acceptance without real assimilation, or blockages.

Resistance. Within the traditional concept, three forms of resistance are described in the context of the Horney theory. Forces interfering with the drive toward self-realization (including the neurosis itself) are retarding forces. However, such obstructive forces need not prevent progress; a neurotic need to know everything can be an incentive to work at something. Such obstructive forces are manifested as defenses, evident in life, but more so in analysis when the patient is under attack. The constant question is: "What is he defending, and what is he defending against?" These are the characterological trends and attitudes of the neurotic structure. Specific manifestations of these defenses, arising when they are threatened, are called blockages. They may be personal or impersonal; expressed against self, analyst, or others; passive or active; acute (such as use of alcohol or drugs, silence, listlessness, forgetting, or "acute negative therapeutic reaction") or chronic (lessening of curiosity about self, inertia, increased unconscious dishonesty through denial, rationalization, vagueness, complaints about lack of progress).

Dreams. Dreams are a primary tool for furthering analytic insight, to extend beyond just taking into account latent symbolic meanings. The first dream related in the analysis, whether a present or a past recurrent one, is crucially significant. It is the purest, tersest, and most meaningful, often expressing the patient's entire personality structure and attitudes toward life and the analysis; it can seldom be interpreted effectively early in treatment. The form of dreams is important; they may be abbreviated or detailed, disorganized or structured, close to or far from reality, static or full of movement. The rhythm of the dreaming pattern—rare, frequent, cyclic—indicates psychic activity; why the dream has been presented *now* should be considered. Series of dreams may indicate evolution of some trend or psychic movement. Attitudes toward dreams—actively relating them to self, recall at beginning or end of hour, good recall or

forgetting, verbal or written, etc.—indicate attitudes toward the unconscious. Content may show symbolic meanings not only as object symbols, but as representations of attitudes, conflict, solutions, directions of movement, active or observer involvement, relationships with others, degree of relatedness (dreams within dreams, movies), etc.

Limitations of therapy. The limitations of Horney therapy are determined by the goals, the degree to which any patient can avail himself of it, and by lack of experience of its practitioners with specific diagnostic conditions. It is long term therapy requiring much time and money, thus it is limited in the number it can reach, although low cost clinics and group analysis are increasing this number. An overwhelmingly unfavorable past or present environment may limit the extent of change. A certain capacity for psychological thinking and awareness is required, although this is relative. Also favorable are a certain moral toughness, a tolerance for anxiety or psychic pain, ability to stay with a problem, a basic desire to change, and a certain intelligence and imagination. Absence of these qualities is limiting. Advanced age is a relative limitation, rigidity of attitude and behavior being more important than chronological age. Use of this therapy with children is still limited; further experience is needed. Application to psychotics and sociopathic or acting out personalities is largely unexplored, with clinical effectiveness demonstrated in a limited number of cases. Some aspects of certain specific conditions, such as sexual perversions or psychosomatic diseases, have not yet been satisfactorily explained in the holistic framework.

Current Perspectives

Given these limitations, as well as its already proven empirical value for patients amenable to analytic treatment, what is the future of this theory? On one hand, its application seems to be growing as the number of its practitioners increases and further usage is explored experimentally. It can be applied to conditions hitherto considered to have a poor prognosis, such as certain forms of psychosis, and adolescent syndromes. One indication of its value lies in the number of its ideas being adopted (and adapted) by classical psychoanalysis (usually without credit being given to Horney), such as the synthesizing ego functions and the significance of pride in neurosis (Hartmann); the expanded notion of neurotic polarities in conflict, leading to further conflict (Kubie); the re-evaluation of narcissism and the ego ideal (A. Reich, Arlow); the concept of a "working relationship" in analysis; and others.

On the other hand, in its present state Horney theory is not the final answer to our understanding of psychopathology, and it will require continued clarification and modification to increase its applicability, i.e., to particular mental conditions, such as the childhood behavior disorders and certain forms

of psychosis, to particular types of patients, such as the elderly, to lower socioeconomic groups, to the mentally retarded. It must be refined for application to newer settings, such as the clinic, for use with the heterogeneous group, the family, and for usage in combination with psychotropic drugs.

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7.3 HARRY STACK SULLIVAN

LEON SALZMAN, M.D.

Introduction

Harry Stack Sullivan received his training in psychiatry during the early years of Freud's profound influence on American psychiatry. However, he did not go to Vienna for his psychoanalytic experience and training, as did so many of his colleagues. Instead, he worked in the United States with Adolf Meyer at Johns Hopkins, at the Sheppard Pratt Hospital in Towson, Maryland, and with William Alanson White at St. Elizabeth's Hospital in Washington, D. C. He was a founder and charter member of the Washington Psychoanalytic Society, and founder of the Washington School of Psychiatry. Both his analytic training and his personal analysis were in the classical tradition.

Sullivan made basic and significant contributions to psychodynamic theory and to the theory of mental disorders, which emphasized the cultural matrix of personality development.

The particular direction and emphasis of these contributions derived from his close association with social scientists, such as Ruth Benedict, Margaret

Mead, Edward Sapir, Leonard Cottrell, and Harold Lasswell, and with culturally oriented colleagues, such as Erich Fromm and Karen Horney. In brief, Sullivan worked closely with a group of psychoanalysts and social psychologists who were moving away from the classical psychoanalytic theories because of the biological and instinctual bias of those theories.

Historical background. Freud believed that man developed out of a matrix of instinctual forces which needed to be restrained and inhibited when confronted by the external world. According to this instinctivist psychology, then, man was viewed as an animal, overwhelmed by inner forces which he must repress or restructure in order to survive as a social being. The focus of study, therefore, was directed primarily toward the elucidation of these inner pressures which were topographically located in the id. The unconscious, as a reservoir of id forces and repressed impulses, was the source of great interest in psychoanalytic theory and therapy. Freud's system was called an id psychology, in contrast to later theories, which were centered on the psychology of the ego.

There were serious objections to Freud's psychoanalytic theories from the beginning, particularly to the sexual nature of the libido. These disagreements ultimately produced dissensions in the psychoanalytic movement. In the early 1900's, and especially during the period of mass exodus of psychoanalysts to the United States in the 1930's, there was evidence of growing dissatisfaction with Freud's instinct theory, and increasing recognition of the significance of ego factors in man's psychology.

These European psychoanalysts, particularly Karen Horney, Erich Fromm, Sandor Rado, and Franz Alexander, were exposed to a new culture, where the predominant values and ethics differed from those they had known in Europe. Some of Freud's theories which were presumed to have universal application did not seem to be as significant in the American scene as they were in Germany or in the Austro-Hungarian culture. This raised many new questions about the role of culture in personality development. The effect of culture, as opposed to instinct, took an increasingly prominent role in personality theory. The ubiquity of many of the variables in human development, which had been considered biologically ordained, were examined anew in the light of the influence of the social, political, and economic factors in man's growth. The Oedipus complex, for example, which Freud and his followers believed was inherited and biologically innate could be viewed as a potential development which might be manifested if the social structure of the family or the community stimulated attachments to the stronger members of the household. In other cases, subtle or overt sexually seductive behavior on the part of the child's parents might constitute a precipitating factor in the emergence of this phenomena. In any event, the Oedipus complex could not be viewed as innately present in all in-

dividuals regardless of their experience with their parents or the social structure of their environment.

In addition, the climate of scientific philosophizing was vastly altered in the 1900's by the formulations of electromagnetic theory and Einstein's theory of relativity. Freud had formulated his theories on the basis of the prevailing scientific model of the 19th century, i.e., the mechanical, physical model, represented by hydraulics and energy mechanics. And this was entirely appropriate for the late 1800's, before wave and quantum theory were elaborated to explain the physical world. However, the deficiencies of the mechanical model became glaringly apparent in the 1900's, when the principles of interaction, transactional theory, relativity, and the field theory concepts tended to emphasize the limitations of the mechanical model for the study of the behavior of particles, as well as man.

Sullivan's Scientific Orientation

This was the setting for Sullivan's intellectual development. The ultimate elaboration of his theories of personality within an "interpersonal" framework reflected the strong influence of his social scientist colleagues and his talent and interest in science in general. More specifically, Sullivan was dissatisfied with those psychological theories which depended upon extensive extrapolations from hypotheses which themselves could not be tested. He was particularly impatient with those psychoanalytic concepts which could not be validated because they were based on experiences which were beyond recall or because they required prior acceptance of certain variables, such as the aggressive or death instinct, as universal human attributes. Consequently, he insisted on formulating his concepts entirely from observable data.

Methodology. For example, instead of postulating a maternal instinct to explain the dominating interest of a mother in her child, or the desire of a woman to have children, Sullivan hypothesized that the tension of the infant's needs stimulate anxiety in the mother, which is manifested as tenderness and results in the care and attention that the infant requires. This proposition, which he called the "tenderness postulate," is described later on. It is possible to test the validity of this formulation by studying the effect of the needs of the infant on all adults in his immediate environment and then determining whether the biological mother is actually more involved with the infant than any other person or whether anyone who is capable of tenderness is not equally affected by the helplessness of the infant. Unlike the conception of a maternal instinct, which presupposes an innate interest and tenderness toward one's offspring, this proposition examines the phenomenon of motherhood and tenderness as an interpersonal development, dependent on the stimulation of anxiety in one person by the needs of another.

Similarly, Freud's assumption of an innate aggres-

siveness, known as an aggressive instinct, predetermines the observation and identification of a piece of behavior, since it is assumed that aggressive behavior is universally present. Sullivan suggested that the notion of an aggressive instinct be put aside and human behavior simply observed. It may be that evidences of aggressiveness will be discovered, but one can then proceed to explore the conditions under which it was produced, whether it is universally present as a primary phenomenon, or whether it is secondarily provoked by the behavior of another person. This is a critical matter and has been the subject of a great number of genetic, biological, and anthropological studies. The developmental child studies of Piaget, Gesell, and others strongly suggest that aggression is a secondary phenomenon rather than an innate one.

In this sense Sullivan limited his concepts to formulations which were capable of being tested and either validated or disproven. The prior assumption of an Oedipus complex or an aggressive instinct does not permit the investigator to observe human behavior objectively and without prejudice. Consequently, when one begins by assuming the existence of an aggressive instinct, and then aggression is noted in a child, this becomes evidence that such an instinct does indeed exist and only needs to be identified. If, on the other hand, one does not begin with this assumption, then one is free to speculate as to what elicited this specific reaction, rather than other possible reactions, and what circumstances are likely to produce an aggressive reaction rather than some other type of response.

Many of the early psychoanalytic hypotheses grew out of speculations and global interpretations based on a few intensive analytic studies. Data was then accumulated to affirm these hypotheses. Thus, once the notion of an innate Oedipus complex was proposed, the absence of confirmatory data was described as "denial of its presence," while the presence of data to confirm it was accepted at its face value. In contrast to this approach, Sullivan suggested that if the investigator begins afresh, without previous preconceptions, he will find the Oedipus complex present in a great many individuals. However, Sullivan insisted that the investigator would also find it absent in many individuals. Ideally, the investigator would then be stimulated to identify the factors which might account for its presence in one person and not in another, and this would greatly advance the understanding of this phenomenon.

In fact, the situation prevails in large areas of psychoanalytic theory, where present knowledge does not justify reified concepts. This can be demonstrated most succinctly in some of the prevailing notions on the psychology of the female. For example, the concept of penis envy states that the female not only experiences the absence of a penis as a loss and a denial, but actively envies the male in this respect.

This concept is an outgrowth of Freud's notion of the primacy of the male. Accordingly, a great deal of activity in the female, such as competitiveness with the male in occupational or aesthetic pursuits, or aggressive striving for status and esteem in so-called male areas of interest is automatically labeled penis envy and is derogated or viewed as abnormal if it extends beyond certain limits. However, if the female is studied without prefixed notions as to the components of her behavior, one might conclude that her activity derives from many sources, some of which are far removed from sexual envy. Her competitiveness or aggressive strivings might be a reaction to cultural restrictions and prejudices, as well as the result of a natural striving for achievement. Feminine interest in male pursuits can be viewed as an unwillingness to accept such distinctions which, after all, have been categorized in this way by the male. Sullivan did not allow such "established" concepts about the female to intrude upon his investigations; instead, he tried to study the origins of behavior in the context of a specific situation and within the framework of his subject's idiosyncratic personal history.

Clearly, when the observation and examination of data are guided by open-ended hypotheses which are capable of being proved or disproved, this is conducive to a more scientific approach to the study of human behavior. Sullivan's views generally encouraged such an approach.

Area of investigation. Sullivan defined psychiatry as the study of interpersonal relations which were manifest in observable behavior of individuals. While he had great interest in what transpired on the "inside" of an individual, he felt that the individual could be studied only in terms of his interaction with others. Thus, the main focus for Sullivan's study of man was man's transactions with others, and particularly the activity that transpired between them. The field of operation, or how one person behaved toward another, and how each person's behavior was affected by the behavior (both overt and covert) of the other, as well as the subjective experiences of each, was a valuable area of study. While these phenomena could be studied only with difficulty outside of the therapeutic situation, the process was greatly enhanced when the therapist was one of the participants, for then psychiatry became a transaction between the therapist, who was a participant-observer, and a client whose living was disturbed or disordered. For this reason, Sullivan's theories and concepts tended to be more operational and capable of being tested outside of a subjective framework. Their validity as a tool for scientific investigation was further enhanced by the fact that he took great pains to define his terms and to limit the boundaries of their application.

Not only were Sullivan's theories congenial to social scientists, because they stayed close to the traditional scientific methodology; they were also of interdisciplinary value because his emphasis on the

field rather than the individual gave greater prominence to the social and cultural context in which personality develops. This emphasis on the interpersonal, and a reliance only on data which are observable through gesture, verbalization, sign, or other communicative devices, has constituted the strength of his theoretical constructs, but it has also been a source of criticism: Sullivan felt that there was no way to study the individual's purely private, uncommunicated thoughts and fantasies. Therefore, it has been suggested that he neglected the uniquely personal elements of an individual's personality. While this is certainly true to a limited extent, the fact is that Sullivan believed that such study was the province of literature, rather than psychiatry. Thus, he justified his "neglect" of individuation as a proper concern and goal of human maturation, by insisting that psychiatry must deal with those human characteristics that were shared and communicated to others. He felt that these were fundamental issues involved in psychiatric disorders. Consequently, he was the paradigm of the ego psychologist. He saw man as an animal, biologically bound, whose potentialities and possibilities were determined by his culture. In summary, then, Sullivan defined psychiatry as the study of biological and conditioning processes which occur in situations in which the psychiatrist functions as participant-observer, the unit of study being the interpersonal situation.

Basic Theoretical Concepts

Sullivan formulated four basic postulates as the foundation for all his theories.

Biological postulate. This stated that man, as an animal, differs from all other animals in his cultural interdependence. Thus, man's functioning within his cultural matrix differs from the herd behavior which is characteristic of some animals; nor is the organization of human society patterned on the colonies created by ants and bees. These forms of communal living are instinctually derived, not volitionally determined. In contrast, man's cultural development is a function of his psychological, as well as his physiological dependence. More specifically, it stems from his growing capacity for tenderness, from his ability to develop an interest in another human being which is equal to his interest in himself.

Man's essentially human mode of functioning. Sullivan maintained that "man is more simply human than otherwise." This postulate implies that man, in the performance of his most diverse activities, is still closer to the human mode of functioning than to that of animals. It emphasizes the basic similarity between the most extreme behavior and the human mode of behavior, rather than resorting to analogous animal behavior to explain atypical human behavior. It tends thereby to encourage more simple explanations for complicated distortions of behavior, without evoking unnecessary or unsupported hypotheses de-

rived from myth or instinctual explanations. This does not obviate the value of animal studies, or comparisons between animal and human behavior. It only refines and restricts the application of the findings derived from such studies; they are useful only after the explanations deriving from our present knowledge of man have proven inadequate.

Significance of anxiety. This refers to the central role of anxiety in human development. It emphasizes the presence of anxiety, to varying degrees, in all human functioning, but postulates the impossibility of absolute states of anxiety, and, concomitantly, of absolute states of euphoria. The varying amounts of anxiety present in an individual will, in turn, determine his variable state of euphoria.

Tenderness postulate. This basic theoretical formulation has its roots in Sullivan's theories. It is an attempt to conceive of tenderness, in all its various manifestations, as an interpersonal development, rather than as an innate feeling present in the form of an instinct or a God-given virtue. Thus Sullivan states that "the activity of an infant which arises from the tension of his needs produces tension in the mothering one which is felt by her as tenderness." At first glance, this would seem to contradict another of Sullivan's concepts, i.e., that tension evokes anxiety which, in turn, necessitates the creation of defenses against the breakthrough of that anxiety.

In this instance, however, the anxiety which the tension of the infant's needs evokes in the mother is experienced by her as tenderness.

Thus, in this postulate Sullivan recognizes that anxiety does not always exert a disintegrating effect; nor does it always constitute an obstacle in interpersonal functioning. The needs of the infant, who is utterly dependent, will evoke a response of tenderness rather than irritation. Anxiety, then, can be viewed as a creative force, as well as an inevitable accompaniment of human growth. And within this framework, the development of tenderness can be visualized as a response to the need of others without exploitative or selfish motives. As pointed out earlier, this postulate is an excellent example of Sullivan's efforts to comprehend the intricacies of human attitudes and feelings as they emerge in the matrix of interpersonal relationships, rather than as innate tendencies.

The infant's need for tender concern, in addition to the fulfillment of his physiological needs, has been amply documented by the work of René Spitz, Margaret Ribble, Harry Harlow, and others. Usually, a maternal instinct is postulated to account for the mother's benevolence toward the infant. As mentioned earlier, Sullivan, in his disdain for instinctual explanations to account for global and complicated behavioral patterns, preferred to view the mother's impulse toward tenderness as a phenomenon aroused by the infant's needs. Moreover, this reaction to the tension of the infant is not confined to the infant's

biological mother; rather, the tension of the infant's biological needs may evoke a similar response in anyone else in the immediate life space of the infant. The caretaking individual reacts with tension, which manifests itself as behavior designed to meet the needs of the infant. This is described as tenderness and is the prototype of all tender activity in human behavior in which giving is the essential ingredient. As will be indicated in the following presentation, Sullivan's concepts of anxiety, love, hostility, etc. are all expressed in interpersonal equations, thereby eliminating instinctual, metaphysical, or theological presuppositions.

Goals of Human Behavior

All human beings have major goals which Sullivan called end states. The first goal is to fulfill the biological needs of the organism in terms of food, air, sex, etc. The second goal relates to man as an acculturated social being and involves those needs which go beyond the purely physiological necessities. These include the need for status, recognition, and a relationship with others. The first goal is called the need for satisfactions, and the second, the need for security.

Modes of need fulfillment (dynamisms). These needs are manifested as inner tensions, and the characteristic ways in which the individual strives to fulfill them are called dynamisms. The dynamism is the constellation of complex movements which constitute the specific activity designed to fulfill or overcome a need, whether it is a need for food, sex, or self-esteem. The infant's cry, for example, is the simple dynamism used to fulfill his multiple needs. As his needs become more complex, the dynamisms he employs become more complicated and varied. Most dynamisms serve to satisfy the basic needs of the individual, but the self-dynamism or self-system develops as a result of, and in response to, the basic anxiety engendered by these primitive needs. This is the personality structure which permits the satisfaction of more complex needs at later stages of development.

The dynamism involves a bodily zone such as the mouth or the genitals, but in the case of the self-dynamism, no bodily zone is involved. The presence of a particular bodily aperture in the dynamism gives it a special coloring. This concept of Sullivan's bears some similarity to Freud's theory of the sexual phases of psychosexual development, but there are also some marked differences. Freud considered these bodily zones to be the central determinant of behavior at specific phases of development. For example, for Freud, the oral phase of psychosexual development evolved around the biological qualities of the mouth as a receiving, sucking, biting aperture. These apertures were important to Sullivan too, but because they were the areas through which the individual established interpersonal contact. Thus the infant, whose biological needs are paramount and to whom

the mouth plays a crucial role as a vehicle for the satisfaction of his nutritional needs, tends to relate to the environment almost exclusively on an oral level. Therefore, the glottis and vocal chords, as well as the mouth, and a wide variety of sensory and tactile impressions, color the infant's experiences. It was this factor, rather than the accumulation of libido in the oral area, which made the oral aperture a significant area of personality development.

When a dynamism manages to achieve or fulfill a particular need, the tension of the need is removed, and the situation is described as having been integrated, satisfied, or resolved. However, many needs are either unfulfilled or only partially fulfilled by the dynamism. The success of a dynamism in fulfilling a need completely, particularly in regard to the need for security, is frequently interrupted by the presence or development of anxiety in the course of the operation of the dynamism. This is described as a disintegrated situation, in contrast to an integrated situation in which a need is fulfilled. Because anxiety can be a dysjunctive or disintegrative force when it interferes with the fulfillment of the individual's needs, Sullivan accorded it a central role in human psychological development and its vicissitudes.

Need for satisfaction. The failure to fulfill a biological need is not necessarily accompanied by anxiety, although there will be some associated somatic distress, such as hunger, thirst, or cold. While these sensations may propel the organism to action, they do not necessarily result in anxiety. It is primarily the failure to fulfill one's security needs that evokes anxiety. Furthermore, anxiety may be either the cause or the result of the failure to fulfill the need for security. However, the pursuit of biological satisfactions and the pursuit of security are intermingled and cannot be isolated in practice.

Need for security. In an affluent society, man's tensions are almost exclusively related to his need for security, which can be satisfied only through meaningful interpersonal relationships. If an individual has notable success in fulfilling both his biological and psychological needs, and he experiences a minimum of disintegrating situations, he will feel only a minimum of anxiety. The increasing power and confidence he feels with regard to his security will give rise to a feeling which Sullivan called self-esteem. A sufficient, albeit minimal amount of self-esteem is required to deal with the realistic feelings of powerlessness and helplessness which are evoked in man in the course of his lifetime. In more specific terms, self-esteem is directly related to the amount of anxiety the individual experiences in his daily life and his capacity to deal with it effectively. Therefore, mental illness, or personality disintegration, that results from excessive anxiety is intimately linked to the lack of self-esteem and self-regard, and the feeling of powerlessness in interpersonal activities. Just as there are no absolute states of freedom from anx-

iety or euphoria, no individual is totally devoid of self-esteem. Massive feelings of anxiety such as panic do occur, but these situations are fleeting and never permanent. Ordinarily, the degree of anxiety present in an individual extends over a broad continuum and is consistent with variations in his mental health or illness.

Modes of Experiencing

Sullivan's personality theory takes account of the role of cognition and learning in human development. Consequently, he distinguished between various modes of experiencing, and their influence on intellectual and emotional development. These modes of experiencing, which depend upon the development of cerebral capacities, as well as other physiological skills, permit the development of such psychological functions as differentiation, symbol formation, and other complex intellectual processes to occur. Since much learning occurs in an interpersonal context, the individual's capacity to comprehend such relationships and his mode of experiencing them will influence his learning capacity.

Prototaxic mode of experiencing. This is the earliest mode of experiencing and consists of raw, undifferentiated, momentary states. There is no connection between experience and the feelings or ideas within or outside oneself; consequently, such experiences seem to have cosmic and universal connections. They have no continuity of past with present or future and appear to be isolated and incomprehensible. Such experiencing is characteristic of infancy and occurs in mental illness, particularly schizophrenia.

Parataxic mode. In this mode, events appear to be causally related because of temporal relationships and serial connections. However, there need not be any logical relationships. Consequently, since cause is determined by temporal relationships, the opportunities for distortion are manifold. For example, the child who notices that his mother is angry when he enters her room may attribute the anger to his appearance, rather than to an earlier dispute she had with her husband. This kind of distorted thinking, which Sullivan calls parataxic, is not uncommon in human functioning, and it is an essential ingredient in the thinking of the paranoid in whom false referential interpretations arouse feelings of malevolence or danger.

Serial thinking of this kind is a stage in the development of logical thinking and is not, in itself, evidence of mental disorder, although it plays such a significant role in the maintenance of suspicious, superstitious, autistic, and paranoid thinking.

Syntactic or logical mode. In this type of experiencing, events are related through logical or rational thinking. It is this experience that has consensual validation and follows a logical train of deductions. Consequently, it is the most mature type of experiencing and represents the highest cognitive capacity

of which man is capable. To illustrate, if a group of people begin to laugh when the individual capable of logical thinking enters a room, he looks about and discovers that someone has just finished telling a funny story. In contrast, under similar circumstances, the individual whose mode of experience is governed by parataxic thinking would immediately conclude that the laughter had been provoked by his entrance. Obviously, the capacity for syntactic thinking requires comfortable amounts of self-esteem.

These three types of experiencing occur side by side in all individuals, and the process of maturation rarely achieves the level where experiencing follows the syntactic mode exclusively. Typically, most human beings function on all three levels, with a minimal amount of experiencing in the prototaxic mode. The neuroses and psychoses involve a great deal of perceptual distortion, initiated by the nonlogical, more primitive modes of experiencing. Viewed in this light, the cognitive distortions in mental illness appear more comprehensible and less alien to the functioning of "normal" people with more adequate adjustment.

Sullivan also emphasized the importance of foresight, which involves not only consideration of the future, but a consideration of the past in relation to the present and the future. Sullivan held that anxiety might seriously interfere with the crucial role of foresight in human behavior and, concomitantly, interrupt the learning process.

Learning

While Freud conceived of learning almost entirely in terms of the pain-pleasure principle, Sullivan amplified its role in personality development. He placed particular emphasis on learning as a way of minimizing anxiety, and the ultimate development of a self-system consisting of techniques for avoiding anxiety. In addition, he described a number of factors which are essential to the learning process, such as empathy, self-sentient activity, trial and error, reward and punishment, learning through imitation, and, ultimately, deduction and conceptualization. Learning, he maintained, was accelerated by lowering the anxiety gradient. On the other hand, however, he recognized that the initiation and motivation of the learning process depended on the presence of a certain amount of anxiety. Sullivan's description of self-sentient activity was a particular contribution to learning theory. This enables the individual to develop techniques for alleviating anxiety, boredom, or states of deficiency, through activities in which he is not only the provider, but the recipient of satisfaction. This is true of masturbation or intellectual pursuits, in which the rewards are the outcome of one's own initiative and action. However, this type of learning can be accelerated or impeded by cultural values and attitudes toward activity which provides pleasure through one's own capacities. For ex-

ample, some bodily manipulations are approved, while others, such as genital or anal manipulations, are strongly condemned. This is true of certain intellectual pursuits as well. As a result, exploratory activity may be abandoned, and interest in one's body and certain cultural areas cease. Such reactions may produce serious personality complications in later life.

Sullivan's interest in the individual as he becomes acculturated in the human environment encouraged his explorations in learning theory, which is currently playing an important role in the therapy of mental disorders.

Anxiety

Anxiety is the focal issue in personality development for the neo-Freudians, as it was for Freud himself. Like all other concepts developed by Sullivan, anxiety was seen as an interpersonal phenomenon and was described as the response to the feelings of disapproval from a significant adult. Thus, it can *only* occur in an interpersonal context, even if the other person is not real, but a phantasied or eidetic image. The feeling that he is disapproved of can be communicated to and interpreted by the individual in a variety of ways, or it can be falsely interpreted, as would be the case in prototaxic or parataxic experiencing. In any event, since anxiety is a most distressing feeling and may be accompanied by a variety of somatic symptoms, as well as psychological feelings of impending doom, it cannot be tolerated for long and must be dealt with.

In large measure, Sullivan views personality development as a process of learning to handle anxiety by the use of adaptive maneuvers and defensive techniques. Since anxiety stems from the feeling that one's security needs are threatened, essentially, these patterns are techniques for achieving security by gaining approval from significant people. They become incorporated into the self-system, which forms the matrix of the personality structure of the individual. When anxiety is widespread, the individual attempts to limit the opportunities for the further development of anxiety by restricting his functioning to familiar, well established patterns of activity. He avoids new and novel experiences, in order to reduce the risks of living. But in doing so, he also reduces his spontaneous activity and is limited to situations where he can predict the consequences of his actions.

In brief, the self-system may restrict and rigidly proscribe the activities of the individual and thereby interfere with learning and motivation. Thus, in attempting to achieve security, the self-system may actually make the individual more vulnerable. For example, in the process of maturation, the individual may develop and incorporate into his self-system a pattern of selective inattention. Selective inattention may enable the individual to focus on the relevant, and to dismiss the irrelevant. However, if it is em-

ployed extensively, it can become a technique which will enable him to overlook any instances of behavior that may be "upsetting" i.e., anxiety-provoking. In this way, a potentially valuable technique can become destructive and incapacitating if it is used too widely: it can restrict one's horizons and cut off opportunities for learning.

Sullivan's concept of anxiety is particularly valuable in the therapy of mental disorders. The presence of anxiety serves as a beacon, to facilitate identification of the patient's problem, and it highlights those elements of the patient's personality which he feels will meet with the therapist's disapproval. Exploration of the anxiety experience is the most fruitful and direct way of uncovering repressions and dissociations. However, as mentioned earlier, while anxiety usually carries a negative connotation, Sullivan pointed out that it may also constitute a positive force, propelling the individual toward learning new techniques and devices for dealing with it.

Role of Sex

In contrast to Freud, who maintained that sexual factors were of major significance from the earliest years, Sullivan felt that sex played its most significant role in the later developmental stages. This is not to devalue its significance in human affairs, since Sullivan was very cognizant of its intense capacity for initiating and sponsoring intimacy and relationship. However, he did not assign it a leading role in motivating the developmental processes, nor did he view sex as the primary source of neurotic or psychotic disturbance. In his view, sex entered the human scene during adolescence, when it served an essential function in integrating interpersonal, heterosexual intimacy. In view of the cultural attitudes and prejudices and the powerful effect of anxiety on sexual performance, the earlier experience of the individual may produce serious obstacles in the development of adequate sexual behavior. In this way he accounted for homosexuality and other sexual disorders as symptoms, rather than causes, of personality disorders. Phobic attitude toward the genitals or difficulties in sexual identification can prejudice the sexual performance in later life. Like other post-Freudian psychologists, Sullivan viewed lust as significant, but not central in man's behavior. He saw it as a biological function which has special capacities for pleasure. Because it requires physical intimacy, it can serve as the stage on which many other human needs are fulfilled.

Stages of Personality Development

Personality is a collection of processes which occur as an outgrowth of interpersonal experiences, rather than the unfolding of intrapsychic forces. For Sullivan, personality manifests itself only in relation to other human beings. It is embodied in the self-sys-

tem, and Sullivan described its development in terms of epochs which reflect the changes in the interpersonal environment of the maturing human being. He described six stages, which were subsequently condensed into five. (1) Infancy. From birth to the beginning of language (1½ to 2 years). (2) Childhood. From language to the need for compeers (2 to 5 years). (3) Juvenile era. From the need for compeers and the beginnings of formal education to preadolescence (5 to 8 or 9 years). (4) Preadolescence. From the beginning of the capacity for intimate relationships with peers of the same sex until genital maturity. (5) Adolescence. From the patterning of genital behavior with the opposite sex until maturity.

Infancy. This period of development is characterized by utter helplessness and dependence on the benevolence of other humans, particularly the mothering person. The infant's cry and his capacity to arouse tenderness in others are his only tools for satisfying his needs. The oral zone is the area of interaction with the world, and the development of feelings of security and self-esteem depend entirely upon the infant's capacity to fulfill his needs.

Anxiety makes its first appearance during this period as a result of the infant's failure to achieve satisfaction of his primary needs. The infant also experiences feelings of security or anxiety through a process of empathy. And he learns some techniques for dealing with anxiety; these include implementing his cry or somnolent detachment or apathy to avoid the tension of needs which produce physiological disequilibrium (dehydration, etc.), or the psychological feeling of total rejection. The cry which achieves such magical results in infancy takes on special significance in later years in the form of language.

This epoch also marks the beginning of symbol formation and the recognition of signs, particularly the forbidding gestures from others, which warn the infant to refrain from those activities which provoke such gestures. Repeated experiences with these forbidding gestures enable the infant to determine in advance which behavior is acceptable and which is not. Thus, the beginnings of the self-system are recognizable in infancy. In addition, the infant begins to develop a set of concepts of himself, as well as of others. Some aspects of his behavior which meet with approval are considered to be part of the "good me" personification; those which stimulate anxiety and disapproval are considered to be part of the "bad me." Other items of behavior which produce marked reactions of loathing, shame, or intense rejection may become part of the "not me," which can be repressed and dissociated. These may ultimately come to play an important role in the later development of neurosis or psychosis. Since Sullivan felt that sex does not play a major role in the developmental process until the gonads have matured, these "not me" personifications do not necessarily involve sexual or libidinal

transgressions, in contrast to the pregenital repressions which Freud described in such detail. However, the cultural attitudes toward genital and anal manipulation may stimulate enough anxiety in the infant and toddler to produce an avoidance of these areas. Sullivan called this genital avoidance a primary genital phobia, which he subsumed under the "not me" personification.

As mentioned above, the self-system begins to develop in infancy and becomes a technique for avoiding anxiety. However, as it expands, it may tend to restrict further experience, if the potential for anxiety is too great. If the self-system becomes too restrictive, it may interfere with the necessary experimentation and risk-taking which are essential for growth and may seriously impair development in later epochs. The degree of anxiety and the defenses against it which develop in the earliest period of personality development will strongly influence the child's capacity to benefit from the experiences in later periods.

Ultimately, the individual's self, or ego, is made up of reflected appraisals which represent the views that others have of him. If others treat us with respect and tenderness, then we treat ourselves with respect and tenderness. If the individual is viewed by others in a critical or derogatory way, or if he believes that others think of him this way (although this may be a distortion in perception), his view of himself may be derogatory. However, the self-system is never completely rigid, and it does allow for alteration and change through correction by later experiences or therapeutic intervention.

In summary, the self-system, which Sullivan preferred to the term "personality," is a reflection not only of maternal and paternal attitudes, but of an accumulated set of experiences which begin in infancy and continue for a long period of time.

Infancy is a crucial stage of development; the outcome will depend on the nature of the infant's interpersonal relationships with benevolent or malevolent individuals. These relationships can produce the infant's first experiences of trust, faith, feelings of power and esteem, or they may leave the infant uneasy and uncertain, with feelings of powerlessness and helplessness. In infancy, most needs are satisfied automatically with a minimum of stress, and only occasionally is the satisfaction of these needs characterized by restraint or limitation. However, as verbal skills mature and the infant's capacity to comprehend the limits of the environment develops, he begins to experience denial and limitation. When the sphincters mature, training of the bowels and bladder takes place, and the cultural requirements of propitious eating and socializing are inaugurated. This ushers in the period of childhood.

Childhood. This is the period of acculturation, when the individual learns the mores of the particular culture to which he belongs. Depending upon the

amount of anxiety present in infancy and the security operations he develops to reduce and eliminate it, the child can benefit, or fail to benefit, from the experiences in this era. The development of sphincter control, eating and dressing habits, and behavior toward adults and other children are all dependent upon the child's self-esteem and his capacity to deal effectively with the parental figures. Since learning is associated with considerable anxiety (through reward and punishment), the self-system begins to expand very rapidly. The development of language and the capacity to sublimate, which permits one to retain unacceptable needs by transforming them into acceptable channels of satisfaction, begin to manifest themselves.

The problem of becoming educated into the requirements of one's culture is often extremely difficult, not only because of unfavorable experiences in infancy, but because of the contradictory demands of the culture. The experiences of fear and anger, and the value of obsessive verbalization, e.g., "I'm sorry," or "excuse me," begin to manifest themselves. Concurrently, the need to hold firm by negative or resistive activities also becomes apparent. Willful activity, rather than compliant behavior, becomes a prominent part of dealing with powerful adults.

During this era a very significant process may occur called the "malevolent transformation," which has serious consequences for future living. When this happens, because the situation may demand it, the child begins to think of himself as bad or unworthy whenever he feels the need for tenderness. In the boy, the need for tenderness is considered unmanly and weak. Therefore, he denies this need, which tends to evoke anxiety. At the same time, the possibility of interpersonal relationships of tenderness and warmth is made impossible since, when they are offered, they are strongly rebuffed. Tenderness is transformed into malevolence, and the child becomes surrounded by a sea of hostility which he can deal with only by hostile or paranoid rejoinders.

Juvenile era. When the child begins to manifest a need for compeers, which generally coincides with the beginning of formal education in Western culture, he has entered the juvenile era. Generally, this occurs when he is about 5 years old. Now his interpersonal range moves beyond his own home and his own parents. He must share a common parental figure in the form of a teacher and deal with other individuals who have equal claims upon her. He must learn to deal with new authorities and to cooperate, compete, and compromise with his peers. There is a great expansion of his self-system and an opportunity to correct earlier distortions because of the presence of new significant adults in his life. Behavior which might have been a source of rejection or disapproval previously may now elicit rewards which could modify his earlier reactions.

The development of the capacity for cooperation

and compromise provides the background for the competitive skill which is an important ingredient in his ability to face cultural demands in later life. During this period, the child develops a clear cut personality and characteristic ways of dealing with others. So far, he has had little experience with sex, except for some expressed preference for friends of the same sex. As the child enters preadolescence, friendships have begun to develop.

Preadolescence. This period, ranging from approximately 8 to 12 years of age, is notable for the development of the capacity for love and collaboration with another human being of the same sex. It is devoid of sexual exchanges, however, since gonadal maturation has not yet occurred. Firm friendships are formed, and loyalty, devotion, and sharing of feelings and closeness with another human being are much in evidence. This era was labeled homosexual by Freud because these relationships were between individuals of the same sex. However, Sullivan felt that the lust dynamism had not yet developed. It is only because people of the same sex are more like one another and therefore easier to understand, with common interests and desires, that these relationships occur. Such intimacies in the later periods of preadolescence may involve sex, but essentially they involve intimacy devoid of sex. One begins to see the world as one's compeers see it. Values are shared and mutual concerns and interests are aired. Self-appraisals are clarified and strengthened, and the possibility for favorable change is present since opportunities for tenderness and closeness are more available. One begins to consider the importance of other people's needs as well as one's own, which is the essential ingredient of a loving, tender attitude.

Difficulties begin to manifest themselves toward the end of the era, as the sexual apparatus begins to mature and friendships dissolve due to interest in the opposite sex. If there is unequal maturing or if one chum is, for some reason, unequal to the task of moving into heterosexual relationships, then there may be a clinging to preadolescent intimacy which may become complicated by lust, producing homosexual behavior. However, lust is a very powerful dynamism and generally succeeds in forcing most people out of the comfortable and successful preadolescent friendships which have been established. The tendency to label this era as a homosexual stage of development has produced grave mischief and grief with regard to the friendships and intimacies of people of the same sex. The cultural prejudices and proscriptions which derive from such a view often serve to discourage the development of tenderness, which is necessary in the heterosexual patterning which is to occur in adolescence.

Adolescence. This is a stormy period in human development. It is the crossroad between the dependent child and the independent adult, with all the complicated patternings of sex, vocation, and future

value systems still to be resolved. Even if one enters this period with a fairly solid self-system as an outgrowth of good earlier experiences, it is a most difficult transition. If, however, one arrives at this juncture with weak self-esteem and a tendency toward anxiety in interpersonal encounters, the transition to heterosexuality and adulthood will be extremely difficult. Intimacy with another human being is now complicated by lust, and the adolescent must overcome a great many previous restraints on nonlustful intimacies and try to establish sexual involvements as well. In addition, he must separate himself from his family dependencies at a time when he is not entirely independent either economically or emotionally. While still a boy, he is trying to be a man. He must decide upon a career and develop standards and values for the future. Compromises must be reached in accepting the values of the adult world. While he is struggling with all these issues, he is expected to be acquiring and perfecting scholastic or technical skills which will provide him with future economic security. It is a tumultuous period in which one seeks one's own identity as a human being. Now the interpersonal exchanges are confused and ambiguous, requiring the adolescent to make adult decisions while retaining a child's prerogatives.

When heterosexual patternings are established and adult roles are assumed, the period of adolescence draws to a close, and the individual has arrived at adulthood. However, adulthood is not always synonymous with maturity, which is achieved only by a fortunate few. Maturity involves a self-respect which permits one to meet most situations with a capacity for intimate and collaborative relationships and loving attitudes—an understandably difficult achievement.

The foregoing is a brief summary of the development of normal personality. A great deal more learning and experiencing than has been described here takes place during these stages. The limits of such learning are defined by the innate capacity of the individual, the interpersonal atmosphere in which it occurs, and the capacities and emotional integrity of the persons involved in these interpersonal relationships. In addition, cultural requirements and historical, political, and economic conditions also influence the developmental demands on the individual. Sullivan emphasized these factors, while he took into account the biological necessities which are so clearly manifested in infancy, childhood, and adolescence.

Psychopathology

While anxiety is the dynamic propelling force for personality development, it is also the essential element in the production of the neuroses, psychoses, and other psychopathological phenomena. The self-system, or dynamism, described earlier, develops in response to anxiety. The techniques and patterns of behavior comprising the self-system aim at alleviat-

ing and eliminating the distressing effects of anxiety. These security operations are rarely entirely successful, and inevitably the anxiety manifests itself in symptoms which can be noted in all human activity. Such symptoms comprise the bulk of psychosomatic complaints, ties, mannerisms, stereotyped behavior, activity in dreams, etc. They are devices for discharging tensions or minimal outburst of anxiety, without necessitating the breakdown of over-all adaptive patterns.

In this sense, the self-system, by discharging tensions in acceptable ways and preventing more massive outbursts of anxiety, maintains the individual as an effective functioning entity. However, under extreme stress imposed by external demands, or the overwhelming pressures of internal needs, the protective armor of the self-system is inadequate to stem the tide and more massive disintegration occurs, producing the neuroses and psychoses.

Sullivan's concept of mental disorder arises directly out of his interpersonal concepts. The self-system develops directly in relation to interpersonal needs or the need to avoid disapproval from significant adults. As noted above, in the early development of the self-system, certain experiences are personified in terms of the "good me," "bad me," and "not me." In the same way, individuals are personified as the "good" mother or "bad" mother, and this way of perceiving others is retained as a lifetime pattern, as highlighted in the transference aspects of the therapeutic process. The "not me" personification and often the "bad me" personification lie outside immediate awareness. Mental disorder results when some of these dissociated processes erupt into awareness. The nature of the disorder and diagnosis depend on the way the self-system maintains or fails to maintain itself in the face of these crises.

The neuroses. Sullivan distinguishes between the substitutive (neurotic) and the disintegrative (psychotic) processes. He believed that in the neuroses certain tendencies are dissociated; were they to manifest themselves in actual living, massive outbursts of anxiety and panic would result. They are dealt with in substitutive ways, particularly by the obsessional devices of distraction and displacement. These substitutive devices produce symptoms which combine to form a syndrome and are given a particular label. For example, in the obsessional neuroses, the profound insecurities of the individual are held in check by the substitutive devices of magic and control through ritual. In hysteria, the major substitutive technique is a simple process of amnesia in which clear recognition of issues is avoided and somatic substitutions become the major area of relating to others. Sullivan did not concern himself with the conventional, nosological categories; therefore he did not describe the neurotic disorders under the traditional classifications.

When the process of substitution is used, in order to

maintain anxiety at a tolerable level, the individual uses other techniques as well, such as sublimation, which may be broadly defined as a way of making unacceptable impulses acceptable. In addition, there is the ubiquitous tendency toward selective inattention, in which aspects of experiencing that might upset or stimulate anxiety are simply not noticed. As pointed out earlier in this section, if this technique becomes too extensive, it may seriously impair perception and learning and be responsible for many major deficiencies in functioning. It may become the basis for considerable distortion in the perceptual process.

The elements of a neurotic process consist of personality devices or techniques, the function of which is to keep out of awareness those responses, reactions, and impulses which, if admitted to awareness, would produce serious personality disorganization. The neurotic symptom, therefore, is an adaptive reaction, the major function of which is to prevent disintegration of personality and promote repair. Sullivan's view of the obsessional disorder gives one a clear notion of his concepts of psychopathology. He studied this disorder in great detail, and it was his work in this area that led to his examination of the schizophrenic process.

Freud viewed obsessive symptoms as a compromise attempt to deal with ambivalent feelings and to prevent the expression of unacceptable aggressive or sexual impulses. The symptom, as he saw it, was not only a displaced substitute for the impulse, but also a partial satisfaction of it. Sullivan, on the other hand, viewed the obsessional process as one in which the individual attempts to exert maximal control over himself and the universe, in order to guarantee and protect himself against deep feelings of uncertainty and insecurity. He attempts to do this by the personal magic of compulsive ritual or obsessive, ruminative omniscient thinking. And he strives to achieve perfection, omnipotence, and omniscience so that he may be beyond criticism, rejection, or danger. He avoids commitment and involvement, since these contain emotional elements which cannot be controlled. Most obsessive symptomatology can be understood in this framework.

The somatic disorders which frequently accompany obsessional states are the result of the inner tensions produced by these neurotic demands. Sullivan believed that there is very little outlet, even in dreams, for dissociated impulses in the obsessional states; therefore, there is a constant need for control in order to avoid the feeling that one might explode.

The psychoses. When the dissociated impulses actually do go out of control and the self-dynamism fails to retain its integrative capacity, psychosis results. Since Sullivan was primarily interested in the schizophrenic disorders, he focused very little of his attention on the clarification of the affective psychoses.

Psychosis results when the repressed aspects of personality emerge into conscious awareness. These aspects are alien to the ego and disruptive to the usual, conventional, acceptable social processes, and they evoke a sense of loathing and shame. Consequently, their manifestation produces a violent reaction which results in panic. This is frequently followed by the disintegration manifested by an extremely regressed catatonic reaction. In this state the individual withdraws from reality and becomes wholly preoccupied with fantasy, in a cosmic struggle that usually consists of intense rage, stuporous immobility, or a combination of both.

The acute catatonic reaction is generally followed either by resolution of the conflict or by the development of more severe and chronic personality reformulations. The resolution of the conflict and a reintegration of the self-system are possible either through an alteration of the circumstances which led to the disintegration, or through a lessening of the demands on one's psyche. The crisis can then be overcome, and the individual can return to his former way of life, albeit with some minor alterations. If, however, the individual attempts to reconstruct or reintegrate his self-system by repressing all doubts about himself or by bolstering his inadequate self-system by invalid referential processes, he may then experience a paranoid reorganization of personality. In this solution to a schizophrenic disaster, the individual achieves some security and certainty by restructuring the world in "manageable" ways, even if they are viewed as hostile or unfriendly ways. This solution often closes off any therapeutic possibility, unless doubt can be introduced into the self-contained and self-consistent paranoid system.

However, there are other possible solutions as well. Instead of an intellectually organized solution, such as the paranoid formulation, there can be a hebephrenic dilapidation in which emotional deterioration seems to be central. The individual gives up any attempt to view the world in coherent, systematic terms, and it becomes a totally illogical and meaningless world. Exchange and relationships are made impossible because of his determined effort to ward off involvement.

All these outcomes are elucidated within the framework of Sullivan's interpersonal theory. The various solutions to acute psychotic reactions are seen as attempts to avoid, or to set up new interpersonal relationships, and the behavior of both the neurotic and the psychotic patient is made comprehensible by viewing it in interpersonal terms. The neurotic, by his substitutive processes, and the psychotic, through his reconstructive processes, attempt to achieve security and to avoid anxiety by relating to others from the vantage point of the neurotic or psychotic adjustments. The various categories of schizophrenia which are traditionally described as separate disorders were viewed by Sullivan as attempts at solu-

tion of the catatonic reaction. In his view, they all constitute restitutive processes rather than nosological categories.

Sullivan developed a psychological explanation for the etiology of schizophrenic disorder, and brought it directly into the nexus of personality theory by demonstrating that schizophrenic processes were never very far from the normal processes in living. In contrast to the prevailing theories regarding the etiology of schizophrenia, which were either of an organic, constitutional, or hereditary nature, Sullivan demonstrated that schizophrenia can develop as a direct outgrowth of psychological issues and that it could occur in any individual. Schizophrenia, which he differentiated from dementia praecox, is a personality distortion which grows out of a complicated and warped interpersonal history. He documented this notion in a series of fascinating case histories in which he might relate a particular delusional development, for example, to a series of interpersonal complications. The anxiety which resulted stimulated defensive operations designed to cope with these pressures. Thus, by demonstrating the origins of schizophrenia in the distortions of personality development, he stimulated the hope of a possible therapeutic resolution of this disorder through an unraveling of the history of its development.

Sullivan's concepts of neurosis and psychosis enabled the therapist to develop skills in dealing with schizophrenic illness through psychological techniques. Frieda Fromm-Reichmann and others have made notable contributions to psychiatry by applying Sullivan's concepts to the treatment of schizophrenia.

Treatment Techniques

Sullivan's views on therapy were a direct outgrowth of his conviction that psychiatry is the study of interpersonal processes, in which the psychiatrist functions as participant-observer. Since his concept of pathology is intimately tied to the self-system which develops out of the need to minimize anxiety, the focus in therapy is on anxiety and the interpersonal context in which it occurs. Sullivan viewed therapy as a succession of psychiatric interviews in which the psychiatrist is a participant in the exploratory process and an observer of trends in the patient which the patient's defensive patterns prevent him from noticing. The focus in therapy is on discovering how the patient came to be the kind of person he is, with his defenses and insecurities which have produced complications and difficulties in living.

Sullivan felt that the manner in which this could be pursued most effectively was through the investigation of anxiety, which will permit patient and therapist to see what the patient's insecurities are and where they lie, how they became stimulated in life situations and what defenses the patient uses to deal with them. This is achieved by dealing with sit-

uations in the present which could lead to the recall of earlier experiences. In this way, one can discover what was dissociated and why the patient had to keep it out of awareness. One can then assist the patient to permit the dissociated feelings or attitudes to come into awareness, thereby obviating the need for substitutive devices (neuroses) or disintegrative processes (psychoses). Briefly stated, this is Sullivan's philosophy of therapy.

He introduced a large number of parameters into the classical therapeutic technique. While he recognized the value of free association, dream analysis, and other symbolic reconstructions, his main emphasis was on the communicative process and what it could reveal regarding the patient's response to anxiety. The genetic reconstruction of the symptom took second place to data of recent origin, which were less prone to distortion. The use of the couch or the frequency of visits depended upon the needs of the particular patient, specifically, his dependency, financial status, degree of incapacity, etc., rather than on predetermined rules of procedure.

Sullivan believed that the process of therapy required the active participation of the therapist; therefore, anonymity was not considered a virtue. His view of transference phenomena differed from Freud's, and he developed the concept of parataxic distortion instead. With this concept he extended the notion of transference to include the multitude of distortions which develop out of parataxic interpretations of one's experience, not only with one's parents but also with other people such as teachers, friends, colleagues, etc. Because of the active role played by the therapist, counter-transference becomes an important technique in the therapeutic process. The use of dreams, free association, and other symbolic interpretations play a major role, as they do in classical psychoanalytic treatment. However, Sullivan insisted that such activities be pointed and directed at some particular question being explored at the moment and not used in an open-ended, unstructured inquiry. Values are part of the therapeutic process, to the extent that the therapist's feeling and attitudes could not and should not be kept out of the process. Such issues, however, need to be clearly understood and should always be used in the interest of enhancing the therapeutic process. Sullivan himself was a gifted, highly competent therapist who made great use of sarcasm and humor and demonstrated the value of such maneuvers in accelerating therapy.

The following is an abbreviated description of the treatment of a case of obsessional neurosis which demonstrates the main outlines of Sullivan's therapeutic technique.

The patient was a 24-year-old man who had spastic colitis and recurrent anxiety attacks. He was a bright, competent individual who insisted on immediate rewards and acknowledgement for skills he felt he possessed, but had not yet demonstrated. He was intensely anxious about every piece of

work he did and fearful of criticism. He expected his performances to be perfect. He could admit to no deficiency or error and needed to feel omniscient and omnipotent. His rituals were attempts to guarantee "superman" performances.

Treatment began by obtaining detailed data about his anxieties and the interpersonal relationships in which they occurred, with the aim of exploring some of his dissociated concerns about absolute security and invulnerability. His substitutive devices and rationalized explanations were exposed and he was able to see the patterns he used in trying to avoid anxiety. His verbal and gestural communications tended to obfuscate and confuse the relevant issues in his disorder, while his free associations tended to ramble and to be trivial. Active interference was required to bring him back to the point, in order to explore any issue at length. To help him recognize what his obsessional patterns were attempting to do, there was a constant necessity to focus on recent data; otherwise his obsessive doubts would cloud any interpretation in order to reduce its effectiveness. For example, often, his attempts to recall early experiences were clearly related to his wish to avoid exploration of a recent anxiety attack. Direct confrontation and questioning, as well as intervention, were regularly required to keep his communications within manageable limits, lest the interviews become rambling and evasive, with typical obsessional attempts to avoid the significant issues.

The therapist's activities stirred up considerable reactions of anxiety, defensiveness, counterattack, etc., during the therapeutic hour, and revealed the patient's typical patterns of behavior. Interpretation of these reactions enabled the patient to see how his perceptions were distorted by his expectations and the extent to which they were influenced by his neurotic needs. In this way, abundant transference data were produced, and the counter-transference reactions of the therapist toward the patient's excesses enabled the patient to see how his behavior affected others. Because of his need to be right and beyond criticism, every interpretation was viewed as an attack, and the therapist needed to demonstrate the distortion by becoming personally involved in the issue instead of objectively pointing out the patient's distortion. Dreams and other symbolic material were dealt with only to the extent that they clarified immediate issues and had relevance to current data. Intellectual discussions and the introduction of psychiatric terms were strenuously avoided.

When some clarification of the patient's anxieties was achieved and an understanding of some of his efforts at certainty and "guaranteed living" was arrived at the patient was encouraged to test out new patterns of behavior. He received strong support in taking risks and abandoning obsessional security operations, without overidentifying with the results.

Thus, therapy takes on many aspects of a learning experience in which the discomforts of learning new responses must be minimized by support and encouragement. The reconstruction of the individual's functioning without the props of obsessional devices is a difficult and painful process, and the patient must be prepared to experience some anxieties and helped to bear them. Therapy does not continue indefinitely but is gradually abandoned as the individual's skill in achieving improved interpersonal relationships develops. Since one must avoid trying to achieve a total cure or complete reconstruction of the personality (which, in itself, would be an obsessional pattern), the patient must recognize that being human means having anxieties and being vulnerable and insecure at times.

The therapeutic process was, for Sullivan, not only

an exploratory process for uncovering repressed or dissociated material, but also a learning process in which the restructuring of new patterns must be assisted. There is no special emphasis on sex, other than its role in the patient's life, and the sexual development of the patient is significant only to the extent that it elucidates the growth of his interpersonal capacities. The schema of personality development that Sullivan proposed becomes useful in assessing the interpersonal thwarts and complications and in identifying the stage of development at which such difficulties began.

Sullivan felt that therapy could be terminated when the person's perceptions of himself and others were "consensually validated." This is another way of saying that when a patient's capacity to see himself is validated by the view others have of him and is free of substitutive devices, and when his self-respect is adequate to withstand any view of himself by others, he can be considered to have achieved sufficient maturity.

Sullivan made his greatest contributions in the therapy of the psychoses. His notions that the schizophrenic responses were adaptive and restitutive enabled the therapist to understand a great deal of the confused and symbolic communications of the patient. Psychotherapy became recognized as a possible method for reversing the disintegrative process and was widely used, despite Freud's belief that psychoanalysis could not be effective in the psychoses. Sullivan's technique required modification of the classical model, but it made major inroads in the therapy and comprehension of the psychoses.

Since Sullivan believed that schizophrenia, like all other forms of mental illness, was due to some distortion or deficit in the development of interpersonal relationships, essentially, his therapeutic approach was similar to that used in the neuroses. However, the modifications introduced took into account the difficulties in communication as well as the schizophrenic's problems in relating to other people. In dealing with the schizophrenic patient, Sullivan attempted to develop his trust and participation by sharing his fear and anguish. He was not interested only in the patient's verbalizations, but in his non-verbal behavior as well. And he focused throughout on comprehending the anxiety that pervaded the schizophrenic's functioning, and which required such extreme defenses.

He attempted to actively encourage and stimulate the patient's interest in the therapeutic process. To do this, he would freely interpret the symbolic verbalizations or gestures and mannerisms of the patient. He did not hesitate to offer help and guidance in order to stimulate confidence and trust in the process. The goal of therapy was to enable the patient to recognize the source of his anxiety and to overcome his defective patterns by learning to deal with them in a more adaptive way. He was often content to settle for so-

cial recoveries; that is, manipulating the patient's life so that he would be exposed to situations which were less demanding and anxiety-provoking. He felt sufficient respect for the schizophrenic dilemma to realize that the passage of time during the illness often permanently incapacitated the patient, in terms of his return to a full social existence.

Sullivan's techniques required that the therapist know intuitively what was happening inside the patient and that he achieve rapport with him at that level, instead of following some rigid requirement of psychological theory. He would encourage and countenance any maneuver that contributed to understanding the illness, as long as it did not aggravate the illness, arouse anxiety unnecessarily, or show disrespect for the patient. Eventually, he hoped to strengthen the patient's self-esteem so that situations or relationships which had previously stirred up anxiety would now be dealt with in a diminished state of tension.

Sullivan did not feel that any limitations had to be imposed on the therapeutic process because the patient was catatonic or uncommunicative or actively paranoid. Instead, he would adapt his communications to encourage the patient's participation by making provocative statements or by actively becoming involved in his illness.

Finally, Sullivan experimented with milieu therapy by providing personnel in the hospital wards who he felt had greater empathy for the schizophrenic patient. This project did not fulfill his expectations; it provided, nevertheless, a strong impetus for later interest in the effects of the environment of the hospital ward on the patient's illness.

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7.4 ERICH FROMM

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Introduction

Erich Fromm studied psychology and sociology at the University of Heidelberg and subsequently received orthodox psychoanalytic training in Munich and at the famous Berlin Psychoanalytic Institute before he emigrated to the United States in 1933. However, although he has drawn liberally from classical psychoanalytic thought, his focus of interest has been the relationship between man and his society. Thus his theories reflect the orientation of the social scientist, rather than the classical psychoanalyst's concern with the individual, *per se*. Insofar as he has sought to elucidate the relationship between psychological functioning and social milieu, his basic formulations are closely associated with the dynamic cultural positions of Adler, Sullivan, and Horney. Within this frame of reference, Fromm has contributed important insights into individual psychodynamics and their relationship to historical and socioeconomic concepts, which have exerted a significant influence on the layman, as well as on psychoanalysts, psychologists, sociologists, and philosophers.

Fromm and Freud: Major differences. In general, Fromm has been critical of many of Freud's formulations which he considers either inadequate or misleading because of their overemphasis on certain developmental phenomena. However, the chief target of his criticism has been Freud's concept of the source and nature of psychic energy, i.e., his libido theory. As opposed to the view of classical psychoanalysis, Fromm believes that "the fundamental basis of character is not seen in various types of libido organization but in specific kinds of a person's relatedness to the world," in the action of acquiring things and relating to people. Fromm has also been critical of Freud's failure to devote sufficient attention to the analysis of the mature or genital character, and he has differed sharply with the position of classical psychoanalysis with respect to the significance of dreams. While Freud defined dreams as the expression of the individual's irrational aspects, Fromm assumes that the dream "can be the expression both of the lowest and most irrational and of the highest and most valuable functions of our minds." Finally, Fromm has emphasized his disagreement with Freud's concept of

self-love as selfishness. In contrast, Fromm believes that selfishness is actually the opposite of self-love, which is really self-affirmation, which, in turn, is the basis for the capacity to love others.

Fromm's Theory of Personality

Man and society. Fromm recognizes that man's behavior is motivated by his biological requirements. However, he contends that man's adaptation is not related solely to the satisfaction or frustration of his instinctual or libidinal needs. Rather, human motivation (and behavior) are culturally determined, and society generates new needs and problems which are superimposed upon man's instinctual needs and are as imperative as the instinctual demands of hunger, thirst, and sexuality, if not more so. To quote from *Escape from Freedom*, the first volume Fromm published in this country in 1941, given the presence of certain universal instincts, "Those drives which make for the differences in men's character, like love and hatred, the lust for power and the yearning for submission, the enjoyment of sensuous pleasure and the fear of it, are products of the social process," not a part of a fixed and biologically given human nature. Thus, Fromm believes that society has a creative as well as a suppressing function; that man's passions and anxieties are, for the most part, products of his culture; and that man himself is the most important creation and achievement of the human effort of history.

Man's quest for meaning. Fromm draws an extensive analogy between individual development and the history of mankind. Man's biological helplessness at birth is the prime cause of the emergence of his specifically human qualities, e.g., his subsequent awareness of himself as a separate entity; his ability to remember the past and to visualize the future; his capacity for conceptualization and symbolization; and, finally, his realization that death is inevitable. These qualities give rise, in turn, to certain existential dichotomies—an awareness of being one with nature, yet transcending it; the hope for immortality, on the one hand, and the knowledge that death is inevitable, on the other. The human condition drives man to resolve these incompatibilities. Religion, with its promise of an eternal life, represents one such attempt at resolution. There are also historical dichotomies, such as that of abundance versus scarcity. However, these may be resolved through human wisdom and effort.

Above all, man differs from other animals because he has become separated from nature and other men; as a result he is overwhelmed by feelings of loneliness and isolation. He is compelled to relate significantly to self and others, to give his life meaning through the realization of his powers to reason and to love and of his capacity for productive activity. This provides the necessary frame of reference which will enable him to answer the questions of what he is and how he can best implement his search for meaning and belonging. This

human need for meaning and belonging is the key concept in Fromm's theory.

Separation and individuation. Just as man's history begins with his awareness that he is separate from nature, so the growth of individuality begins with separation of the newborn from the mother; separation occurs first through the physiological birth process and then through the individual's gradual psychological awareness of himself as an entity distinct from mother and other objects. Education, which necessarily involves frustration and prohibition, sharpens this awareness of separateness; once the primary ties of infancy have been broken, the child learns to use his own unique powers. And, gradually, he achieves greater physical, mental, and emotional integration, leading to the development of a structured self, guided by will and reason. Ideally, dependency is gradually surrendered.

On the other hand, the child's primary ties to his parents have given him a sense of security and belonging, which growth and individuation threaten to destroy. Confronted with an external world which appears strong and threatening, the growing child feels powerless and anxious. If his early experiences were unfavorable, in that he was deprived of respect, warmth, and affection, and if he failed to achieve confidence in his capacities as a result, the child will find the problems of individuation and isolation difficult, if not actually agonizing and insoluble. Generally, there is a lag between individuation and the development of a sense of security which is based on confidence in one's own capacities (rather than the omnipotence of one's parents). During this period the individual whose early environment was "unhealthy" may find his impotence and isolation intolerable; he may then seek to surrender his individuality and re-establish his dependency through one of several mechanisms of escape. These mechanisms, which include specific forms of neurosis, i.e., masochism, sadism, destructiveness, and automaton conformity, are discussed in further detail below, as pathological phenomena.

Theories of personality development. Fromm's theories of personality development are in harmony with his hypothesis that man relates to his world, either through acquiring and assimilating things ("assimilation") or by relating to people and to himself ("socialization"). He can take things or produce them himself, to satisfy his needs. But he must also associate with others in work, play, and sexual activities. Complete isolation is incompatible with sanity. The specific way in which the individual relates, that is, whether love or hate is predominant, competition or cooperation, freedom or oppression, is an expression of his personality or character.

Socialization may take one of five forms or orientations, which correspond to five types of assimilation. Socialization orientations include masochism, sadism, destructiveness, automaton conformity, and love. And

these are correlated with the orientations of assimilation which emerge as the receptive, exploitative, hoarding, marketing, and productive characters. Thus, for example, the receptive character is a masochistic person. These classifications are ideal constructs. In reality, human personalities are mixtures of these orientations, although one is usually predominant.

Temperament, as the mode of reaction to experience, is constitutional. As such, it influences the character of the activity in the several personality types. For example, the productive or loving personality with a choleric or irritable temperament will react vigorously to love; on the other hand, the sadistic person with this temperament will react vigorously to submissiveness in another. In this sense, personality, through which energy directed outward to the world is channeled, is the counterpart of the instinctual mechanism of the animal.

The family, the psychic agent of society, forms the child's character by compelling him to become a person who wants to do what is required of him as an effective member of society. Thus the core of personality is the "social character," on which the individual orientations are then superimposed. The reason why certain social character patterns predominate, rather than others, is a sociological problem. In any event, the social and individual character orientations are the end zones of a continuum which ranges from the conventionally patterned to the most idiosyncratic individual, as described below.

The receptive character. The receptive character, whose socialization orientation is basically masochistic, believes that his needs must be fulfilled by an external source, not through his own efforts. In fact, he feels inadequate and helpless. Therefore, he seeks a magic helper and becomes anxious when his "supply line" is threatened. Feudal societies fostered this orientation, which corresponds to the Freudian oral-passive type.

The exploitative character. This basically sadistic character, which corresponds to the Freudian oral-aggressive personality, attempts to seize what he requires from others, including things, ideas, friends, or mates. He is hostile, manipulative, envious, and cynical. Sociologically, he resembles the feudal robber barons and the "adventure capitalists" of the 19th century.

The hoarding character. Like the Freudian anal personality, the security of the hoarding character derives from his hoarding and saving activities. Spending arouses anxiety. Love is possession. He is orderly and pedantic, but generally sterile. Thus mastery is achieved through order and remoteness. Sociologically, this type corresponds to the bourgeois, Calvinistic-Puritan personality which was a product of the period of transition from feudalism to capitalism.

The marketing character. The marketing character, a product of modern society, is the automaton conformist. In this nonproductive orientation, indi-

vidual qualities have no intrinsic value. Personality is a commodity for sale; and there are fashions in personality just as there are in other commodities. Moreover, as might be expected, there is no genuineness or stability in human relationships. The classic example is the mythical character of Peer Gynt, who tries to find himself beneath layers of superficial values, only to find that he has no inner core of truth.

The productive character. This is the only productive orientation in Fromm's schema, and thus far it has not characterized society at any stage of its historical development, although Fromm has sufficient faith in humanity to believe that man will ultimately have the courage "to be himself and to be for himself." The criteria of productivity are the ability to reason independently and the ability to love. Love is a human capacity, but difficult to realize. As an expression of productiveness, genuine love implies care, respect, responsibility, and knowledge. The ability to love is acquired through loving specific individuals, such as members of one's family. Love for self is not incompatible with love for others; rather, the two are interdependent. Modern culture has produced individuals who cannot love themselves and who, therefore, cannot love others. The productive personality has many virtues; but these do not exceed appropriate limits. Thus, he is adaptable, but not unprincipled; he is active, but not exploitative. Finally, when productiveness is dominant, it tends to transform the nonproductive orientations in the personality. Under such circumstances, a tendency toward submission, for example, becomes devotion.

Authoritarianism is a basic concept of Fromm's thought. It is the most general mechanism of escape from the sense of isolation by seeking external powers, whether personal and direct, as that of a leader, or impersonal, as that of God. All forms of this mechanism serve to avoid personal responsibility and stultify the individual's creative productivity and growth. Basically, "the power to act creates a need to use this power and failure to use it results in dysfunction and unhappiness."

Fromm is averse to the anatomization of personality structure. Simply stated, he believes that only a spontaneous, integrated self can ensure the individual's successful relationship with his world. Therefore, since sex, for example, is only one of man's basic needs, it cannot function as a nuclear explanatory principle, nor can adequate sexual functioning be considered the sole prerequisite for happiness. "Happiness" is the result of free, productive activity which extends well beyond the limits of this single sphere of activity.

Theory of Psychopathology

Fromm has not dealt specifically with the differential diagnosis of mental disorders; he is concerned primarily with the role of modern society in the pathogenesis of such disorders. Accordingly, his main theo-

retical emphasis is on the neurotic mechanisms used by man to escape from the basic dichotomies in human existence. As mentioned earlier, these include masochism, sadism, destructiveness, automaton conformity, and neurosis.

Masochism. Masochism and sadism are usually conjoined in the sadomasochistic or authoritarian personality. The sadomasochistic person in whom masochism predominates feels inferior and insignificant, never experiencing the fulfillment and joy of freedom, which he fears. However, masochism does permit some sense of relatedness to others, despite the fact that such an individual remains weak, helpless, and dependent beneath his mask of love, loyalty, and devotion.

Sadism. Fromm delineates three types of sadistic behavior: (1) making others dependent by wielding unrestricted power over them; (2) exploiting and robbing others materially, intellectually, or emotionally; or (3) making others suffer. Actually, the sadist is not strong and independent, but weak and helpless. Unless he is able to dominate someone, he feels isolated and alone. Either trend (i.e., masochism or sadism) may predominate in the sadomasochistic personality. Anxiety arises when such a person is neither dominating nor submissive.

Destructiveness. The destructive person tries to destroy or eliminate another person or object who represents a potential basis for comparison or threat. Fromm formulated the attitude of this character type as follows: "I can escape the feeling of my own powerlessness in comparison with the world outside myself by destroying it." Such irrational destructiveness may masquerade as love, duty, or patriotism.

Automaton conformity. Some degree of conformity is required in any culture, of course. But in automaton conformity, the entire personality is dependent on the cultural pattern, and the individual becomes what others are and expect him to be. His fear of aloneness is overcome by thinking, feeling, and acting exactly like everyone else in his culture or group. A pseudo self is created.

Fromm sees these neurotic and characterological deformations as attempts to escape from the warping, alienating effects of a society that denies man's basic needs for relatedness, transcendence, rootedness, identity, and a stable frame of reference for the perception and comprehension of his world. It is the "sick" society that drives man into insanity, self-destruction, and antisocial behavior. The family communicates its traditional pathological mechanisms and social irrationalities to the child and reinforces these by communicating its feelings of hostility and anxiety.

Treated with hostility instead of warmth and respect, deprived of confidence in his own capacities, the child finds individuation difficult or impossible, and the escape devices described above are called into being.

Therapeutic Principles

Fromm has not developed a separate psychotherapeutic method. Instead, he has drawn freely upon other systems, particularly Freudian techniques. However, he differs from both the Freudian and the Jungian approaches in his use of dreams as a therapeutic tool. Specifically, Fromm believes that dreams reflect the rational, as well as the irrational aspects of personality. He has also introduced modifications in orthodox psychoanalytic technique with respect to the frequency of treatment sessions, use of the couch, sole reliance on free association; he has, in addition, advocated greater emphasis on current life situations. Finally, Fromm contends that the therapist must play a more active role in treatment. This stems, in turn, from his belief that insight must derive from experience which has an affective quality if it is to be therapeutically effective, and that this insight will determine the outcome of man's innate struggle toward health. Above all, Fromm is concerned with the requirements for a sane society, as a matrix for the creation of the productive, fully human man. Ideally, this would be a humanistic, communitarian society in which man could relate to others creatively as an individual, rather than a conformist.

Current Perspectives

Erich Fromm has not created a separate school of psychoanalysis, although his ideas have been adopted by many psychotherapists. He was chairman of the faculty of the William Alanson White Institute of Psychiatry, Psychoanalysis and Psychology in New York City for many years. At present, he holds the position of Professor at the National University of Mexico where he teaches psychiatry and psychoanalysis, is Director of Psychoanalytic Training, and exerts considerable influence. In addition, Fromm's appeal to the general public remains undiminished, and he spends several months each year in New York City, lecturing to lay and professional audiences.

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7.5 SANDOR RADO

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Introduction

Definition. Adaptational psychodynamics is the term used to refer to a body of psychoanalytic theory originally formulated and systematized by Sandor Rado and widely disseminated among many generations of psychoanalytic students. Early in his career, Rado worked closely with Freud and achieved eminence as an outstanding classical theorist and educator. Gradually, in the course of his work, Rado became increasingly aware of the need to rebuild classical psychoanalytic theory to conform to the criteria of biological science and scientific methodology. The accumulated clinical observations of classical psychoanalysis have been preserved as the basis of the newer adaptational theory. However, the explanatory principles have been revised so that they may truly serve to clarify and elucidate the data to be organized and explained, and the theory has been restructured to provide hypotheses capable of validation and suggestive of new research. The theory of adaptational psychodynamics also attempts to provide a basis for transoperational correlation with other scientific disciplines. It has been described by Rado as the "introspectional branch of human biology." As such, it postulates a basic theory of the science of behavior of the total organism.

Orientation

Areas of emphasis. During the development of adaptational theory, classical psychoanalytic theory was subjected to meticulous examination and scientific criticism; a partial report of the conclusions drawn from this examination is presented in this section. In general, this review served to underscore the importance of literate and detailed descriptions of clinical observations. It often seemed that the more abstract and poetic the theory, the more removed it became from the clinical data from which it supposedly derived. Extensive descriptions of clinical observations comprise the basic data which must then be organized and clarified through theory formation.

Review also pointed up the need for the precise and explicit definition of all technical terms. It was felt that deficiencies in definition and description in the body of classical clinical and theoretical psychoanalytic theory, as reflected in its literature and teaching, had assumed serious proportions. The attempt to preserve outworn theory by increasing patchwork on the libido theory, by refining the definition of energy sources, and by postulating subtler cathexes on

subtler structures had led to scholastic dogmatisms rather than recognizable scientific statements.

Finally, adaptational psychodynamics strives to establish a correlation between psychological knowledge, gained through introspection, and the physiological findings derived from the inspective sciences. Freud believed that psychological functioning would ultimately be explained in organic terms but felt that the knowledge of neurophysiology then available was inadequate for this task. Rado believes that the introspectional and inspectional aspects of brain activity must be correlated by cross-interpretation and that the theory must be open to new knowledge which would continually increase the degree of correspondence.

Psychoanalysis as science. Orthodox psychoanalytic theories served the proper function of scientific theory at the initial stages in the development of the science. More specifically, they represented a first attempt to organize overwhelming, chaotic, and novel psychic data which had been elicited through the use of a revolutionary technique which was misnamed "free association." The theories which interpreted these data provoked new questions and stimulated new areas of research and thereby fulfilled the basic function of all scientific theory.

Thus, subsequent direct studies of the behavior of the child were inspired by Freud's retrospectively based hypotheses concerning the emotional life of children and the stages of psychosexual development. The scientific value of classical psychoanalytic theory is also evident in the stimulus Freud's anthropological speculations provided for modern systematic comparative anthropological research into personality development in diverse cultures with varying child-rearing practices. Nor is the significance of this contribution diminished by the fact that Freud's original hypotheses which drew on the meager cultural knowledge then available and those that resulted from his misapplication of Haeckel's law of recapitulation ("ontogeny recapitulates phylogeny") to sociology were disproven later in the light of subsequent knowledge.

On the other hand, classical psychoanalytic theory includes constructs which are inadequate and misleading, such as those which postulate an innate normal progression of pleasure-seeking behavior through various phases (including a homosexual stage and a latency period) which are organized around the specific "erogenous zones." And Freud's dual instinct theory is not a scientific theory at all, since it does not permit testable study of clinical phenomena; nor can it be validated by any scientific method. Rather, it represents a philosophical abstract description of the origins of behavior which, according to the adaptational school, is remote from the real motives which govern behavior. Another example of differences with the adaptational viewpoint is Freud's conten-

tion that neuroses arise solely as a result of difficulties in the resolution of the Oedipus complex.

More precisely, Freud's original theory of mental functioning was built around his concepts concerning six elements considered essentially sound by the adaptational school: (1) motivation, (2) pleasure seeking and pain avoidance, (3) repression, (4) mental mechanisms, (5) mental apparatus, and (6) evolutionary and individual history. However, after 1905, Freud's tendency toward speculation increased, as evidenced by his arbitrary expansion of his sexual theory and his introduction of the animistic concept of "instinct." Thereafter, he persisted in the development of mystic animistic concepts, despite his own warning that the instincts were vague and mythological and that his tripartite model of the mind was not to be interpreted literally. Adaptational psychodynamics discards these hypotheses and procedures and reverts to the body of factual knowledge and sound mechanistic theory which were characteristic of Freud's early approach. Only through reorganization which will enable "transoperational correlation with the findings of science" can psychoanalytic theory achieve the goal Freud set for it.

Methodological principles. Adaptational psychodynamics treats the historic concern over the mind-body problem as a paradox resulting from the scientific observer's confusion over his own methodology. The human organism is viewed as an integral unit. The methods of studying the organisms will vary according to the functions to be studied; concomitantly, the type of information obtainable will be determined by the methods available for such investigation. Introspectional material, the product of the reporting function of the brain, is studied by means of a psychological tool such as psychoanalytic exploration. On the other hand, physiological brain functions and other functions of the body are studied by inspectional methods which use structured techniques to measure performance. The psychoanalyst's unique capacity for self-awareness and self-observation is the investigative tool in psychodynamic matters. The psychoanalyst may be a crude measuring rod, but he is the best there is. Confusion has resulted from misguided attempts to explain inspectional data by introspectional means, and vice versa. There is no validity to the charge that the study of psychodynamic matters cannot conform to the methods of science. Any set of data can be studied scientifically, if the appropriate method or instrument is used. Statistical methods may satisfy a primitive thirst for exactitude, but when statistical approaches are misapplied, they can only provide an illusion of knowledge. An introspectional or psychological method is the appropriate one for measuring the cerebral mechanisms of motivation and control, and the complex findings are best expressed by the skillful use of language.

Personality Theory

Although Rado recognized Freud's enormous contributions to science, he did not consider Freud's theories immutable. Rather, he believed that the future progress of psychoanalysis as a science depended on the further modification and clarification of classical theory. To this end, he used simpler and less abstract explanations, removed undefined terms and obscure references, and reorganized the material in simple hierarchical terms.

Behavior as a teleological phenomenon. "Adaptation" was postulated as a core concept to emphasize Rado's evolutionary biological orientation. Thus the theoretical frame of reference conforms to the dictum "adjust or perish," which must be obeyed by both the individual and the species. The emphasis on adaptation has served, in turn, to refocus attention on the continuing influence on development of mutually reinforcing interactions of ever increasing complexity between the child and the people and things in his environment. In his later theoretical formulations, Freud minimized this aspect of development and emphasized the role of constitutionally determined internal forces which seemed to operate autonomously.

Adaptational theory conceptualizes and evaluates behavior in terms of its utilitarian and survival functions. Thus, pleasure seeking is seen as a means to the adaptive end of fulfilling the organism's needs in biological interaction with its environment; therefore, it also serves to insure the preservation of the individual and the species. Pleasure is not an end in itself. It follows, then, that adaptational psychodynamics is concerned with goal-directed behavior. Behavior is conceived of as a means to an end; it is evaluated in terms of its goal-finding and goal achievement functions, which are designed to reduce or eliminate equilibrium-disturbing tensions that arise within the organism and to establish a new equilibrium. The observer interprets the adaptive value of behavior in terms of his evaluation of its evolutionary or survival value. Our psychology has adopted the teleological orientation which characterizes modern biology and physiology.

Motivation and emotion. In his early formulations Freud emphasized, as we do today, that behavior must be studied in its motivational context if it is to be understood. However, Freud departed from this fundamental insight in his later theoretical constructs, specifically, his instinct theory, his theory of constitutional bisexuality, and his tripartite model of the human mind. In so doing, he replaced mechanistic concepts with animistic notions which failed to explain behavior in terms of its motivational context. Adaptational psychodynamics does not employ concepts which describe imaginary energy (e.g., "libido") or its cathexis on imaginary structures to explain motivation. Instead, it identifies the forces which motivate behavior as the emotions themselves. Thus,

the emotions are defined as the integrating forces which mobilize the organism to take action which is designed to fulfill its needs.

The only human energy that science recognizes is the conventional metabolic energy studied in physiology and biochemistry, measurable by inspective, rather than introspective, methods. This is actually the energy underlying brain activity. Psychodynamic phenomena are observed, measured, and explained through the human capacities of introspection, language, and thought. Freud discovered an appropriate method to enable searching scientific exploration of introspectional material, and called it "free association." However, Rado uses a descriptive term for it, "communicated deep introspection." The relationship of mind to brain activity is one of congruence, not identity. To quote Rado, "Consciousness is the awareness of the running report produced as its inward expression by the underlying nervous activity of the brain. The latter may be called the *reporting process*, and consciousness, the *awareness process*. . . . The rest of the brain's activity is non-reporting (i.e., purely physiologic). Nevertheless, even this purely physiologic brain activity may, through proper channels, influence the reporting process and correspondingly, the awareness process." The extrapolation of introspectional language enables identification of nonreporting emotions, specifically, when the awareness process reveals a gap in motivational understanding and the context in which the gap appears enables the observer to draw the requisite inferences, that is, to describe nonreporting fear, rage, desire, etc. In summary, although this concept recognizes that brain physiology operates on a different level from the psychological concept of motivation, it nevertheless links behavior to brain activity. This dispenses with the obscure connotations of "the unconscious."

Concept of emotion. Freud's instinct theory, and particularly his libido theory, obscured the primary role of emotions in human life; instead, they were described as secondary derivatives or epiphenomena. In contrast, adaptational psychodynamics places the study of emotions in the foreground as the clearly observable mobilizing forces of behavior, on a psychological level, and describes their action in introspectional terms. Following the physiological concepts outlined by Cannon, the emotions are divided into two classes. The emergency emotions, such as fear, rage, shame, guilty fear, guilty rage, are based on present pain or the anticipation of pain. The second class, the welfare emotions, such as desire, joy, affection, love, and pride, reflect present pleasure or the anticipation of pleasure. The welfare emotions stem from pleasantly toned forces of attraction and gratifying interaction with a mothering person.

The emergency emotions provide the organism with an "emergency control," and protect it from danger and anticipated danger. For example, fear and

rage protect the organism by mobilizing it for fight or flight in the face of tangible or rationally perceived danger. If the danger cannot be dealt with and the organism freed from continued fear and threat of damage, the organism will be flooded with inappropriate and excessive emergency emotions which no longer perform a protective function, but are damaging in themselves. Examples of the effects of "emergency dyscontrol" are cases of acute war neurosis or acute neurotic failure. If this reaction cannot be mastered by conscious thought, there follow nonreporting thought, repression, and the other automatic mechanisms of repair, e.g., hysteric, obsessive, phobic, and other syndromes. These syndromes are classified diagnostically according to the psychodynamic mechanisms involved. They serve to free the organism, partially, from the painful excess of stimulation produced by excessive insoluble fear. The organism is then able to function once again, although the functioning will, of course, be constricted.

Central integrative apparatus. Adaptational psychodynamics hypothesizes a "central integrative apparatus" which is described in terms of hierarchical levels of central integration and control of the organism's motivations and behavior. This hierarchically organized structure reflects the evolutionary history of the species and is presented schematically as consisting of four levels: (1) hedonic self-regulation (the most primitive), (2) preverbal brute emotion, (3) emotional thought, and (4) unemotional thought.

Hedonic self-regulation. The level of hedonic self-regulation is achieved by the human fetus or the semicomatose adult. In terms of evolution, it corresponds to the integrative functioning of the protozoa. At this level, the organism's capacity for foresight, its ability to anticipate the future, is minimal. It simply moves toward objects that fulfill its need and away from noxious stimuli. Nevertheless, there is evidence of discrimination, of awareness of the presence of needed supplies and of other conditions favorable to survival, and, conversely, of the presence of danger. Thus, with respect to evolution, hedonic self-regulation is of obvious survival value. Contact receptors and rudimentary nervous nets are used at the hedonic level. Tension, pleasure-pain, attraction-repulsion mechanisms, and reference to past experience in terms of feeling residues are present. Tropisms and simple conditioned behavior are also manifested by the organism at this level. These forces enable the organism to obtain optimal conditions of food, oxygen, light, temperature, water, and to integrate motor behavior which is designed to permit it to take and retain needed objects and avoid damaging ones. Finally, hedonic self-regulation is the primitive basis of pain-pleasure physiology.

Pain and pleasure govern the operative patterns of the organism at higher levels of integration as well.

For instance, the ability to construct abstract mathematical formulas is also governed by sophisticated application of the pain-pleasure principle. Mathematical thinking produces rewards and punishments, successes and failures, and evokes feelings of pride or provokes a loss of self-esteem, despite the fact that it involves unemotional thought.

In fact, mechanisms for the avoidance of painful stimulation exist at all levels of the psychodynamic cerebral system, and in the integration of peripheral (somatic) levels, as well. Rado refers to these mechanisms generically as "riddance mechanisms," and he has emphasized their presence in all animal design, and at each level of organismic integration. On the physiological level, the riddance mechanisms include such reflexes as vomiting, scratching, lacrimation, sneezing, coughing, etc.; on the psychological level, the primary riddance mechanism is repression. Repression is the automatic riddance of painful thought and emotion through exclusion of the painful processes from awareness.

Preverbal brute emotion. The level of preverbal brute emotion corresponds to metazoan evolution. The emergency emotions of fear and rage appear at this higher level of organization and perform the same adaptive function as pain. The evolution of distance receptors and the increasing specialization of the head end of the organism and of nervous system control at the head end must have preceded the appearance of the emergency emotions. There is "sensory exploration of the shell of the immediate future," speedier motility, evidence of predacity, and an extended period of care of the young. There is increased delay of motor reaction to stimuli as the brain develops at the head as the "manager of muscle," in response to its increased capacity to receive signals and, as a result, greater effectiveness and discrimination of action. The welfare emotions also appear as mobilizers of the organism to action. The emotions are expressed in order to warn of impending danger or elicit cooperation. Thus, they serve as a communicative mechanism on the group level. The emotions are of evident survival value and have feeling tone and voluntary and autonomic expression.

Emotional thought. At the emotional thought level, brute fear and rage are modified and take the form of apprehensive and angry thought. Language and thought processes have appeared, and there is exploration of present, past, and future experience. The cerebral cortex has become dominant. There is greater discrimination, diversity, and flexibility of motor performance. The basic emotions have become differentiable into shadings and compounds of derivative emotions. The learning process is highly developed, and the dependency period is extended. Regulation by reward and punishment is maternal at first and is then governed by society. Reasoning develops; symbols rather than things, are manipulated; thought is trial action and provides increased effi-

ciency. Yet, emotional thought is selective, not objective; it tends to be self-justifying and feeds the emotion from which it springs and by which it is controlled. Consciousness and self-awareness are present at this level.

Unemotional thought. The unemotional thought level is characterized by "rational" or "objective" thought. At the present stage of social evolution, there is continual struggle between rational and emotional thought for dominance in personal and in political life. Unemotional thought corresponds to the transcendence of intellect over emotions. This is achieved by intellectual mastery of the emotions; and in the process, intellectual activity becomes increasingly complex. Intellectual activity becomes an exploratory and mastery tool of increasing dependability, which can operate in relation to phenomena far outside the "shell of the immediate future." This level provides a fine adjustment of the equipment for survival: man's complex culture develops from its use, and his social survival now depends on its effectiveness.

Controlling unit: The action self. The controlling unit of the entire psychodynamic cerebral system is the "action self." Rado identified the action self as occupying an axial position in relation to the four hierarchical levels described above and as deriving from the central importance of the uniquely human capacity for conscious self-awareness. This self-awareness emerges from and is sustained by infantile proprioceptive sensations. The baby, perceiving his muscular activities, discovers himself as the one who acts. The psychological interaction between self-awareness and willed action is the psychodynamic expression of unfolding innate circuits of brain activity. On this foundation, the organism builds its systematic self-image, or action self. Combining kinesthetic with other sensory information, the organism learns to recognize itself as a cohesive, enduring being. The self-image is formed as the organism focuses attention on the equipment it uses to control its environment. Changing profoundly as it develops, the action self is originally filled with pleasure by its success in sucking and attributes limitless power to its willed actions; it pictures itself as omnipotent. This is termed the "primordial self." At this stage, the infant sees his parents as deputies who exercise his magic powers for him. The tested self develops from the primordial self as a result of continual defeat of this feeling of omnipotence in the face of realistic experience. The self then develops as a reliable, tested self, differing to various degrees from the desired self. This process involves delegatory and emulative identifications, the awareness of one's capacities, and the ability to change the longing for omnipotence into a desire for achievement in socially rewarding directions. These achievements then become a source of self-reward, or pride. Emotional self-approval, the function of the action self known as pride, rises and falls, depending on the

amount of pleasure the action self consumes. The action self is the supreme decision maker and controls activity at each of the four levels of the integrative apparatus.

Theory of conscience. The conscience develops as the preventive branch of emergency control and consists of self-restraining and self-prodding mechanisms which enable the action self to adapt to societal demands. It arises in the dependency situation at the level of emotional thought and enhances the organism's fitness for cooperation, first with mothering persons and then for increasing cultural cooperation. Conscience regulates conduct by self-punishment and self-reward. Cultural rules are transmitted to the child by parental regulations, which are enforced by reward and punishment. The child's reactive fear of punishment restrains forbidden activities. His obedience is rewarded by loving care, to which he responds with heightened pride. These mechanisms, automatized to varying degrees, continue into adulthood in the form of fear of social punishment, on the one hand, and rising pride in social recognition, on the other. Conscience proper derives from the child's belief that his parents are omniscient and his resultant fear of inescapable punishment. When this is automatized it becomes the fear of his own conscience, and this is the most differentiated and dependable mechanism of self-restraint humanity has achieved. Obedience to the "voice" of conscience elicits the self-reward of rising pride.

When temptation and defiant rage overrule the fear of detection and punishment, disobedience and efforts to escape detection follow. In submissive obedience, defiant rage is submerged by fear. With growth and loving identification facilitated by the influence of rewards misbehavior causes guilty fear, which acts as a warning signal that loving care is threatened and must be restored. Thus, the complex emotion of guilty fear consists of self-criticism, the awareness of wrongdoing, and the fear of inescapable punishment, intensified by dependence on loving care, together with repression and retroflexion of defiant rage on the self. When temptation and defiant rage overrule the fear of conscience, disobedience causes guilty fear and falling self-respect or pride. Repair is effected through expiatory behavior taught in childhood and designed to elicit self-forgiveness—modeled on parental and social forgiveness. Self-respect is thereby elevated again. Atonement maneuvers aim at restoring self-respect and are modeled on the earlier restoration of parental care and social approval after repentance, at a time when the child was in a state of dependence.

Theory of Psychopathology

The dynamics of depression are traced to the miscarried application of automatized conscience mechanisms to the repair of the results of serious failures in realistic living.

Depression. Important failures in realistic mastery

cause excess fear and impotent rage which may surpass resolution by the resources of intellectual activity. If fight or flight fails on all levels, hopelessness ensues. Then, on a regressed and inappropriate level, guilty fear and expiation offer the hope that by self-punishment and forgiveness, concomitant magic help can be coerced. Even when this proves illusory in reality, the hope does not die; rather, there is resort to further and angrier self-punishment to secure the desired end. In the face of realistic failure, this regression to dependent automatized angry expiatory proceedings is the miscarried repair that underlies the depressive reaction.

Homosexuality. In adaptational theory, sexual theory has been revised in the light of modern knowledge, since Freud's theory of constitutional bisexuality has been refuted by modern embryological and endocrinological knowledge. Nevertheless, Freud's theory persists in the theory and practice of many psychoanalysts, as evidenced in their search for "latent homosexuality." This orientation, when it persists, can be quite destructive; it confuses clinicians and causes despair to many patients who attempt to analyze a mythical constitutional latent homosexuality, in the magic hope that this will relieve their suffering which, in fact, is due to entirely different emotional motivations and failures of function.

Adaptational psychodynamics has reemphasized the essential heterosexuality of all mankind, based on reproductive anatomy and the institution of marriage, imprinted on the mind of the child early in his development. The fulfillment of the reproductive goal is dependent on childhood learning. Heterosexual function is often damaged by the impact of early parental threats; fears and rages may affect the assertive capacity of the individual, and the assertion of his sexual desires, in particular. The partially incapacitated child attempts to repair the damage as he matures, and one reparative device, among many others, is the attempt to reproduce heterosexual union in the absence of the frightening and forbidden organ of the other sex. Thus, he is able to avoid fear and guilt, as well as the fear of the humiliation of failure in sexual performance, and achieve orgasmic satisfaction nevertheless by means of an illusory or fantasized heterosexual mating between partners of the same sex. Simultaneously, dependent, hostile, and power-seeking motivations are prominent, and usually sexual love is only counterfeit. Frequently, as homosexual partners grow used to each other, physical sexual activity becomes increasingly rare. However, homosexuality can only denote behavior motivated by the desire to have orgasmic experiences with a partner of the same sex; it cannot serve as a label for all passivity and inhibition.

"Masochism." The concept of miscarried repair mechanisms to compensate for failures in the emergency function of the organism is used extensively in adaptational psychodynamics to explain a wide range

of psychopathological symptomatology. Thus, "masochistic" behavior is explained in terms of automatized obedience and submission to old parental threats of punishment before forbidden pleasurable goals can be experienced and achieved. This is self-punishment elicited by guilty fear, administered in advance of obtaining prohibited pleasures. Rado describes this as "pain-dependent behavior," which can be observed in all forms of disturbed pleasure functioning. This explanation is based on the desire for mastery, experience, and pleasure, despite inhibitory fear and guilt. According to adaptational theory, it cannot be attributed to death-seeking instincts, or sadistic or masochistic components of a sexual instinct.

Classification of behavior disorders. Ideally, the production of emergency emotions, such as fear, rage, guilty fear, and guilty rage, will lead to the realistic resolution of the threatening situations. However, where healthy resolution fails, there develops an overproduction of these emotions which then presents the organism with an additional threat from within with which it must cope. The overproduction of emergency emotions, termed "emergency dyscontrol," is the simplest form of behavior disorder; other clinical syndromes depart from this source and may be classified in a sequence of increasing complexity of their patterns of attempted self-repair. Rado's classification, as incorporated in his theory of adaptational psychodynamics, provides the following seven classes of behavior.

Emergency dyscontrol. Emergency dyscontrol includes the emotional outflow; the riddance through dreams; the phobic, the inhibitory, the repressive, and the hypochondriac patterns; and the gainful exploitation of illness.

Descending dyscontrol. Descending dyscontrol may be defined as autonomic discharge of repressed but overflowing emergency emotions into the various component systems—respiratory, circulatory, alimentary, endocrine, etc.—of the whole organism.

Sexual disorders. These include impairments and failures in standard performance; dependence on reparative patterns (e.g., organ replacement and organ avoidance; the criminal, dramatic, and hidden forms of sexual pain dependence; the formation of homosexual pairs); fire setting and shop-lifting as sexual equivalents.

Social overdependence. Social overdependence is characterized by the continuous search for an ersatz parent and the mechanisms of forced competition, avoidance of competition, and self-harming defiance.

Common maladaptation. This is a combination of sexual disorder and social overdependence.

The expressive pattern (expressive elaboration of common maladaptation). This pattern includes ostentatious self-presentation; dreamlike interludes; rudimentary pantomimes; disease copies and the expressive complication of incidental disease.

The obsessive pattern (obsessive elaboration of

common maladaptation). In this pattern are included broodings, rituals, and overt expression of temptations; tic and stammering as obsessive equivalents; bed wetting, nail biting, grinding of teeth in sleep, as precursors of the obsessive pattern.

The paranoid pattern (nondisintegrative elaboration of common maladaptation). This pattern is the hypochondriac, self-referential, persecutory, and grandiose stages of the Magnan sequence.

Theory of schizotypal organization. Adaptational psychodynamics recognizes that there is a qualitative difference between schizophrenia and the neuroses, in terms of organizational deviations which involve the entire organism. It also postulates that schizophrenia depends on a variable (but necessary) genetic predisposition, which is operative throughout the life of the schizophrenic individual. Thus, schizophrenia is not caused by "schizophrenogenic" mothers; rather, these mothers have been upset by the atypical reactions of their "schizotypal" babies. "Schizotype" is Rado's abbreviation of schizophrenic phenotype, and his theory holds that the genetic predisposition finds physiological and psychological expression in unique forms. When psychodynamically organized, the clinical data reveal difficulties traceable to a compound of inherited defect, faulty childhood experiences, and miscarried efforts of the individual to repair his deficiency and "stay afloat."

According to Rado, schizotypal "differentness" resides in two fundamental forms of damage. These are an integrative pleasure deficiency and a proprioceptive disorder. The diminished pleasure capacity weakens the motivation for every action of the integrative apparatus throughout life. Normal welfare emotions, which are essential for performance and growth toward enjoyable cooperation and love, are lacking. Consequently, the pleasure deficiency weakens the balance of emergency emotions, and fear and rage rise to an excessive and unmodulated strength. The coherence of the over-all control of the action self is disrupted by intense emotion, and self-confidence is undermined because the socially acceptable integration of behavior is so difficult to achieve. The enjoyment of all the complex tasks and relationships of adult life is weakened.

The proprioceptive disorder also damages the action self from the time of its early formation through awareness of willed action in early childhood and throughout life. These two sources of damage to the action self leave it brittle and prone to disintegrative breakdown characterized by thought disorder. The extent of these two defects varies from patient to patient, as do the genetic predisposition and the nature of the traumata of life experience. However, the consequences pervade every area of behavior. The following four processes of automatic repair are described as typical of the organism's attempts to compensate for the defective self.

Extreme overdependence. Extreme overdepend-

ence throughout life, together with an inability to give love and affection, is usually accompanied by responses of fear and rage to parental demands and gross obedience or gross defiance, with little in-between range of emotional shading. This dependent craving is resented, and the anger is aimed at those on whom the individual is forced to depend.

Scarcity economy of pleasure. A scarcity of sources of pleasure forces the individual to cling to every morsel of pleasure. Thus, any loss of small pleasure is experienced as a severe blow. However, a favored or routine pursuit may absorb the entire limited capacity for pleasure.

The use of intellect. Intellect is used to do the job ordinarily done automatically by pleasurable feeling. Unemotional thought is used to figure out how to live in the emotional world of other people, whose emotions are not shared by the individual. This attempt to imitate other people's pleasurable reactions may create the impression of oddness, unexpected humor, or creativity.

Greatly increased craving for magic. The preceding three reparative devices may sustain a workable adjustment, but this one miscarries because it defeats adaptation. It provides solace, the individual tends to rely on it, and it can eventuate in delusion.

The clinical outcome depends on the efficiency of the first three repair mechanisms, in relationship to the total adaptive resources of the organism. These include intellect, education, privileges of wealth and social position, opportunities, the establishment of achievable goals under the enlightened guidance of parents and psychiatrist, and the capacity for healthy repair. Adaptive failures tend to develop under the stresses of life and the conventional expectations for performance according to the patient's chronological age. As the individual becomes aware of his failures in adjustment, he is flooded with fear and experiences a severe loss of pride, and if he finds no acceptable way out, decompensation may ensue with acute schizophrenic panic. He may then resort to more regressed magical methods of repair that produce much of the overtly psychotic symptomatology.

Treatment Techniques

Rado's theory of treatment includes the goal of raising the level of the patient's psychological development by remedial reeducation, which transcends the removal of symptoms. To achieve this, it is important to trace the patient's history from the present back to the formative experiences of his early years. It is necessary to overcome the patient's fears and resentments in order to help him to communicate fully; the interpretation of the hidden meaning and motivating power of his emerging memories, ideas, and emotions will then prove more fruitful. Finally, to achieve the goal of reeducation, it is necessary to keep the patient's emotional relationship to the physician under control. These principles are in accordance with

Freud's concepts, which we recognize to be valid today.

However, Freud's theory of treatment eventually became dominated by the concept of transference, which had its origins in the mysterious force known as the repetition compulsion. Transference is a descriptive, rather than a motivational term. Moreover, the abstract power of transference and resistance obscured the motivations of the patient's behavior. The adult patient's childish love and hate of the psychoanalyst derives from the child's pursuit of emotional security in the interest of survival. Whenever he feels helpless, he reverts to the early adaptive pattern of infantile dependence. Under the continued stresses that have induced the adult patient to undertake treatment, he behaves toward the psychoanalyst with the invocatory mechanisms aimed at magic fulfillment which he learned under childhood stress. This behavior does not solve his problem but only creates new difficulties. For example, the classical technique tries to encourage development of a "positive" transference, which may be considered to consist of an overly dependent relationship with a distorted image of the therapist. Once the transference is achieved, the therapist is no longer seen realistically as another human being who is an expert in human relationships and who is to be consulted because he can help the patient to work out more effective ways to master his emotions and interpersonal relationships. The dependent and magically idealized view of the therapist may never be resolved in classical technique.

In contrast, the adaptational technique attempts from the start to work against the patient's search for a repetition of a dependent parental relationship. It attempts to prevent perceptive distortions of the psychoanalyst by which the patient strives to fulfill his magical hopes, and it presents the analyst in human proportions. It attempts to help the patient to achieve the most realistic level of integration of which he is capable and to help him to move to more integrated levels of functioning. Prolonged regression, which is inevitable in classical psychoanalysis, is considered to preclude achievement of these goals.

Rado emphasizes that the undoing of repressions is only a first step in treatment. Once inhibiting fears begin to be relieved, a positive program of emotional reeducation is undertaken, in order that the patient may become aware of his emotional capacities for pleasure, assertion, and competition in reality, and thereby learn the lessons he could not master while he was dominated by emergency emotions and inhibition. This is a reeducational process, which begins where classical psychoanalysis ends, with development of the welfare emotions while the patient is maintained on the self-reliant or aspiring level. This procedure builds pride based on realistic, successful performance in areas where the patient had failed previously and in new areas now open to the patient's curiosity and striving.

Adaptational psychotherapeutic technique avoids classifying patients according to specific methods of treatment. Its theory describes the therapeutic needs of all emotionally troubled patients; it does not recognize that certain people are not "eligible" for analysis. Treatment is designed to meet the needs of the patient after a detailed history taking, and an evaluation of his functioning capacities, the extent and nature of his inhibitions, and his capacity for change.

While elaborating his theory of treatment, Rado offers a deceptively simple and most helpful schema for describing psychotherapeutic methods based on the motivational and integrational level on which they are conducted. The schema obviates the futile argument over whether a treatment is psychoanalytic, based on such criteria as the frequency and duration of sessions, their total number, the posture of the patient, the material dealt with, etc. Meaningful treatment is based on the application of sound psychodynamic principles which serve as a guide to the psychotherapeutic needs of all patients.

The descriptive schema alluded to above charts the hierarchical order of the patient's designs for cooperation with the therapist. On the basis of the patient's capacity for cooperation, on self-reliant or aspiring levels of function, reconstructive therapy can be done. Patients who employ mainly methods of cooperation based on a search for a parent figure or for magic and who are incapable of a shift to more integrated and mature levels of treatment behavior must be cared for properly by methods integrated on levels suited to them. Thus, there is room in the armamentarium of adaptational psychodynamics for reparative psychotherapy, hypnotherapy, pharmacotherapy, and other techniques which rely for their effectiveness on the forces inherent in these patients' search for magic and for parent figures. The appropriate levels of treatment for each patient must be diagnosed and tested in practice. A proficient psychiatrist should have the ability to provide various types of treatment, according to the patient's need. An appropriate scientific frame of reference provides him with an accurate tool for understanding and communication. The psychotherapy of schizophrenia differs qualitatively in goal and method from the treatment of the neuroses because of the qualitative difference in the psychodynamic integration of schizotypes, as described above.

The scientific understanding of events and changes in psychotherapy requires accurate theory of psychodynamics and psychotherapy. In addition, there is an artistic dimension to therapy, and apprenticeship

methods are required for its mastery. Clinical competence depends heavily on certain characteristics of the individual therapist, e.g., empathy, insight, etc. The gifted therapist may achieve results, even when his frame of reference includes inaccuracies. Psychodynamic science, however, depends on the development of theories which are as adequate and accurate as possible. Adaptational psychodynamics represents an attempt to formulate an organized basic theory which will ensure the accurate understanding of human behavior.

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Chapter 8

Other Psychoanalytic and Psychodynamic Theories

8.1 ADOLF MEYER

GEORGE MORA, M.D.

Introduction

Background and training. Adolf Meyer was born in Niederwenigen, Switzerland, on November 13, 1866, the son of a Zwinglian minister. In medical school he was influenced by the psychiatrist August Forel, Director of the Burghölzli Hospital for the Insane. Subsequently, during a year of postgraduate study in London, Meyer was particularly impressed by Hughlings Jackson's integrative views of the nervous system and by Thomas Huxley's evolutionary concepts. In 1892, following a period of further study in Paris under the neurologist Déjérine, Meyer decided to emigrate to the United States and to accept a position at the State Hospital at Kankakee, Illinois.

Early career. Three years after he arrived in this country, Meyer accepted a position as pathologist at the Worcester State Hospital, which at that time, was one of the outstanding psychiatric institutions in the United States. Shortly thereafter, he was appointed Clinical Director of the hospital and began to establish standards for taking and recording detailed case histories for all psychiatric patients. A subsequent tour of various psychiatric institutions in Europe in 1896 resulted in his adoption of Kraepelin's system for the classification of mental disorders. However, nosology was not Meyer's primary interest, for even then he recognized the importance of the psychiatrist's awareness of the dynamic factors which influenced the behavior of the patient and his life situation.

In 1901 Meyer was appointed Director of the Pathological Institute by the State of New York, and he proceeded to establish basic standards for the state hospital system. The following year, Meyer moved the Institute to Manhattan State Hospital at Ward's Island so that he might have more opportunity for clinical

observation. Concurrently, he began to concentrate increasingly on the study of psychopathology.

Basic orientation. Instead of emphasizing symptoms, Meyer focused on the types of reaction manifested by the whole individual in terms of his total life experience. In 1903, in an article entitled "An Attempt at Analysis of the Neurotic Constitution," Meyer postulated that mental disorder often had its roots in a personality imbalance which, in turn, was caused by the disorganization of habits. The "incomprehensible" symptoms of mental illness were viewed as crude and inadequate attempts by the patient to cure himself, which had to be guided rather than suppressed. Dementia praecox, which was then the area of investigation of such outstanding psychiatrists as Kraepelin and Jung, was the testing ground for Meyer's concepts. Contrary to Kraepelin's stress on deterioration as the eventual outcome in dementia praecox, Meyer believed that personality traits, such as withdrawal, preceded the appearance of the disease, and he suggested that prevention, as well as recovery, might be possible. He conceived of schizophrenia as a "twisted" maladaptation which could be understood in terms of the patient's life experience and was characterized by habit disorganization or deterioration.

Meyer recommended that an attempt be made to intervene early in the development of the illness by the patient's school, family, and community. Thus, his early interest in "community psychiatry" is noteworthy. Moreover, the first applications of the principles of social work to occupational and recreational therapy with convalescent patients, and the organization of after-care programs, were inspired by Meyer's work during this period.

In the meantime, psychiatrists in this country had become familiar with Freud's theories, largely through the efforts of Stanley Hall at Clark University. As early as 1906, Meyer evaluated Freud's study of the infantile phase of development as "pathologically important" and warned against premature rejection of psychoanalysis, although he objected to Freud's em-

phasis on the pathological and hypothetical, rather than on the healthy and verifiable aspects of mental functioning. Meyer's theory of psychobiology reflected this conflicting view.

Meyer introduced the term, "psychobiological interpretation," during a lecture on dementia praecox at Clark University in 1909, in connection with the different types of disorganizing personality reactions. In the broad context of psychobiological interpretation, Meyer explained, pathological personality reactions could be explained as regression to former, previously protective phylogenetic reactions which were incompatible with adaptation at the later time.

Meyer's Theory of Psychobiology

Basic concepts. Meyer developed the theories which were to be designated as the school of "psychobiology" during his tenure at Johns Hopkins. Here, as Professor of Psychiatry and the first Director of the Henry Phipps Psychiatric Clinic, he remained from his appointment in 1913 to his retirement in 1937. In brief, psychobiology emphasized the importance of biographical study in understanding the whole person. That is, the object of such study is the individual, whom Meyer defined as a biological unit that always functions as a person, whether alone or in groups. Although it changes constantly, the individual's "experiential continuum" enables him to maintain internal and external homeostatic equilibrium in coping with new situations. In addition, the individual's plasticity allows him a wide spectrum of differentiation in capacity and function, and a relatively high degree of spontaneity and responsiveness. Because of the complexity of human functioning, the psychiatrist who attempts to acquire a scientific understanding of his patients must have a combination of attributes: he must be a methodical investigator, biographer, artist, and educator.

In sketching the evolutionary development of the human mind, including its prehistory, largely through the process of symbolization, Meyer noted that the biographical study of man was the last discipline to pass from the stage of intuition and philosophical speculation to that of scientific investigation. This area of study, which he defined as objective psychobiology, consisted of the observation of objective facts, the formulation of predictable conditions in which these may occur, and the testing and validation of methods for their controlled modification. Instead of accepting predetermined hypothetical psychological or metapsychological constructs to account for these facts, he emphasized the soundness of "common sense."

Although an analysis of psychobiological assets may reveal the presence of a variety of factors in each individual, Meyer emphasized the basic tendency toward integration that takes place. Because Meyer believed that multiple biological, social, and psychological forces contribute to the growth and development of the personality, he concluded that psychiatrists must

study normal and abnormal behavior from many viewpoints.

Meyer conceived of the clinical value of the biographical approach to personality study as follows. It provides a practical and specific guide for eliciting individual data; a means of organizing that data; and a method for checking and reevaluating data elicited under varying conditions. Recognizing that only a fraction of the total personality could be understood at any particular time, he devised a biological-cultural formula. The denominator of the formula consisted of the total personality record or potentiality of the patient; the numerator was the particular sample of performance.

Clinical examination. For Meyer, the clinical psychiatric examination included the following components: (1) identifying the motives or indications for the examination, with particular focus on presenting pertinent details in the patient's life history, elicited through biographical study; (2) listing the obviously related personality items, factors, and reactions; (3) careful study of the physical, neurological, genetic, and social status, and the correlation between these variables and personality factors; (4) differential diagnosis; and (5) formulation of a therapeutic plan geared to each case. Meyer felt this to be the best way to reconstruct the "experiment of nature," which was defined as the reduction of events in the patient's life to the factors in a controlled experiment. In accordance with its common sense approach, psychobiology began with the data which were accessible. Symptoms were viewed as compensatory phenomena. Because data selection was necessary in any examination, Meyer called "distributive analysis" the study of all the factors in an individual's life which played a significant role (whether favorable or unfavorable) in his adjustment. The formation of better methods of adjustment by the patient, based on his understanding of past maladaptation, was termed "distributive synthesis."

In interviewing a patient, Meyer considered it better to begin by focusing on his chief complaint, which directed attention to the situation which required immediate therapeutic intervention. Later, the psychiatrist would determine the nature and extent of the disturbance in the context of the patient's over-all functioning, the previous medical history, and the role played by such factors as constitution, development, and environment. Unconscious material elicited from the patient, as well as information supplied by his family, could supplement the psychiatrist's efforts and facilitate his understanding of the situation.

As a general rule, Meyer felt that "one-word diagnoses" were inadequate in a field as complex as human behavior. Initially, he used the terms "reaction set" or "reaction type" in diagnostic classification. From the early 1920's on, however, he used the word *ergasia*, derived from the Greek word for work, *ergon*, to describe the general concept of behavior and mental activity,

and its plural, *ergasias*, to denote specific behavioral units. Ergasias were the behaviorally conceived overt and implicit products of psychobiological integration. In the normal personality, of the many potentialities available for adaptation, various "ergasias" tended to prevail, depending on the internal and external needs of the individual. Meyer defined the individual's overt behavioral response to various situations as "subject organization." He then listed the various ergasias, using a different prefix for each type. At the same time, he warned that these classifications, in themselves, were not to be regarded as diagnoses; they simply described phenomena which occur under various conditions. It should also be noted that the following list of ergasias is no longer in use but is reproduced here for historical reasons. (1) *Anergasia* (an = lacking or lost): organic brain reactions, such as general paresis and senile brain disease, in which structural and functional brain deficit and pathology alter behavior; (2) *dysergasia* (dys = difficult): syndromes due to impairment of brain function, such as the toxic psychoses and delirium; (3) *thymergasia* (thymo = affective): the affective psychoses, such as manic-depressive reactions; (4) *parergasia* (para = beside): the form of schizophrenia which is characterized by regression, abandonment of reality, and delusions; (5) *merergasia* (mero = part): partial inability to work or function, as in the psychoneuroses; (6) *kakergasia* (kakos = bad): abnormal, poor, or faulty behavior, used synonymously with *merergasia*; and (7) *oligergasia* (oligo = few or scant): mental deficiency.

Psychobiological Therapy

Psychobiological treatment, which began with distributive analysis and terminated with distributive synthesis, was not considered apart from pathology. More specifically, Meyer believed that the psychiatrist began to treat the patient at the time of their initial contact with the patient's exposition of his "problem." This did not mean that diagnosis was not essential. However, the first step in distributive analysis was evaluation of the patient's assets and liabilities. This was best accomplished through the study of his life history, on the basis of current data initially provided by the patient, and supplemented by his subsequent reconstruction of past experiences.

Meyer recognized the importance of the patient's cooperation for the success of the psychotherapeutic process: the cooperation of the patient's better self, i.e., of the healthier part of the patient's ego, was considered essential. Concomitantly, he believed that these healthier aspects of the patient's personality should serve as the starting point for treatment. Therapy was conceived of as a service performed on behalf of the patient; the therapist was obligated to utilize every available opportunity to assist the patient. The basic aim of psychobiological therapy was to help an organism, hampered by abnormal conditions, to make the best adaptation possible to life and change.

Treatment techniques. In the initial stage of treatment, the therapist's concern focused on the patient's sleep habits, nutrition, and the regulation of daily routines. It was also important at this stage to induce the patient to describe his difficulties in a concrete way, and for the therapist to use the patient's ideation and language to communicate his offer of help and advice.

Problems were approached on a conscious, rather than an unconscious level. Thus, therapy was administered in the course of ordinary face-to-face conversation, in order to implement the psychiatrist's efforts to focus on the patient's current situation and his reactions to his everyday difficulties, as well as his long term life adjustment. At the beginning of each therapeutic session, the patient was encouraged to discuss his experiences in the interval since the last interview, beginning with obvious and immediate problems. Eventually, these problems were explored in greater detail, when deeper relevant material had been elicited from the patient. This was accomplished through the use of "spontaneous association," a term used by Meyer in preference to "free association," to describe the overcoming of the patient's resistance to verbalizing his basic problems in the unbiased atmosphere of the psychiatrist's office.

The intensity and frequency of treatment sessions depended on the needs of the individual patient. The psychiatrist permitted the patient to arrange his treatment schedule or asked him to agree to a specific therapeutic program. It was the psychiatrist's responsibility to reassure the patient, so that he could function adequately between interviews. This reassurance was conveyed through casual comments and sensitive questioning.

Under the guidance of the psychiatrist, the patient analyzed his personality problems and their relative importance (distributive analysis) and then reconstructed the origin of his conflicts and devised healthier behavioral patterns (distributive synthesis). The psychobiological therapist asked the patient to formulate his life story by means of a life chart, to demonstrate his understanding of the origin of his difficulties and the means he might employ to ensure their resolution and prevent their repetition.

Meyer believed that the essential goal of therapy was to aid the patient's adjustment by helping him to modify unhealthy adaptations; these modifications would lead, in turn, to personal satisfaction and proper environmental readjustment. He called this "habit training." In the process of habit training, the psychiatrist utilized a variety of techniques, e.g., guidance, suggestion, reeducation, and direction—always with emphasis on the current life situation. Psychobiological therapy was especially valuable with psychotics, although it was also recommended for psychoneurotic reactions. And, in regard to the treatment of the hospitalized patient, Meyer also emphasized the importance of collaboration of the members of the thera-

peutic community—physician, patient, nurse, and ward group, as well as the patient's family—in providing a setting to safeguard the integrity of the patient's personality functions.

Meyer emphasized that different criteria could be used to evaluate a patient's progress and his return to normalcy, according to the concepts of different schools of psychiatry. However, he preferred the criteria of the capacity of the individual to follow a constructive regimen of work, rest, and play.

Meyer's Contribution to Psychiatry

Contribution to psychiatric training. From the opening of the Henry Phipps Psychiatric Clinic in 1913, with Meyer as director, he was closely identified with the psychiatric training program there, which produced a large number of psychiatrists who carried the concepts of psychobiology to medical schools and psychiatric clinics and hospitals throughout the world. Even after his retirement in 1937, until his death in 1950, he remained active in psychiatry.

However, Meyer was not primarily concerned with the dissemination of his theoretical concepts. A large part of his work was dedicated to providing proper training in psychiatry for medical students and residents. This training included the development of techniques for the detection and description of the behavioral signs and symptoms; such techniques provided a common basis for communication. In general, these techniques were based on Meyer's concept of psychopathology as an uninterrupted continuum of normal behavior, as an adaptive reaction occurring through temporal sequences and stages which could be elicited through careful history taking and formulated by means of a biographical life chart.

To summarize Meyer's major contributions to psychiatry, they might be considered to include: (1) his emphasis on the interactive nature of symptoms, and the unity of the individual's psychological and biological functioning, so that psychoses are described as "reactions," a definition which persists in the *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association; (2) his pioneering biographical and historical approach to the study of personality; and (3) his enthusiasm for social action, especially for community psychiatry. In fact, although community psychiatry has come to the fore only recently, Meyer predicted the establishment of the community mental health center as early as 1913.

As for psychobiology, with which Meyer's name is usually connected, it was never truly a personality theory, and therefore its application declined with the death of its founder. However, the importance of psychobiology does not derive from its application as a system or theory. Rather, psychobiology is important as a trend of thought which paved the way for the acceptance of current psychodynamic concepts.

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8.2 CARL JUNG

EDWARD WHITMONT, M.D.

Introduction

This description of Jung's contribution to psychiatric thought, which he called "analytical psychology" (to differentiate it from Freud's psychoanalysis) will be limited to a definition of his main concepts and formulations—his symbolic method and his views of the collective unconscious or objective psyche, the archetype, and the complex—and a brief description of his practical methodology.

Basic orientation. Jung differed from Freud, above all, in his concept of the unconscious as the original, a priori mold of the personality and not merely the repressed part. He viewed the unconscious as an original pattern of motivation which manifests itself gradually throughout life but which never can become completely conscious. Jung regarded the symbolic approach to these unconscious phenomena, i.e., dreams and other unconscious manifestations, as the most rewarding means of comprehending the "language" of the psyche and of describing its dynamics. Specifically, he believed that the psyche communicates with us through images rather than concepts and that these images take the form of analogies and parables which represent the meaning of a given situation. He regarded this "as if" method of communication as the spontaneous and original means of psychic expression, "the forgotten language of the soul."

In Jung's estimation, it is not possible to define the psyche with objective accuracy, for in any such attempt the psyche is both subject and object of the definition. Accordingly, he charted the territory of the

psyche in the language most germane to it, symbolism. He utilized the methods of modern physics and sought symbolic descriptions or working models based upon observation of the way an otherwise unknown, which defies precise description, acts in the world of matter.

However, it is important to note here that, to Jung, psychic symbols were not freely chosen, abstract designations which are attached to a specified object by convention (as a verbal or mathematical sign might be). Rather, they are genuine and organic forms of experiencing life; they extend beyond their obvious implications to take on a meaning which cannot be conveyed within our accustomed rational framework. Jung defined a symbol as the best possible description or formula of a relatively unknown fact; a fact which, although it is unknown, is recognized or postulated as existing.

In brief, the generally accepted view regards rational conceptual thought as the standard of normality, while dreams and fantasy are relegated to the level of the primitive, regressive, and even abnormal mental functioning. In contrast, Jung revealed the autonomous image world of the psyche, as expressed in dreams and fantasies, to be a vital and indispensable source of guidance and information which was not to be found elsewhere. His method of dream interpretation, which is so different from that used in other analytic techniques, originates in this radical and unique view of what he called the objective psyche.

Objective Psyche

Definition. This term replaced Jung's earlier reference to the "collective unconscious," which had given rise to serious misunderstanding and misinterpretation. Jung defined the objective psyche as nothing less than the totality of a priori psychic prefigurations and predispositions, the whole substratum of autonomous psychic functioning; and he held that this reservoir of a priori psychic existence gives birth to consciousness. In other words, he maintained that this substratum of psychic phenomena exists prior to the conscious mind and continues to function together with, or despite consciousness; it is autonomous and has laws unto itself. Although the objective psyche may subsequently contain many elements which were once conscious and have become unconscious again (through repression, for instance), the unconscious as a whole cannot be considered a mere relic of consciousness, any more than the psychic functions of animals can be considered remnants of consciousness. The autonomy of the objective psyche can be observed in the peculiarly organized character of the image and emotional drive patterns which arise spontaneously from that realm. Quite frequently, these patterns take on the character of separate personalities. Jung reasoned that if each of these "splinters,"

regardless of whether the fragment is big or small, has an independent personality, then the larger block from which they were separated must have personality autonomy to an even greater degree. He conceived of this larger segment of total personality as a concealed entity: it can be dormant or "dreaming"; it does not necessarily include consciousness.

In summary, then, the objective psyche is so labeled because it lives an independent, autonomous life prior to and regardless of consciousness and personal experience; it possesses a meaning and reality of its own, only one particular aspect of which is ego consciousness. The objective psyche is not a part of the subjective being which the individual calls "I"; rather, his subjective experience of himself is only a part—and, in fact, an incomplete and relatively inadequate part—of the encompassing wholeness of psychic existence. General, impersonal, and as yet undifferentiated, the objective psyche counterbalances individual ego personality with varieties of unconscious (and, therefore, not yet individualized) partial personalities.

The personal unconscious. Jung described what is commonly referred to (by Freudian and other schools of thought) as repressed material, that is, experience which was once conscious, but was subsequently rejected, as the "personal unconscious." Attitudes, urges, feelings, etc. that have been repressed as incompatible with one's ego-ideal appear in personalized form in dreams and fantasies as the "shadow," the alter ego, the individual's unacceptable and repressed "other" personality, which is experienced through an automatic projection upon another person for as long as it remains unconscious. But, again, this personal unconscious is only a small part of the total objective psyche.

Introversion and extroversion. It follows from this view of the reality of the inner world of the psyche that the introverted life adaptation is equal in value to the extroverted one. "Introversion," which is defined as that approach to life experiences in which the individual's predominant sense of reality derives from the actions and reactions of his inner world (thoughts, intuitions, emotions, and sensations) is regarded as complementary to extroversion. "Extroversion," in turn, is defined as the attitude in which the individual's concern with material objects and people predominates. Just as an overemphasis on introversion may result in inadequate external adaptation, extreme extroversion, which is fostered by prevailing cultural and educational values, may lead to depersonalization, loss of a sense of identity, and submersion of the individual in conformist herd psychology.

Archetypes and complexes. The two chief elements of the objective psyche are the archetypes and the complexes which surround them. The archetypes of the objective psyche are a priori energy field con-

figurations which express themselves in typical representational images and in typical human emotion and behavior patterns. They are analogous to the instinctual patterns observed in animal behavior. All psychic energy is channeled and directed into these basic forms of experience, behavior, and emotion. Thus, the archetypes constitute the predispositions of the psyche, or the basic motivations and drives around which the conscious personality will subsequently organize itself. The representational images which express the arrangements of elemental psychic life are universal images which appear in dreams in forms which are similar to past and present mythologems, such as the motifs of mother, father, child, hero, death, rebirth, or the search for treasure.

Complexes may develop as a result of long term conditioning, and/or early traumatic experience. However, their structure derives from an archetypal model; that is, they are based on "transpersonal" and universal forms of human experiencing. To illustrate, the "mother complex"—one's unique, and at times bizarre, manner of reacting to one's mother or one's way of being motherly—is determined not only by personal experience with one's own mother, but also by the universal human predisposition and reaction pattern in terms of "The Mother," by a preformed image or gestalt pattern which exists within the psyche. Jung called this preformed image the mother archetype. It corresponds to a mythological image, which is personalized in the process of being projected as an expectation onto the woman who fills this role in real life.

The mother complex develops as the result of the conflict between archetypal expectation and actual experience with the real woman (or women) who function in a motherly role. For example, a man may project his archetypally based expectations regarding the mother onto any eligible woman in his environment. He will then experience her as life- and love-giving, as protective, sheltering, all-understanding, and unconditionally forgiving; and at the same time he will see her as diminishing his life strength by means of her unfathomable wiles. She is both beautiful and ugly, attractive goddess and destructive witch. And, indeed, all these features are personified in the mother-goddesses of mythology. While no human being has all of these capacities and destructive powers, the human mother who is aware of the degree to which she represents this image can realistically embody its positive, life-giving female aspects and can reduce its negative archetypal elements to an equally realistic degree. However, should the man's relationship with his mother be problematic due to her possessiveness or cold remoteness, the negative aspect of the mother archetype (the devouring witch or dragon) may become activated and form the core of a disruptive mother complex, which forces the ego personality to flee forever from the witch that is projected upon every woman.

In summary, complexes operate as larger or smaller "splintered" personalities and represent autonomous affect-motivated patterns which are endowed with an organized structure and will of their own. More specifically, complexes (and the archetypes on which they are based) can disrupt and even submerge consciousness by replacing the rationality of the ego with their own weird images, emotion, and action patterns. If the conscious ego cannot translate the archetypal expressions symbolically, their meaning will not be accessible, and the ego cannot relate to them in a way which will utilize their energy creatively. Only through the symbolic approach can the archetypes and complexes serve the needs of consciousness and personality growth; if the archetypes are denied, then compulsive, obsessive patterns will develop, which in their extreme forms become psychotic.

Archetypal configurations. As mentioned above, the archetypes (e.g., mother, father, child, hero, etc.) are manifested as mythological or personalized images in dreams and fantasies; in addition, they are invariably projected onto other people. The archetypal configurations which are encountered most frequently are the persona, shadow, animus (in women), anima (in men), and self.

Persona. Jung used this term, which when translated from the Latin means "the actor's mask," to characterize expression of the archetypal drive toward conformity and external reality. The persona is the mask which covers the personality of the individual; it is the face he presents to the outside world, the surface which embodies his external expectations about his social role. In dreams, the persona is represented in the form of images of clothing and as problems involving dress.

Overidentification with the persona results in a pseudo ego, a stereotyped, false personality based on early values and standards of performance which emphasized the need to conform. Thus, one actually becomes the professor, judge, policeman, or society matron, rather than an individual who has adopted the role or profession of professor, policeman, or matron, etc. and gives the role its due at the necessary times. Similarly, other people are viewed not in terms of their unique individual characteristics, but as personifications of the "sister," the "doctor," a "brain," or a "rich man." If the persona is preeminent, dream images show clothing that is too tight, rigid, or armor-like.

Conversely, an inadequate persona means an inadequate adaptation to collective and social demands; hence it can represent as much of a threat to adequate ego functioning as an overly rigid persona. In such cases, dream images may show the dreamer appearing in the street or at a party inadequately dressed or naked.

Shadow. The shadow is represented in dreams as another person of the same sex as the dreamer, and it personifies the dreamer's repressed personal uncon-

scious qualities, his "other" personality. To the extent that the individual is not aware of his shadow and, consequently, identifies with it, he ascribes those qualities he rejects and cannot accept in himself to the other fellow or, collectively, to other people, e.g., minority groups, who then become the enemy.

Anima and animus. Anima and animus are archetypal representations not of personal qualities, but of predispositions or potentials—instinctual, as well as emotional and spiritual—which have not yet become personalized or entered conscious awareness. The anima and animus configurations are universal basic human drives, from which both conscious and unconscious individual qualities develop. These drives do not belong to the manifest personality, but represent "other" as yet unrealized, or recessive elements. Since they include a man's undeveloped femininity and a woman's undeveloped masculinity, they appear in unconscious imagery as persons of the opposite sex, as indicated in the use of both genders of the term: anima to denote the man's feminine aspect, and animus for the woman's masculine qualities. The anima represents the man's feminine potential which is undeveloped (to varying degrees) and, therefore, relatively primitive and unconscious. It includes his capacity for emotionality, fantasy, imagination, receptivity, and the moodiness over which he has no control. When these attributes are projected, they form his anticipations, fears, hopes, and expectations about women. Conversely, the animus, the woman's recessive masculinity, represents her potential initiative and aggressiveness, her ability to reason, her spirituality, and her capacity for activity and organization. When they are not assimilated by consciousness and, therefore, are beyond her control, the animus aspects take hold of her as dogmatic opinionatedness, self-righteous argumentativeness, and stubborn aggressiveness. When the animus is projected, it forms her anticipations, expectations, and reactions to men.

Self. A good deal of misunderstanding has arisen concerning Jung's concept of the self. In contradistinction to Freud's use of the term "self" to refer to the empirical ego-personality, Jung used the term to hypostatize a central archetype which embraces both conscious and unconscious elements, a psychic "wholeness." Since his idea of the unconscious, i.e., the objective psyche, extends to future potentialities, as well as to all current and past experience, the self, as the center of a personality that is both actual and potential, represents not only what we were and are, but also what we are still to become.

In a broader sense, the idea of the self represents the inherent "law of one's being," the archetypal drive toward individuation, toward becoming what one was meant to become, in terms of one's own nature. Jung did not regard the psyche as a *tabula rasa*, to be imprinted with environmental influences. In his view, individuality is preformed in the psyche of the neonate. Environmental influences serve to

modify, enhance, repress, distort, or fragment the unfolding archetypal potentials as they develop into complexes. Thus at various phases of development varying degrees of tension arise between the potential self and the actual ego. This ego-self tension is the underlying cause of one's sense of splitness and incompleteness; it provides impetus for the autonomous drive toward individuation, the urge to become whole, to bridge the split between the actual ego and the potential self, between what is conscious and what is unconscious.

The Ego and the Unconscious

The individual ego is confronted with the basic determinants of the objective psyche, the archetypes, namely, the typical predispositions of behavior, patterns of emotion or affect configurations, and representational images. It is also confronted with the complexes which result from the personalized modification (or distortion) of archetypes when they interact with early childhood experience, conditioning, and traumata. The archetypes and the complexes which form around them operate independently of the ego and are, to varying degrees, in conflict with the intents of the conscious personality; therefore, they are capable of causing psychic dissociation and fragmentation. The resultant threat to emotional stability can be overcome only if these archetypes and complexes are consciously confronted and understood in symbolic terms.

For example, a male patient's compulsive urge to prostrate himself and worship a woman's feet was resolved and integrated into his personality once he understood the symbolic content of his fetish. More specifically, his seemingly bizarre urge had to be understood *as if* it referred to a gap in his potential wholeness; it had to be translated as symbolizing his unrealized need to worship and adore the feminine world of emotion, fantasy, and intuition, as it exists in himself and in others, which his one-sided, rational outlook had previously devalued. Once he acquired such insight, his behavior was no longer governed by the primitive urge. The reorientation of conscious contents and values which occurs consequent to such symbolic understanding enlists the cooperation (rather than the obstruction) of the unconscious in daily life.

Process of individuation. Jung described the process of individuation as the growth and expansion of personality which occurs through realizing and becoming what one intrinsically is. This process defines the purpose of therapy for both the neurotic and the psychotic patient, and it delineates the goal of the healthy person who is seeking a clearer or deeper understanding of the meaning of life. Jung commented on this point as follows:

...psychoneurosis must be understood...as the suffering of a soul which has not discovered its meaning. But all creativeness in the realm of the spirit as well as every psychic advance of

man arises from the suffering of the soul, and the cause of the suffering is spiritual stagnation, or psychic sterility. (Psychology and Religion. *Collected Works*, vol. 11, p. 330).

Conscious and unconscious do not make a whole when one of them is suppressed and injured by the other. If they must contend, let it at least be a fair fight with equal right on both sides. Both are aspects of life. Consciousness should defend its reason and protect itself, and the chaotic life of the unconscious [should] be given the chance of having its way too—as much of it as we can stand. This means open conflict and open collaboration at once. That, evidently, is the way human life should be. It is the old game of hammer and anvil: between them the patient iron is forged into an indestructible whole, “an individual.” This, roughly, is what I mean by the individuation process.

(The Archetypes and the Collective Unconscious. *Collected Works*, vol. 9, Part I, p. 288.)

The achievement of personality means nothing less than the optimum development of the whole individual human being. (The Development of the Personality. *Collected Works*, vol. 17, p. 171.)

It... means fidelity to the law of one's own being.

(The Development of the Personality. *Collected Works*, vol. 17, p. 173.)

In so far as every individual has the law of his life inborn in him, it is theoretically possible for any man to follow this law and so become a personality; that is, to achieve wholeness.

(The Development of the Personality. *Collected Works*, vol. 17, p. 179.)

Libido theory. Jung viewed the libido as every possible manifestation of psychic energy. It is not limited to sexuality or to the power drive but may express or include these in addition to any and every other possible expression of the psyche, including the religious or spiritual urge, the urge to find meaning in life. Jung's definition of religion is not confined to any particular creed but is derived from the original meaning of the Latin *religere*, namely:

...A careful consideration and observation of certain dynamic factors that are conceived as “powers,” “spirits,” “daemons,” “gods,” laws, ideas, ideals, or whatever name man has given to such factors in his world as he has found powerful, dangerous, or helpful enough to be taken into careful consideration, or grand, beautiful, and meaningful enough to be devoutly worshipped and loved.

(Psychology and Religion. *Collected Works*, vol. 11, p. 8.)

Accordingly, analytic psychology gives conscientious consideration to the nonrational archetypal factors of the psyche as they delimit, modify, and direct the conscious ego's functioning and goals. At the same time, the individual who seriously explores the products of the unconscious finds symbols and images arising within himself which have occurred again and again in the past as part of the mythological and religious experience of people of all races, both within and outside the framework of the church. Since religion and the religious attitude arise spontaneously within the unconscious in the form of mythological representations, they are not, from the Jungian point of view, to be identified with any specific belief or doctrine. Nor, for that matter, should they reflect the teachings or convictions of the analyst. They are concerned exclusively with the individual's relation

to his own deepest reality. What they demand of him is not abstract consideration in philosophical terms. Rather, they serve to underscore further the need for a symbolic understanding of the images of his unconscious, a total psychic reorientation in terms of his concrete, everyday problems. The following segment from a case history may serve to illustrate.

A middle-aged man of decidedly atheistic convictions, in modest circumstances, had decided to leave his wife and children to marry a wealthy girl, many years his junior. After he made this decision, he had the following dream. The patient dreamed that he was about to set out on a trip to a rather out of the way destination. Rushing off hurriedly, he passed a group of respectable looking elderly men who shook their heads disapprovingly. He disregarded them, however, and pushed on. Suddenly, from out of the clouds, a huge hand appeared, grabbed him, and shoved him back to the place from which he had started.

This dream shows that the patient was well aware that what he set out to do was “out of the way” and contrary to generally and culturally accepted moral standards (the disapproving elders = Freud's superego). It shows that it might be possible for him to disregard these considerations with relative impunity and still manage to get by. Something else, however, could not be disregarded. A power or entity, visualized or symbolized as if it reached from heaven to earth, did not allow him to proceed. We may call this power the inner judge of conscience, the moral integrity of the personality, the self (as distinguished from the conscious ego), or the will of life, or characterize it in the symbolic terms of this dream image as the hand of God. All of these phrases and symbolic representations express the same thing: they refer to an entity which is both unknown and unknowable, yet objectively real; is transpersonal and supreme; has appeared in the form of many symbols and under many names; and has been instinctively acknowledged by mankind throughout the ages. The dream contains a warning that the “hand of God” would not permit the patient to proceed.

Of course, one is justified in asking whether dreams of this sort may not express the patient's own unadmitted and unconscious wishes, rather than the requirement of an “objectively real” transpersonal self, an unknowable entity anthropomorphically symbolized through the images of the objective psyche. Could this religious symbolism have been “invented” in order to furnish the dreamer with a plausible alibi for changing a plan he did not really want to go through with? Quite frequently, however, as was true in this case, the dreamer is startled, even shocked by such material. Far from fulfilling his wishes or representing any attitude he can recognize as his own, it actually makes a demand upon him and confronts him with a point of view which is apparently entirely unacceptable and opposed to his own desires and convictions.

Not infrequently, there are serious consequences when warnings of this sort are overlooked. The dis-

regarded, unconscious "other" will then obstruct and sabotage, rather than complement, the conscious personality, thus producing psychopathology which stems from varying degrees of guilt and conflict. Such observable results would certainly seem to justify acceptance of the "objectiveness" of a nonpersonal source of meaning as a working hypothesis.

Analytic Principles

The aim of psychotherapy, as Jung defined it, is to bring about an adequate adaptation to reality. But, as we have seen, he conceived of an internal, as well as an external, reality. That is, reality includes the demands of the unconscious and the as yet unrealized potentialities of the inner world of the objective psyche centered in the self, as well as one's adaptation to society. Thus, the wholeness of the human individual requires an awareness of both inner and outer demands. In general, the need for outward adaptation is well recognized and has been stressed in clinical practice; Jung's major contribution stems from his unique view of man's inner adaptation. Thus, Jung maintained that all psychic drives are amoral and ambivalent; that is, they do not fit into positive-good, or negative-bad classifications. Rather, it is our conscious attitude toward these drives (and toward archetypal meaning as well) that determines whether they will play a constructive or destructive role in our lives.

Jung's concept of psychopathology. When drives, archetypal urges, talents, or qualities are repressed or not allowed to develop, they remain primitive, undifferentiated, unadapted, and negative. And, as such, they exert a potentially threatening or destructive influence upon personality. When they interfere with reality adaptation, they manifest themselves in pathological obsessions or symptoms. However, these very same elements can be integrated into the personality and transformed into positive—and even creative—assets. Once the conscious ego is able to confront these hitherto unconscious or repressed components, once it is able to recognize their significance and inherent positive potential applications and can find ways to accord them a constructive role in life, a deepening of personality and life experience ensues. Thus, the drives, archetypal urges, etc., which, in their repressed form, pose a threat to our stability, may serve as a force for individuation and growth when rechanneled. Anger or vindictiveness may be transformed into initiative and courage; evasive thoughtlessness may become the talent for lightness and playfulness; rigidity may express itself as firmness.

Therapeutic techniques. Jung's therapeutic approach aims not merely at discipline and sublimation, but at transformation of the drives (and archetypal urges) themselves, i.e., the transformation of one's innermost being, through experiencing the objective psyche, not merely in an abstract, intellectual sense,

but symbolically, as an autonomous "other" personality, thereby effecting a reconciliation of conscious and unconscious drives and goals. This is accomplished by basing the conduct of the therapeutic process upon guidance from the unconscious itself. This, in turn, involves conscious observation and scrutiny of the symbolic "statements" of the objective psyche, as they manifest themselves in dreams, fantasies, and artistic productions, such as painting and sculpting. Of these, the dream is regarded as the most authentic, autonomous, and the "purest" product of the unconscious. Artistic productions contain varying degrees of unconscious elements, which are contaminated by deliberate conscious formulations; and fantasies stand midway between dreams and artistic productions. The "messages" inherent in these phenomena must be integrated into conscious life and tested in terms of external values and adaptations.

Interpretation of dreams, fantasies, and artistic productions. Jung's analytic technique relies heavily on the interpretation of dreams, fantasies, and artistic productions, and on a concern with the trend which emerges in the course of their continued observation. His radically unique method of dream and fantasy interpretation had its roots in his emphasis on the symbolic language of the objective psyche. As was evident in the preceding clinical example, Jung did not subscribe to Freud's concept of the dream as an expression of latent repressed wishes. Rather, he conceived of the dream as the involuntary expression of psychic process, which is not subject to conscious control, and which, therefore, presents the patient's subjective state as it really is.

The dream has no respect for the analyst's conjectures, or for the patient's views, fears, hopes, wishes, or illusions; it simply "tells how matters stand." However, as noted above, it does not present its "message" in the form of rational concepts, but in symbolic analogies. These analogies may pertain to an external object-related situation (in which case the dream would be interpreted on the "object level"), or to an inner situation, i.e., the dreamer's unconscious psychic configuration (which would call for dream interpretation on the "subject level"). Whatever its content and level of interpretation, the dream is viewed as a compensatory activity; that is, its function is to expand conscious awareness, by sending the ego a message describing a fact which is unknown but potentially vital, and which, therefore, needs to become known.

To illustrate, a patient's dream of being threatened by her sister would be investigated on the object level first. And in that frame of reference, it might be interpreted as a warning against her sister's behavior, if the dreamer happened to be unaware of her sister's true nature and could see only her loving, friendly side. If, on the other hand, the dream seemed to reinforce a conviction already held by the dreamer; if, indeed, it reflected the dreamer's obsessional paranoid

conviction, then it must be interpreted on the subject level, that is, through reference to the dreamer herself, if its message is to be truly compensatory and tell "how matters stand." Interpretation on the subject level would confront the dreamer with her own projection. More specifically, it would refer to the "sister within" (the shadow, the unrealized aspects of her personality), namely, to those qualities which the dreamer associates with her sister (e.g., jealousy or cynicism) while minimizing or being unaware of their existence in herself. However, she may also attribute positive qualities to her sister, such as imagination or artistic talent, which the dreamer herself possesses but devalues for some reason.

Goal of treatment. A decisive point is reached in therapy when the psychological situation appears deadlocked, with no rational solution in view that might bring about a reconciliation of the conflicting drives. Sooner or later, dreams or fantasies appear which indicate possible areas for progress and development which could not have been conceived of through conscious thought processes. Thus, in their search for a solution to the rationally deadlocked situation, both therapist and patient would do well to follow the images which arise spontaneously from the patient's unconscious as their guideline. The patient's resulting course of development may not conform to the therapist's standards of "normal" adjustment. However, this is not the goal of Jungian therapy. Rather, the aim of treatment is to develop the creative potentialities (even if this is only the creative potentiality for living) which lies within each individual patient. Thus, the therapist must decide in every single case whether or not he is willing and able to "stand by a human being with counsel and help upon what may be a daring misadventure." He must have no fixed ideas of what is right (i.e., "normal"), and what is not; if so, he takes something from the richness of the experience. He must try to help his patient find new meanings within, by helping him to understand what is actually happening in his objective psyche—"only that which acts is actual." To this end, the patient is not so much told about himself as put in touch with himself. He must make a constant conscious effort to grasp the significance of mediating unconscious images as they emerge in dreams, fantasies, or artistic productions, in order to bring about the creative transformation of destructive complexes.

Jung's contribution to psychotherapy. In summary, Jung's contribution to therapeutic techniques rests upon his view of psychological conflicts in terms of their symbolic significance, as well as their symptom content. Psychopathology is seen as the result of the individual's inability to integrate new adaptation needs. However, while the intensity of a psychiatric disturbance may be correlated with ego weakness, this may not be the only factor involved. A breakdown in the capacity to integrate the stream of irrational images and impulses may be caused by the

magnitude of the new life within, by the individual's unrealized potentials and talents. When viewed in this light, mental suffering can play a creative role in development, if the conscious ego can relate to it effectively.

By making accessible through its symbolism whatever views, insights, and awareness were previously hidden and unconscious, the objective psyche functions not only as the source of psychological conflict and pathology, but also as the source of psychological and spiritual guidance. Indeed, by uncovering the guiding aspect of psychological symbolism, Jung undertook far more than the task of relieving overt neurotic and psychotic symptoms. In deciphering the messages of the objective psyche, he showed us that it is possible to come face to face with the creative sources of existence and to unfold thereby the deepest meanings of life.

However, if the creative elements constellated by the archetypes are to be utilized fully, it is not enough for the individual to understand the reality of the autonomous complex intellectually. It must be existentially experienced as an autonomous reality. For it is through actually being "touched" emotionally that one is "moved" and thus changed. When the dissociation between conscious and unconscious personalities is healed and redirected, when a true dialogue develops in which both have their say, individuation can then take place; one becomes truly "one's self." This is the aim of therapy.

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8.3 OTTO RANK

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Introduction

Rank and Freud: Areas of disagreement. Rank rejected many aspects of Freudian theory and, concomitantly, Freud considered Rank's concepts to be in conflict with the basic propositions of psychoanalysis. The nature and extent of these differences are described in further detail below. As a means of orienting the reader to the Rankian theory of personal-

ity and psychopathology, it may be summarized briefly as follows.

In general, Rank and Freud might be said to have been on opposite theoretical poles. Rank's ideas were relativistic, voluntaristic, and humanistic, in contrast to Freud's mechanistic, deterministic and reductionistic concepts. More specifically, their theoretical differences stemmed, first, from Rank's emphasis on the birth trauma as the crucial factor in the etiology of the neuroses and his concomitant negation of the crucial role played by the Oedipus complex. A second point of theoretical difference involved Rank's concept of the ego as an "autonomous representative of the will," in contrast to Freud's concept of the ego as subservient to the id.

Rank also differed with Freud in regard to psychoanalytic therapeutic techniques as well. In keeping with his theoretical orientation, he emphasized a dynamic relationship between patient and therapist rather than the classical psychoanalytic interpersonal distance and focus on interpretation. He advocated flexibility on the part of the therapist, rather than adherence to the rigid rules which then governed the classical psychoanalytic treatment situation. In addition, Rank concentrated on the patient's present difficulties, rather than trying to foster insight into his past, as advocated by Freud.

Early contact with psychoanalysis. Otto Rank was introduced to Freud by Alfred Adler as a young student of 21, and shortly thereafter he became a member of the "Committee." Recognizing his brilliance, Freud stated that he had acquired in Rank a "zealous and dependable secretary and a faithful helper and co-worker." Rank was encouraged to continue his university studies and "to devote himself to the non-medical side of psychoanalytic investigation," because of his particular interest in art, philosophy, and the problem of creativity.

Dissension and independence. Rank remained a member of Freud's inner circle until 1926, long after Adler and Jung had left the "Committee" to establish their own "schools." His departure from the orthodox camp had begun in the early 1920's, however, when he questioned the wisdom of lengthy analyses, which he considered the result of Freud's insistence on intensive investigation of each case, to the neglect of the patient's current therapeutic needs. He also questioned the value of the psychoanalyst's passive role in relation to the course of treatment, and he began to experiment with short term therapy and to set time limits for the termination of treatment. These changes in practice led to new insights and further theoretical deviations. However, Rank's final break with Freud was precipitated by his publication in 1923 of *The Trauma of Birth*.

Freud himself espoused the concept of birth as a traumatic situation which is related to anxiety. He expressed these ideas in many of his writings, and they are explicitly stated in a lecture on "Anxiety"

in his *A General Introduction to Psychoanalysis*. His opposition arose at least in part in response to Rank's hypothesis that all of life consists of complicated attempts to undo birth trauma and also to the fact that Rank assigned it a crucial role in the etiology of psychopathology. Also, Freud's opposition was directed to the central role accorded the relationship of the child and his mother in psychic conflict, so that all other conflicts, including those deriving from the oedipal situation, merely mask the essential conflicts concerning birth.

Basic orientation. In evaluating Rank's theory and therapeutic techniques, several important factors must be noted. First, Rank was not a systematic theorist, and he did not share Freud's desire to elaborate a comprehensive theory of personality. While Freud ultimately conceded the fact that the available scientific knowledge was not yet sufficient to permit such a finished system, apparently Rank was much more inhibited by these limitations. Also, Rank was influenced by his lack of medical background. As he had been trained in philosophy, psychology, art, and history, his theories were not elaborated along nosological lines or related to genetic factors. Nor was he bound by the medical tendency to conceive of neurosis as an illness. Consequently, his attempts to find a biological basis for his theory of the birth trauma were soon overshadowed by his concern with the personality as a whole, i.e., the self. Thus, his vocabulary is that of philosophy and religion, rather than medicine and scientific psychology.

One must also consider the various phases in the development of Rank's ideas. Up to the time he differed with Freud on technical problems of therapy, he had followed basic Freudian tenets, more or less. And, in fact, although *The Trauma of Birth* was a significant break with tradition, it was still in the Freudian "spirit," for, as mentioned above, Freud himself had formulated the concept of birth as a psychically significant experience earlier. However, after 1926, Rank became increasingly critical of psychoanalysis and finally reached the point where he no longer considered himself a psychoanalyst.

Personality Theory

Rank conceived of personality within a frame of reference which emphasized human values, such as religion, art, etc. He stressed the dynamic dualism in life, the polarities of male and female, individuation and conformity, impulse and inhibition, etc., eschewing the one-sided approach which he considered characteristic of Freudian formulations. Accordingly, Rank's will psychology is essentially an ego psychology, in which the ego functions as an "autonomous representative of the will."

Concept of will. The concept of will is, in fact, the core of Rank's psychology, and the problem of willing is "the central problem of the whole question of personality, even of all psychology." Rank considered will

to be "a positive guiding [force for the] organization and integration of self, which utilizes creatively, as well as inhibits and controls the instinctual drives." This concept can best be understood if it is considered in terms of its development, beginning with its first manifestations.

Trauma of birth. Freud had emphasized the powerful physiological reactions of birth as the prototype of later anxiety; but Rank correlated anxiety with separation from the mother or, more specifically, with separation from the womb, which represented the source of effortless gratification. He further hypothesized that this painful expulsion results in "primal anxiety," which is then subject to "primal repression." Thus, any subsequent desire to return to the position of "primal pleasure" will give rise to anxiety. In a broader sense, however, Rank postulated that all human mental functioning has its origin in the anxiety precipitated by the birth trauma. For, thereafter, any change from a pleasurable to a painful situation will give rise to the psychical quality of emotion or feelings of anxiety. In terms of development, Rank suggested that childhood was devoted to the mastery of the birth trauma, although the original, or "primal" anxiety had been displaced onto other situations and objects. Thus, the anxiety experienced in childhood actually represents an attempt to abreact the original traumatic experience.

As the result of the trauma of birth, separation is the most dreaded of human experiences, and the central human conflict derives from the wish to return to the womb, on the one hand, and the dread of this wish because of the anxiety it arouses, on the other. In this frame of reference, weaning is not the frustration of a component instinct (orality); rather, it represents another separation from the mother, with all the anxiety which accompanies such a separation. The frustration of orality, then, is secondary to the fear of separation. And genitality—for the male, at least—is the avenue of return to the mother. The female, on the other hand, can achieve this goal only through identification with her father or brothers, or her own child.

Infantile sexuality. On the basis of his theory of the birth trauma, Rank reinterpreted other Freudian concepts. Thus, the basic psychoanalytic concept of infantile sexuality was reinterpreted as the child's concern with where he came from, and the anxiety which surrounds his desire to return. Thus the boy clings to the notion that all human beings have a phallus, in order to avoid the primal anxiety which is associated with the knowledge of the existence of female genitalia, and, concomitantly, homosexuality is rooted in the dread of the female genitalia. Female penis envy is conceptualized as a reaction to the possession of sexual organs and is similarly associated with the primal anxiety.

The masochist transmutes the pain of birth into pleasure. The sadist merely expresses the boundless

resentment of one who has been expelled from paradise. The exhibitionist seeks a repetition of the nakedness of the intrauterine Garden of Eden. And, finally, the theory of the Oedipus complex was reformulated as the result of the attempt to master birth anxiety by accepting the mother's genitals as a source of pleasure, rather than pain and anxiety. Sleep, dreams, and even cultural phenomena were similarly explained in terms of the birth trauma and the persisting desire to return to the mother's womb.

Guilt and fear. Separation, which is basic to the development of individuality and the creation of an autonomous will or ego, begins with the act of being born and physical separation from the mother. In the course of normal development, the child learns intellectually and emotionally that he and his mother are separate individuals. Both the child and the adolescent may assert themselves negatively in order to "define" themselves. In this way, the child learns that he can say "no" to his parents, and even to his own impulses. However, this counter-will, which is essential to the process of individuation, tends to destroy the unity with others which is equally desirable. And so it tends to arouse feelings of guilt. Rank called the guilt which stemmed from this source "ethical guilt," to differentiate it from the "moralistic guilt" aroused by behavior which is contrary to social commandment. In addition, the process of achieving individuality is beset with life fear, that is, the fear of giving up the support and comfort of symbiotic relationships, analogous to that of the prenatal state. But the developing individual is assertive and potentially creative and views any regression to the womb as a loss of individuality and a threat to "life." This is manifested in the death fear, which drives the individual toward greater effort, just as life fear inhibits. This polarity between the drive toward individualization (which is impeded by life fear) and the drive toward symbiosis and dependency (which is counteracted by the death fear) points up the fact that fear is potentially constructive and not necessarily crippling; that resistance can represent the constructive power of will. Obviously, the ideal is the constructive, creative integration of these opposing trends.

Impulse, emotion, and will. Rank characterized the personality chiefly in terms of impulse, emotion, and will. The child's impulses seek immediate discharge and gratification. Emotion arises because of the blocking of an impulse, from without or within. But the real emotional life of the individual can develop only at the stage of the formation of the will—when impulses are "positively and actively placed in the service of the ego," when they are "under the dominance of the ego," instead of its master. When he learns to master his impulses, as in toilet training, the child begins the process of will development. The will, which is born out of the need to master one's impulse life, is also turned outward and manifested as "negative counter-will in the form of stubbornness, willful-

ness and disobedience." Inhibition and denial are other expressions of negative will. However, Rank also emphasized the creative nature of will, the "creative will impulse," shorn of its Freudian sexual character.

Process of individuation. The individual goes through three stages in the process of individuation. During the first stage he wills for himself what had previously been determined for him by the values of his parents and society, or by his biological needs. The next stage is one of conflict between will and counter-will, in which the individual seeks to construct his own ideals, standards, and goals. The third stage is characterized by a truly autonomous ego, capable of creative utilization of powers and ideas.

The so-called average "normal" man is fixed at the first stage. There is a relative harmony of personality functioning, but there are few possibilities for creativity. The ideal is to be like others. The second stage, that is, the stage of conflict, gives rise to the "neurotic," with his tendency toward self-criticism, inferiority feelings, and guilt. He feels estranged from society, the ideals of which he cannot accept, but he is unable to create his own values, for that would require his self-acceptance. In general, the ideal is to function in opposition to the wishes of others.

The third stage of individuation represents the highest integration of will and spirit. Creativity is pre-eminent. The individual who has reached this level of development accepts his own ideals and values without having to impose them on others. The ideal is to be what one's self is. The ego is not helplessly driven by a Freudian id or restrained by a Freudian superego. It is the autonomous representative of the will, in terms of a self-constituted ideal. Rank felt that Freudianism deprived the human personality of its inherent consciousness and potential autonomy, responsibility, creativeness, and ethical sense of duty.

Personality development and individuation are also influenced by two kinds of emotional constellations. These include the uniting or love emotions (love, tenderness, etc.), and the separating or hate emotions (pride, scorn, anger, etc.). The latter prevent the formation of the love emotions. The former lead to a "beneficent release of will," while the latter cause a "hardening" of the will. The love emotions lead to a surrender of self-will, a yielding to the will of another. "In love and through love, whether it be divine or human, the individual can accept himself [and] his own will because the other does." On the other hand, force or "will compulsion" works destructively. Sexuality is the only natural method of healing, or at least of alleviating the primal ethical guilt, because sexuality transforms the negative will into the strongest positive expression of will.

Theory of Psychopathology

As mentioned earlier, Rank was not concerned with psychiatric nosology. References to various forms of neurosis which are scattered throughout his writings

are presented chiefly within the framework of personality types. In addition to the "normal" man, Rank identified the artistic or creative type, the neurotic type, and the antisocial (criminal and psychopathic) type.

In the creative type, will is the organizing principle. Inhibition prevails in the neurotic; impulse is pre-eminent in the antisocial individual. These types are characterized by an imbalance of the various motivational trends discussed above. For example, Rank felt that the artist reconciled separation or individualization and the need for union in an essentially constructive manner. On the other hand, the neurotic is a frustrated artist type, who has failed to achieve an integration of the opposing trends in life but cannot take the easy (average) way out of the dilemma. Unable to adopt the approach of the average person, he seeks one of two alternate paths: he may become completely involved in trivial experiences, to avoid the pain of an independent act of willing, or he may become unduly compliant or consistently rebellious. The neurotic is dominated by a fear of life. He preserves a sense of wholeness by his totalistic, overwhelming relationship with others. Finally, the neurotic may become the detached antisocial type in an effort to maintain his ego intact. The death fear is dominant. Such an individual dreads the loss of individuality threatened by any union with another.

Therapeutic Techniques

The core of Rank's therapeutic technique, which is known as will, or relationship therapy, is the concept of relationship. Rank emphasized the relationship between patient and therapist; the emotional dynamics experienced in the therapeutic situation; new developments in the therapeutic situation; attention to the form or pattern of experience, as opposed to the content; and, finally, the special device of end setting, i.e., the establishment of a time limit for the treatment.

The goal of treatment is to help the patient to accept his separateness and will without guilt. Therefore, resistance is accepted as a valid expression of will. Even hostility is to be understood and accepted as an expression of counter-will, directed against the trend toward union and dependence. However, the therapist does not merely tolerate the hostility but utilizes it to help the patient to overcome his life fear and gain the courage necessary for separation.

The recognition and utilization of the life and death fears is stressed in Rankian therapy. Progress in therapy, leading to independent acts, may arouse the death fear as well as the primary life fear. Initial success may lead to an intensification of moralistic guilt. The patient must feel the support of the therapist in his new ventures toward independence, even when they do not meet with the therapist's full approval. In brief, throughout the period of therapy, the patient is given quiet assurance that he can be loved without feeling dominated.

But too much acceptance or "love" tends to activate death fear, since neurotics simultaneously seek and fear close union. An increase in the death fear ultimately leads to an intensification of the drive toward independence, a potentially healthy cycle. However, the therapist must be aware of the death fear early and reveal it to the patient, to minimize the swings between trust and fear.

Therapy seeks to develop a more reality-oriented attitude and behavior in the patient. This functionalist view leads to rapid introduction of the reality factor into therapy. Because the neurotic seeks to establish total relationships, the Rankian therapist tries to encourage a more realistic partialization through consistent examination of the real life situation, past and present. Furthermore, the realistic limitations of the therapeutic situation are stressed. The therapist accepts the will of the patient with limits consciously understood by both. The therapist attempts consistently to disassociate himself from the inappropriate, repetitive role assigned to him from out of the past, thereby bringing reality into the therapeutic process.

As soon as a good working relationship is established, however early in the treatment, a definite date for termination of therapy is decided upon, subject to change. This technique militates against the excessive dependence on the therapist which is so common in Freudian therapy. Consequently, the patient accepts responsibility for change. "Cure" is not some remote eventuality. Advance awareness of the time of termination makes the event less traumatic, "less reminiscent of the primal birth trauma."

Current Status

Although no Rankian school or training institute has been formally established, Rank's concepts have had a significant influence on American social work theory and practice (which is rivaled only by the orthodox Freudian orientation). Thus, Rank's theories have formed the nucleus for the Philadelphia, or "functional" school of social work. The University of Pennsylvania School of Social Work has been the center for the dissemination of his ideas, which are particularly suited to social work practice (e.g., short term therapy, a focus on reality factors and current life situations, etc.). Rank's influence is also evident in related areas of practice, such as guidance, counseling, and various forms of group and community work. Finally, recent trends in individual psychotherapy, such as greater activity on the part of the therapist and increasing emphasis on short term therapy, may also be considered the result of Rank's pioneer innovations.

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8.4 MELANIE KLEIN

SIMON H. NAGLER, M.D.

Introduction

"English" versus "Continental School" of psychoanalysis. The areas of disagreement between the "English School" of psychoanalysis (as represented by Melanie Klein), and the "Continental School" (as represented by Anna Freud, and classical psychoanalytic theory) may be delineated as follows.

In contrast to orthodox psychoanalytic theory, which postulates the development of the superego during the 4th year of life, Klein maintained that a primitive superego is formed during the 1st and 2nd years, the stage of infantile anxiety and aggressiveness.

Klein believed that aggressive rather than sexual drives were preeminent during the earliest stages of development. It is the presence of these aggressive and sadistic impulses and the fear of retaliation which give rise to the primitive superego described above.

Klein maintained that children 2 years old could be treated analytically. The couch and free association could not be employed. However, the child might walk about, talk, play, tell stories, describe dreams, etc., and all this material was available for direct, deep interpretation by the analyst from the outset. Such interpretations could serve to allay anxiety. Moreover, the young child is capable of forming a transference. Finally, the cooperation of the child's parents is not crucial for the success of treatment, since little significance can be attached to the reality situation in any event. In contrast, Anna Freud emphasized the importance of parental cooperation, and of environmental factors in general, and advocated the treatment of young children by classical techniques which have been modified to suit the capacities of the child.

In contrast to Anna Freud, Klein believed that environmental factors played a relatively minor role in development.

Finally, Klein deviated from classical psychoanalytic theory most sharply in her formulations concerning the Oedipus complex. The onset of the oedipal conflict was traced to the earliest months of life. Further, she believed that the child became aware of parental coitus during the 1st year of life, and that this awareness led, in turn, to a wide range of sexual and aggressive fantasies.

In summary, then, Klein's formulations concerning the pre-oedipal stages of development, the superego, and fantasy in infants provoked controversy. Her later ideas, particularly her hypothesis concerning a "depressive position" in the infant, which was considered central to all mental development, were considered major deviations from orthodox Freudian theory.

Klein's intricate theoretical structure developed in two phases. The first phase ended with the publication of *The Psycho-Analysis of Children* in 1932; the second began with her classical paper on the manic-depressive states in 1934.

Personality Theory

First phase. The concepts which were formulated during the first phase of Klein's work emphasized the infant's autoeroticism and primary narcissism. She considered the infant capable of object relations, despite his poorly defined ego boundaries. Toward the middle of the 1st year, the infant's oral frustration gives rise to his unconscious awareness that his parents enjoy sexual pleasures, which is initially conceived of in oral terms. This awareness, in turn, produces oral envy and increased instinctual oral sadism, which stimulate oedipal impulses. At first, these impulses take the form of a desire to penetrate and destroy the mother's body. The child hopes thereby to incorporate orally the father's penis, which he fantasizes as having been incorporated by the mother.

In the girl, the impulse to destroy the mother's body and its contents in various cruel ways gives rise to the fear that her own body will be destroyed in retaliation. In the boy, these aggressive impulses produce castration anxiety. The primitive superego emerges at this stage of development. The incorporated penis serves as a defense against the child's sadistic impulses. These impulses are also projected onto an external object, which is subjected to oral-, urethral-, and anal-sadistic attack. This external object is first represented by the mother's breast; the infant's sadistic impulses are then directed against other parts of her body.

The child also introjects "bad" objects, i.e., those objects which cause the child pain. These evoke a cruel superego which causes severe anxiety. Therefore, in the early anal-sadistic phase the child seeks to "eject" its superego and even its id. At this time, there is confusion between the fantasied and real dangers of the bad objects, but ejection of the superego paves the way for the introjection of "good" objects which provide pleasure and satisfaction.

These early anxieties and defenses are modified by the development of libido and real object relations. In the girl, the turning from the mother's breast to the father's penis is a precursor of the oedipal situation. A similar reaction in the boy may lead to homosexuality unless a reorientation toward the mother occurs. As mentioned above, the ejection of the super-

ego in the early stage of anal development permits the reintroduction of good objects and alleviation of anxiety phobias, which have a paranoid, projective character. In the later anal stage, the superego is no longer ejected; anxiety turns into guilt, and obsessional behavior appears. The infant's belief in creative omnipotence conflicts with his destructive or excretory omnipotence. Obsessional activity is a further defense against early masturbatory impulses, which are mobilized to deal with sadistic oedipal impulses. The normal mechanisms of play augment the pathological defenses, and the creation of a realistic ego-ideal is begun. The development of the libido and superego ceases at the onset of latency. Klein believed that the progressive stages of libidinal development represent the victory of the libido in its struggle against the destructive impulses.

Second phase. The second theoretical phase revolves around Klein's concept of a "depressive position," which she postulated as central to the child's development and its later capacity for love. As noted above, the infant's development is largely regulated by the processes of introjection and projection. The child introjects good and bad objects, and the latter are conceived of as dangerous to the ego. A paranoid position automatically develops at the age of about 2 to 3 months. Specifically, projection is employed as a defense against internal as well as external persecutors. Since the infant is in the oral phase of development at this point, the aggressive fantasies projected onto the mother are those of biting, tearing, and sucking out.

At the time of weaning, the infant begins to recognize the mother as one person, both good and bad, and becomes concerned about the threat to the introjected good object, now the loved object, from the introjected bad object and from the id. There is also a danger that the good objects will be expelled along with the bad. This evokes an increase in the introjection of good objects and a need to make reparation for the destroyed objects. The child is filled with anxiety lest the love object be lost due to his own destructiveness. Whenever the mother makes the child angry, the good internal object is threatened with destruction. This conflict is the basis of the depressive position, in which guilt arises as the precursor of conscience. The guilty child uses magic in an effort to convert the bad mother into a good one, and to protect the introjected good objects against the bad.

Owing to the suffering, discomfort, and anxiety which accompany the depressive position, the infant is prone to revert to the paranoid position, in which feelings of omnipotence, overactivity, and denial of reality may be used as defensive measures, along with projection of internalized bad objects and denial of external ones. Eventually, the perfect good mother and the unrealistically dreadful bad mother merge into the image of the realistic one. According to Klein, the

real aggressiveness of the parents is unimportant as compared to the aggressiveness which the child projects upon the parents as a result of his own innate destructiveness. Thus Klein's theoretical formulations served to underscore the extent of man's innate aggressive instinct (postulated by Freud as the death instinct). Only psychoanalysis can eliminate (or, at least, diminish) this aggression and the anxiety it gives rise to, and the mutual reinforcement between man's hate and man's fear. Concomitantly, if analysis does not reach and work through this stage of infantile anxiety and sadism, it must be considered incomplete.

Klein's theories were inferentially based on her psychoanalytic treatment of very young children through play technique. Her critics considered her formulations clinically unsubstantiated and described her concepts as "subjective fantasy," "speculative," "hypothetical," "metaphorical," "dogmatic assumption," and "confusion of hypothesis with fact."

Theory of Psychopathology

Freud maintained that infantile anxiety could be epitomized as the loss of the loved person, particularly in the girl. In the boy, castration was the chief source of anxiety. Klein considered these phenomena to be later modifications of anxiety which arises at an earlier stage of development. As mentioned earlier, in the boy, the earliest anxiety situation arises from the attack on the mother's body with its incorporated penis. The infant's extremely cruel superego perceives the parents as sadistic. Consequently, the girl's sadistic attitude toward the mother's body gives rise to profound anxiety lest she suffer the same fate.

Klein considered sadism a determining factor in mental conflict. The paranoid and depressive positions were fixation points for possible subsequent psychotic disintegration. She believed that the presence of excessive anxiety in infancy and the predominance of a very severe superego from the period of its genesis were the fundamental determinants of subsequent development of disturbances of ego development and psychosis.

The ego deals with the depressive position in two ways. A flight to the good introjections carries with it the danger of a later denial of reality and schizophrenic psychosis. A flight to the external good object is the characteristic forerunner of neurosis and a possible weakness in ego functioning with marked dependency on the object. Inability to deal successfully with the infantile depressive position may lead to the dominance of one of these mechanisms. Again, failure to identify with the introjected and real love objects can result in psychotic disorders, such as paranoia and manic-depressive states. The persistence of an extremely primitive superego may account for the antisocial personality.

Therapeutic Applications

Hug-Hellmuth first suggested that the play of children might replace the free association technique which was the basis of the analysis of adults. Klein developed such an "analytical play-technique," employing small toys of a primitive type, such as little wooden men and women, carts, motor cars, trains, houses, paper, pencils, and scissors, which were usually placed on a low table in a play room.

Careful observation revealed that the child expresses its fantasies and real life experiences in a symbolic fashion through its play with these simple toys. This play can be analyzed in the same manner as a symptom or dream may be, taking into consideration the meanings of the separate symbols and the mechanisms of the dream work. The play elements are interpreted to the child in minute detail. The child also talks while he plays, and these words have the value of the associations produced in the classical free association technique. Children readily accept the interpretations offered.

For a successful treatment of a child, however young, Klein believed that the child should use language in the analysis to the full extent of his capacity. However, the direct interpretations described are adjusted to the child's level of development, in terms of speech and thought, to facilitate comprehension. For example, if the child talks about a swing which dangles and bumps, this is interpreted as reflecting his preoccupation with the way "Daddy's and Mummy's thingummies bump together." A child, 3 years old, is reported to have accepted this interpretation without the slightest difficulty.

Klein believed that children form positive and negative transferences in the classical sense. Negative transference is manifested by fear in the younger child, and by mistrust, dislike, and reserve in the older child. As anxiety is resolved, through play and its interpretations, pleasure in play is renewed and positive transferences are formed. Resistances which are difficult to resolve may occur if anxiety and guilt are released from the deeper psychic layers. In general, however, action, which is more primitive than thought, is the child's chief mode of expression. As a result, the child often reveals experiences spontaneously and directly through action, which the thinking adult can only recall through "reconstruction."

Current Status of Kleinian Theory

Melanie Klein's followers have continued to practice and disseminate her theories since her death in 1960. The so-called "English School" has gained the support of such prominent British analysts as Susan Isaacs, Joan Riviere, and D. W. Winnicott. Ernest Jones was Melanie Klein's staunch supporter from the outset. In the United States, however, the traditional concepts of classical psychoanalysis, as applied in the treatment of children, and as represented by Anna Freud, have continued to prevail.

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8.5 WILHELM REICH

SIMON H. NAGLER, M.D.

Wilhelm Reich completed his formal medical training at the University of Vienna in 1922 and quickly rose to prominence in the psychoanalytic movement. In the late 1920's, as director of the Vienna Seminar for Psychoanalytic Therapy, he initiated searching discussions of analytic technique, which subsequently paved the way for modern ego psychology. But for most of his career, he was deeply involved with the quest for the biological basis of the libido theory. Unfortunately, in this search, he made numerous bizarre and pseudoscientific claims in the course of time, including among these the "discovery" of orgone energy as the basis of life.

According to classical psychoanalytic theory, character represents a habitual and relatively constant reaction which reflects the way the ego combines its various tasks in order to find a satisfactory solution to the conflict between instinctual demands and environmental forces. Reich placed special emphasis on the influence of social forces in determining character structure, particularly on their repressive and inhibiting effects.

This view of character structure as socially determined is currently widely accepted. However, Reich's early social and political views were considered rather "radical," and his efforts to apply these views to psychoanalytic theory, which was supposed to be "nonpolitical," were strongly opposed. First indications of a possible estrangement on this score appeared in 1932 when, to Freud's great distress, Reich published an article in which he advocated the amalgamation of psychoanalysis and Marxism. Reich's continued political fanaticism led to increasing personal and scientific estrangement from Freud until in 1936, he resigned from the International Psychoanalytic Association.

Nevertheless, neither the extremism of Reich's early social and political convictions, nor the bizarre pseudobiological claims he made subsequently can diminish the significance of Reich's contribution to the body of psychoanalytic theory. In addition, his

early interest in political and social forces as an influence on human development were an important stimulus for the development of the cultural schools of psychoanalysis. Thus, his hypothesis concerning character structure and the technique of character analysis have been further expanded by Horney, Sullivan, and Fromm.

Theory of Character Structure

Definition. It should be noted that Reich's theoretical contributions with regard to character structure were made within the framework of Freud's libido theory. Reich's basic concept is that character is a defensive structure, an armoring of the ego against both instinctual forces within and the world without. It is the individual's characteristic manner of dealing with these threats. As a defense which becomes an automatic mode of reaction, it acquires a rigidity which produces a loss in psychic and physical elasticity. The degree of persisting elasticity will determine the difference between the healthy and neurotic personality. The affect-inhibited compulsive personality is the prototype of the rigid, neurotic character.

At the core of the formation of character are the incestuous wishes and their inevitable frustration. Thus, character formation represents an attempt to resolve the conflict. It is precipitated by the fear of punishment which is produced by early sexual education. Society imposes its demands for a certain solution which, in turn, produces a certain kind of character structure. It is through its repressing effects on the libidinal needs that society establishes its authoritarian order: "Character structure is the crystallization of the sociological process of a given epoch."

Character formation. The rigidity of the ego is the result of several processes. First, there is an identification with the frustrating person and his prohibitions. The aggression aroused by the frustration then gives rise to anxiety, which inhibits motor expression and leads to the inhibited nature of the character. The ego employs libidinal energies to ward off the prohibited sexual impulses. "Character armor" thus formed serves to alleviate the pressure of the repressed id forces and lends strength to the ego. But the armoring may also become the basis for later neurotic conflicts and symptoms, for the determining pathogenic factor is not the conflict but the manner in which it has been solved. The solution, in turn, is largely determined by society, i.e., the family, that is, by the intensity of the fear of punishment aroused in the child, by the degree to which instinctual satisfaction is allowed, and by the character structure of the parents themselves. The outcome of the oedipal phase determines whether the individual will be capable of a satisfactory sexual life, free from neurotic problems. When the ego is excessively rigid, there is an increasing stasis of sexual energy which, eventually, can no longer be controlled by reaction formation. Neurosis can only be prevented by the develop-

ment of a character that permits genital sexual gratification.

The genital versus the neurotic character. The final quality of character structure depends on the stage of libidinal development at which character formation was most decisively influenced and on the degree of sexual stasis produced. The genital (or healthy) character differs from the neurotic character in that the genital character employs genital orgasm and sublimation to bind anxiety, while the neurotic character employs pregenital forms of gratification and reaction formation. In the neurotic character, the basic infantile instinctual conflict remains unresolved beneath rigid, automatic character attitudes, which are reflected in stereotyped postures, facial expressions, tones of voice, and patterns of mobility.

Theory of Psychopathology

Reich described several types of pathological character formation, such as the hysterical, the compulsive, the phallic-narcissistic, the masochistic, and the neurotic.

The hysterical character. This type of character is the result of fixation at the phallic phase of libido development. This character is strongly expressed in bodily behavior. Movements are soft and sexually seductive, with a special kind of agility. The hysterical character has little tendency toward sublimation or reaction formation. There is little actual sexual satisfaction and little anchoring of sexuality in the character. Sexual tensions are discharged somatically or in the form of anxiety.

The compulsive character. The compulsive character is orderly and thrifty and tends to ruminate. Outwardly, he is extremely controlled; inwardly, he is distrustful and indecisive. His affective reactions are diminished almost to the point where affect is completely blocked. These characteristics are the result of fixation at the anal-sadistic level, due to overly strict or premature toilet training. The strong inhibitions which are created at this stage interfere with progression to the genital or phallic phase and, instead, bring about a regression to the earlier stage of anal interests and aggression. In latency, anal-sadistic reaction formations are intensified to form the final character.

The phallic-narcissistic character. The phallic character does not regress to the passivity of the anal phase. Rather, he is confident and arrogant. Moreover, these traits plus aggression and sadism are manifested overtly since reaction formation is absent. He is attractive as a sexual object, although he may be orgasmically impotent. The male always has contempt for the female and has great phallic pride, but the phallus is in the service of aggression, not of love. The formation of this character type is usually attributed to frustration of the child's attempts to win the love object through display of the phallus at an early stage of development, and his

consequent identification with the rejecting person. For such a man, the sexual act becomes a demonstration of sexual potency, as well as a means of degrading or destroying the woman.

The masochistic character. Reich disagreed strongly with Freud's concept of a death instinct, and he was particularly opposed to Freud's reference to the death instinct as the basis for masochistic phenomena. Instead, the masochistic character, according to Reich, is the result of the repression of exhibitionistic impulses at the onset of the genital phase of development. Typical masochistic character traits include a chronic sense of suffering, a tendency toward complaints and self-depreciation, and a compulsion to torment others, which results in self-torment. Also included in this character is an awkward manner in dealing with people. However, the masochistic character rarely develops a masochistic perversion. Reich believed that the specific psychodynamic basis for the formation of the masochistic character was a fear of an increase in pleasurable excitation. This fear immediately inhibits any strong pleasure sensation and converts it into pain. Thus it constantly adds to the store of rejection and displeasure which the masochistic personality feeds upon. Actually, the masochist has an excessive demand for love, plus an unusual vulnerability to anxiety in the face of frustration. The masochist, because he projects his own insatiable demands, gives what he would like to receive.

The neurotic character. Reich distinguished several phases in the development of the typical neurosis. During the infantile phase of development, there is a conflict between the fulfillment of libidinal needs and their frustration, in the course of which these needs are repressed. A breakthrough in this repression, through the formation of a phobia, for example, leads to a weakening of the ego. The phobia is overcome by a neurotic character trait. When adolescent conflict is complicated by the inadequacy of the character armor, the phobia, or a corresponding symptom, will reappear. Reich considered the character neurosis to be more serious than the symptom neurosis.

Treatment

Reich's most enduring contribution, the technique of character analysis, is based on his hypothesis that certain resistances are inherent in the character structure of the neurotic patient. These resistances are evident in the patient's specific ways of acting and reacting and may take the form of extreme passivity, ingratiation, argumentativeness, arrogance, distrust, and certain motor activities. These neurotic resistances must be eliminated before the unconscious infantile material from which they derive can be recovered through the classical techniques of free association and dream analysis. Therefore, every analysis must include a character analysis.

Character resistance. Character traits are much more complex than symptoms and are more easily rationalized. As a totality, they form a compact resistance against therapeutic endeavors. The nature and extent of character resistance will vary from patient to patient of course; however, it remains qualitatively unchanged in any single patient until it disappears with the neurosis. The character resistance is separated out from the total analytic material and resolved by interpretation, rather than education to analytic candor and cooperation which is elicited through exhortation and persuasion. The patient is repeatedly confronted by his character traits until he begins to experience them as painful symptoms or foreign bodies requiring removal.

The analytic process. Thus, there are two phases in an analysis. During the first phase, there is a focus on character analysis, or "education to analysis by analysis." Once the character resistance has been diminished or removed, the second phase begins, with its emphasis on the analysis of repressed infantile material so that the libido may be freed to form a genital fixation. It is important to note, in this context, that, in contrast to the culturalists, who consider character analysis the main objective of therapy, Reich viewed it as an essential preliminary step toward the main task of analysis, namely, the working through of repressed infantile sexual material.

Reich made other contributions to technique within the framework of his theory of character analysis. Thus, he emphasized the danger of overlooking a negative transference which the overly obedient patient of the passive feminine type or the affect-blocked compulsive type might conceal behind a positive facade. He also warned of the danger of premature deep and unsystematic interpretations, i.e., before resolution of the character resistance.

Up to the time of his death in 1957 Reich had many followers who practiced his theories of orgone or vegetotherapy in the United States. He established an "Orgone Institute" and set up his own press, the Orgone Institute Press, in New York. He had an estate in Rangeley, Maine, where he directed the activities of the Orgone Institute and the Wilhelm Reich Foundation, publishing the *Orgone-Energy Bulletin*, the *Annals of the Orgone Institute*. The sale of his orgone box or accumulator brought him into conflict with the United States government. This and his subsequent death dealt a severe blow to his followers.

Although Reich's later therapeutic innovations have failed to gain acceptance, his earlier contributions to psychoanalytic theory and technique in regard to ego psychology and the influence of cultural forces on character development have proved to be of considerable value.

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8.6 JULES H. MASSERMAN

SIMON H. NAGLER, M.D.

Introduction

Biographical data. Jules H. Masserman, originator of the biodynamic theory of behavior and prominent psychiatrist, psychoanalyst, and experimentalist, received his training in psychobiology under Adolf Meyer, and in psychoanalysis under Franz Alexander. Since 1946 he has taught at Northwestern University, where he now holds the appointment of Professor of Neurology and Psychiatry. In 1957, in recognition of his important work on experimental neurosis in cats, dogs, and monkeys, he was elected President of the Society of Biological Psychiatry.

Scientific orientation. Masserman has published two volumes on the principles and practice of dynamic psychiatry in which he has attempted to integrate and synthesize various psychological and physiological concepts of behavior. As a result, the term "biodynamics" (a term generically applied to the branch of physiology concerned with the vital functions of all organisms) has come to represent a unique system of psychoanalytic psychiatry, despite Masserman's disavowal of any intention of establishing a new "school."

In brief, it is Masserman's thesis that animal studies can help to uncover fundamental biodynamic principles of behavior and thus contribute materially to behavioral sciences and psychotherapy. On the basis of his investigations of dynamic psychology and the experimental neuroses, Masserman has formulated four basic biodynamic principles concerning motivation, adaptation, displacement, and conflict. He has attempted to correlate these biodynamic principles with psychoanalytic concepts and to consider their relevance to psychotherapy.

Application of Biodynamic Principles to Personality Theory

Motivation. The principle concerning motivation states that all behavior is stimulated by physiologic needs of varying intensity, such as survival, growth, dominance, procreation, even esthetic creativity, and

is directed toward the satisfaction of these needs. In support of this principle, Masserman has pointed out that Freud recognized the influence of somatic demands on mental functioning, and the operation of an indeterminate number of instincts, other than the libidinal ones. And W. McDougall named two dozen or more instinctual drives.

Experimentally, any physiological need can be utilized to activate behavior. The hunger drive is particularly suitable for experimental purposes and has been shown to be related to sexuality, dominance needs, and herd behavior, to substantiate further the concept of the biological origins of social behavior. In numerous experiments it was demonstrated that no learning takes place without relevant motivation; unless training takes the animal's needs and capacities into account, adaptive, contented behavior cannot be effectively established.

Masserman believes that, if we disregard the formulation of the death instinct, "Freud's categorization of the phases of Eros is essentially biological." Thus, for the most part, biodynamic and psychoanalytic concepts relative to motivation can be reconciled. He admits, however, that our understanding of man's esthetic needs on the basis of instinctual strivings and their sublimation is still inadequate. Similar reservations have also been applied to other correlations of biodynamic and psychoanalytic concepts.

Adaptation. The second principle states that organisms react to and define their environment on the basis of their unique needs, capacities, and experiences; their reaction is not determined by some ultimate reality. In terms of the human organism, this implies that the individual's adaptation to a situation is determined by his own perception of that situation. His reaction is not based on evaluations of the situation by other observers; nor is it based on objective reality. "Reality" is, in fact, highly relative. It is dependent on biodynamic factors unique to the species and the individual, and it is subject to many modifications within this framework, as the result of specific needs, past experiences, and present integrative capacities. Although an individual may appear to behave in complete accordance with social norms, he nonetheless nourishes numerous idiosyncratic attitudes and conceptions of his particular universe. Confusion or conflict between social norms and the individual's idiosyncratic concepts leads to disturbed or neurotic behavior. In this sense, neurosis might be defined as the persistence of behavior patterns which no longer serve an effective adaptive function.

This second principle is readily demonstrated in experiments in which the animals' responses appear to be paradoxical. For example, these experiments showed that monkeys avoid bananas when their odor is associated with an unpleasant experience. On the other hand, the cats studied suffered increasingly severe self-administered shocks in order to obtain the reward of food. This response could be interpreted

as indicating that the goal of "masochistic" behavior is not self-punishment; rather, it is reward seeking. Such investigations point up the value of biodynamic findings for the elucidation and clarification of psychoanalytic formulations.

Displacement. The third biodynamic principle postulates that the blocking of goal-directed behavior leads to altered efforts to achieve the same, or compensatory, objectives. Masserman considers this principle to be in harmony with psychoanalytic formulations. The vicissitudes of the instincts (e.g., reversal, repression, and sublimation), and the defense mechanisms of the ego (such as displacement, condensation, reaction formation, symbolization, and fantasy formation) illustrate the principle of adaptive substitution in the face of frustration.

In animal experimentation such substitutive behavior might take hostile and destructive forms. Nevertheless, it is still directed toward satisfaction of the animal's needs. The optimal environment for such experiments should be sufficiently challenging, but not so frustrating as to lead to deviant behavior. When frustrating obstacles are removed, the organism reverts to normally effective behavior, showing that the effective patterns have only been inhibited, not eliminated.

Many animal experiments in this area also demonstrate the prevalence of dominance hierarchies among groups in search of satisfaction of basic needs. Thus, those organisms which constitute the lower order of a group react to their superiors as if they were barriers to the achievement of need fulfillment. As such, they must be submitted to cooperatively, or eliminated aggressively. It is significant that cooperative as well as parasitic relationships were observed in feeding experiments on an animal level.

Conflict. The fourth principle relates to the all important concept of conflict, that is, the clash of two or more strong motivations, accompanied by increasing tension and anxiety, resulting in maladaptive behavior (as in the neuroses and psychoses). Pavlov and others had induced experimental neurosis in animals by simultaneously presenting positive and negative stimuli which could not be differentiated. Masserman demonstrated that opposing stimuli which were approximately equal in terms of motivational strength would result in conflict which might even lead to persisting disturbance in the behavior of animals. Moreover, this behavior resembles the neurotic anxieties, depressions, and inhibitions which arise in human beings when they are faced with conflicting positive and negative choices.

Masserman produced neurotic behavior in animals by producing conflict between the hunger need and fear by pairing food with an aversive stimulus, such as an electric shock or a toy snake. The degree of neurotic disturbance varied with the urgency of the motivations in conflict, the possibilities of avoidance, the availability of alternate solutions, etc. But the

effects of the conflict were remarkably uniform: they consisted of pervasive anxiety; psychosomatic disturbances in respiratory, genitourinary, and gastrointestinal functioning; phobic behavior; stereotyped compulsive movements; sexual behavioral deviations; withdrawal and hostility; and even regressive behavior, such as abnormal dependency.

Biodynamic Principles and Therapeutic Intervention

The factors which accentuate or reduce neurotic disturbance were investigated experimentally. First, it was demonstrated that those variables which increased the basic conflict or hindered its solution increased the neurotic disturbance, even to the point where it threatened the animal's survival. Secondly, Masserman demonstrated that experimental neurosis was ameliorated by such factors as satisfaction of conflicting needs, removal of the animal from the conflict situation (a procedure analogous to a rest cure or vacation), or forcing a solution to the conflict (e.g., making food particularly attractive to the animal, etc.).

Successful attempts at spontaneous solution of conflict were also observed in these experiments. And these efforts probably parallel the manner in which human beings resolve their problems spontaneously, that is, through reexploration of the problem and discovery that mastery is possible. Indeed, this concept is implicit in the training and education of children to cope with a wide variety of problems to achieve mastery.

In psychotherapy, the protective and permissive atmosphere of the therapeutic situation fosters the patient's self-confidence, which can then be utilized for more successful interpersonal relationships and adaptation. The therapist is perceived as a helpful parent-surrogate with whom the patient can explore and resolve his difficulties. Similarly, it was possible to reeducate neurotic animals through handling by a gentle trainer with whom the animal had previously had positive experiences.

A form of social therapy was investigated as well, in which a neurotic animal was placed in a cage with a well trained, normal animal, which it could observe operating the proper switches to obtain food with impunity. This is analogous to placing a neurotic child in a foster home or residential school, in the hope that he may be favorably affected by his observation of and interaction with normal children.

Masserman and his colleagues also conducted extensive investigations of the effects of organic intervention in the form of drugs, electric convulsive treatments, and neurosurgery on the course of experimental neuroses in animals. It is of clinical interest that the efficacy of neurosurgery in their animals depended less on the site and extent of the lesion than on the preoperative personality and experience of the animal

and the methods used for its postoperative care and rehabilitation.

General considerations. Above and beyond these biodynamic considerations, in his approach to psychotherapy, Masserman stresses what he has termed man's "ur-defenses." These are man's faiths, albeit his delusions. The first of these defenses is man's belief in his immortality and invincibility. Numerous religious systems attest to the fact that, from time immemorial, man has refused to believe in the eventual complete end of his existence. The second ur-defense is his belief in the omnipotence of his servants or helpers—his parents, physicians, clergy, various authority figures, etc. The third faith concerns his confidence in the protective function of society, that is, his belief in man's ultimate concern for his fellow man.

Man needs these faiths to live by and the therapist should not try to abolish them. Instead, Masserman insists, we need only assist the patient "gently to find happier beliefs and more creative applications of them. . . . The best therapist is he who helps troubled men rebuild, largely on their own terms, their faiths in themselves, in their fellow men, and in their selected philosophic or theologic systems."

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8.7 EXISTENTIAL PSYCHOANALYSIS

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Introduction

Historical development

Role of philosophy in psychiatry. Psychiatry, more than any other medical specialty, requires elucidation of the philosophical premises which guide the psychiatrist's efforts to understand his patient. According to the psychiatrist-philosopher, Karl Jaspers, this understanding is based on a combination of two main trends of investigation. The first of these, objective cognition, refers to the psychiatrist's efforts to follow the chains of cause and effect from the past into the future and, thereby, to establish diagnosis, prognosis, and plan of therapy. The second trend of investigation, emotionally inspired intuition, or empathy, is defined as the psychiatrist's ability to understand the

patient by identifying with him, by putting himself in the patient's place. Emotional participation or identification with the patient may lead to wishful or fearful falsification, which will lead the psychiatrist astray. Indeed, when carried to extremes, intense involvement may lead to a *folie à deux*. Objective cognition also presents certain pitfalls when the psychiatrist is primarily interested in verifying his premises. The reductive method of analysis illuminates important partial aspects of the patient's personality, but the totality of the subject's integrated existence may escape the analyst.

Contribution of phenomenology. The phenomenologist, Edmund Husserl, has recommended that every scientist detach himself intermittently from his premises, setting aside his system of preconceived ideas, in order to gain a new perspective of the phenomena under observation. Inspired by Husserl, a descriptive phenomenology has emerged to enrich psychiatry, as elaborated in the works of Eugene Minkowski, Ludwig Binswanger, Erwin Strauss, Maurice Merleau-Ponty, and others. Minkowski stated that insanity is nothing more than the exaggeration of the individual's habitual character. The vital impetus toward integration (Bergson's *élan vital*) is reduced in mental illness; the crucial contact with "reality" seems distorted to the observer. In brief, the patient exists in a world of his own, more or less, which cannot be fully shared by people who are oriented to "common sense" standards and values.

Out of the phenomenological philosophy grew the various forms of existential philosophies, or *Dasein* analytic studies, each carrying the imprint of the originator's personality. Martin Heidegger conceived of a new synthesis of idealism and realism. Jean-Paul Sartre's writings are characterized by radical nihilism, atheism, and voluntarism. Karl Jaspers, Max Scheler, Martin Buber, Gabriel Marcel, and Nikolai Berdjaev emphasize humanism and theism, as opposed to naturalism and materialism. Although their views of the world are frequently contradictory, all of these philosophers share in common a desire to bridge the gap between subject and object; therefore, their ideas are of vital concern to the modern psychiatrist.

Cultural influences. The upheaval of two world wars, of revolutions and counter-revolutions, and the threat posed by the development of atomic weapons have destroyed our illusions of a lawful and harmonious cosmos which had previously been accepted as "reality." The absurdity of fate has permeated Western culture and has become an almost universal theme of literature, art, and philosophy. Freud anticipated such developments when he wrote *Future of an Illusion*, in formulating his concept of thanatos, the death instinct, as the counterpart of eros, the life-affirming instinct. But are thanatos and eros instincts? Freud's reformulation of his dual instinct theory would seem to resemble the existential dualism of Sartre's *Being and Nothingness*. Sartre agrees that he has much in

common with Freud, but he also disagrees with him on many issues and has created his own theory of existential analysis.

Theories of Existentialism

Phenomenology and existentialism were introduced into American psychology and psychiatry by Rollo May and his associates. May has characterized Sartre's theory as "a nihilistic, subjectivistic extreme in existentialism which invites misunderstanding." On the other hand, he considers Martin Heidegger the fountainhead of present day existential thought. Heidegger's concept of "being-in-the-world" embraces the inseparable polarity of man and world in the "here-and-now" situation, in which his *Dasein* ("being-there," the field of being which is his existence) aims at authenticity. Being-there implies a concern about being which Heidegger has called "*Sorge*" (care), a concept which encompasses anxiety as well as love. (We are reminded here of Sullivan's definition of love as concern for another as well as concern for one's self.) The anxiety component of *Sorge* (care) stems from the fear of not-being—specifically, the fear of death. Man knows that he is destined to die, but he is inclined to forget this. Heidegger sees the authenticity of being-there in the resolution to accept one's destiny, to accept death as a constantly present possibility.

Paul Tillich, the theological interpreter of existentialism in the United States, has defined authenticity as the "courage to be," despite the threat it presents of non-being. But the constant threat of non-being tended to splinter "care" in the concerns of daily living, and the potentialities of authenticity are squandered. Being-there is translated in the sense of the "man," the German impersonal pronoun which is the equivalent of the English "one." The "man" is not fully present. He is preoccupied with his desire to conform to public opinion, the playing of expected roles, meaningless distractions, and aimless small talk. And these preoccupations give rise to a feeling of "being lost to the world" which arouses anxieties and guilt feelings, because it undermines the experience of freedom and responsibility.

Sartre has evolved more lucid, but often paradoxical, existential formulations. Being, the basis of existence, is an enigma to man; but he can objectify the world of things. He can study and handle the "technical" aspects of the environment, "*Umwelt*." He can deal with his fellow man as an object in the "*Mitwelt*" (being with others). His fellow men become objects of his emotions, desires, and fears. He objectifies them in the processes of cognition and manipulative action. For the "other person," according to Sartre, man is an object. The other self "presents himself, in a certain sense, as the radical negation of my experience, since he is that person for whom I am not subject but object." As a subject, however, man remains elusive, partially shrouded in unawareness.

Consciousness, which Hegel called "unhappy con-

sciousness," splits the subject from the object. The other person can objectify the subject more accurately than the subject himself, who is frequently the victim of self-deception. Nietzsche had stated that every man is most remote to himself. Self-consciousness is experienced as an inner split, a loss of face. The self-conscious person loses his mask before the look (Sartre's "regard") by which the other person objectifies and evaluates him; the esteem of the other person makes the subject's conscience conscious to himself. The subject plays the role that common sense dictates but he does not "experience" the role he plays. When he becomes self-conscious, he is embarrassed, ashamed, guilty, because—in Sartre's words—"he is not what he is and he is what he is not." This paradox interferes with the subject's stable identity.

Man is not the automatically functioning product of nature or of human fabrication, an *en-soi* (in-himself), the passive recipient of fate. He is *pour-soi* (for-himself), a project into the future, transcending the present situation with its contingencies and necessities. Man is thrown into the world, dependent on his heredity, his fellowmen, and his luck. Yet he is forced to be free. His desires and fears force him to choose, to take the risk of participating or not participating in each given situation. And by refusing to make a choice, he indicates that he decided not to decide. His emotionally inspired magic imagination rejects and rebuilds the world into which he is thrown, and therewith he transforms himself. The vertigo of freedom confronts him wittingly or unwittingly with the horror of nothingness. Not only is man afraid of the realistic external dangers of his situation; he is equally frightened by the possibility, arising from his imagination, that he may fail to master the situation. He vacillates between faith and lack of faith in himself. He may choose to avoid the danger by repressing his desire; or he may elect to confront the danger by denying his anxiety. But at the moment when he represses or denies, he is not true to himself; he is in a state of "false faith." Man deceived himself by making himself believe. (Belief, in Sartre's formulations, is always make-believe, because when belief enters man's self-consciousness, he represses his doubts. And when he consciously tries to appear honest, he represses his dishonesty.)

In the situation of erotic intimacy man feels liberated from the anguish of nothingness through the high value of love that confirms his existence. But as soon as he makes himself believe that he loves and is loved, doubt creeps into the love relationship. This doubt makes the other person an object of his desires, threatened by the "frustration of nothingness," and, similarly, he becomes an object to the other person. The love relationship deteriorates into the master-slave relationship described by Hegel. In Sartre's system, human reality is a passion. In the projects of the *pour-soi*, man yearns for God as the source of protection from the anguish of nothingness; or, in his

more solipsistic designs, he tries to be God, a superman, *pour-soi* and *en-soi* at the same time. "Man loses himself as man to give birth to God. But the idea of God is contradictory and we lose ourselves in vain; man is a useless passion."

Theory of Personality Development

Karl Jaspers, Ludwig Binswanger, and Medard Boss have integrated the concepts of existential philosophy into European psychiatry. Victor Frankl has developed a therapeutic approach related to existentialism, called "logo-therapy." These psychiatrists attempt to apply philosophical concepts in evaluating and understanding their patients' personality structure and functioning; thus, their interest is not restricted to the causes of mental illness. The objective study of mental mechanisms and dynamics by the reductive method of psychoanalysis had illuminated the personal history of mental patients. The existential psychiatrists have utilized these methods in pursuing their interest in the subjective experience of the total personality of their patients.

Yet, the total personality is elusive, because it is constantly in the process of becoming, in the process of integrating, disintegrating, and reintegrating, of rejecting and rebuilding its self and its world. Even the brain-damaged person is rebuilding his personality and his world out of fragments of perceptions, emotions, impulses, and memories, driven by the horror of incapacitation, which Kurt Goldstein has characterized as the "catastrophic reaction." The neurotic and, to a greater extent, the psychotic individual are also victims of partial fragmentation of the self and alienation from the world, owing to heredity and/or environmental influences, both past and present.

The basic symptom of all mental illness is a partial withdrawal from the surrounding world into a world of one's own. This trend toward egocentricity, solipsism, or autism can be enriching or impoverishing. The world is enriched by the creative personality, who is able to share his values with others. Being-in-the-world is distorted and alienated in the mentally ill person. The world of the hysteric and the distortions in his bodily functions are transformed by the intensity of his egocentric preoccupations. The world of the obsessive person is regulated by rigid, legalistic rituals intended to exorcise the dangers of decay and dirt, which represent death and destruction. Psychopathological transformations are ascribed to the existentialist psychiatrist's intuitive entrance into the patient's subjective experience. Boss tries to enter also into the subjective experience of the dreamer, whose images impress him as fragmented attempts to transcend a situation of stress. Boss sees, even in the most extreme perversions, the patient's attempt to transcend the defensive walls of egocentricity.

Binswanger, in contrast to Boss, uses Heidegger's concept of care only to refer to the manipulation and organization of things and men in political, economic,

scientific, or ecclesiastical institutions, which are engaged in purposeful action, directed toward the common welfare. But in an institution man remains an object, a cog in the wheel, manipulated by managerial skill into encompassing structures. The will to power is tamed by established hierarchies of law and order. Binswanger distinguishes between such transcendence by objectivation and transcendence through love. Gabriel Marcel calls the basic solidarity of men "intersubjectivity." It manifests itself in Martin Buber's "I-thou relation" of mutuality, which uses verbal and nonverbal communication, not for defensive concealment or anxiety-driven adaptation, domination, and appropriation, but for the liberating revelations of communion. This communion, according to Berdjaew, transforms the "individual" into a "personality" who chooses and grants to the "I" and the "thou" the freedom of optimal development. In each meaningful encounter this spontaneous integration of personality arises unplanned and unpremeditated. In the parent-child relationship, in friendship, in the enthusiasm of erotic union, in marital partnership, and in personal religious experience, personality reveals itself, not only as the boundary of nothingness, but as a potentiality of encompassing communion. Karl Jaspers emphasizes that love, a symbol which loses its value in everyday verbal usage, is not merely an epiphenomenon of sexual libido or a product of mature sublimation. Love is present from the very beginning of existence as a potentiality, initially revealing itself in the cry and smile of the infant. It is present in every stage of development as a possibility for mutuality. However, the psychiatrist is always aware that intersubjectivity can deteriorate into the master-slave relationship that Sartre has described.

According to the existentialist view, the regression to infantile forms of adaptation not only is a sign of psychopathology, but may also imply a search for a new beginning. The child is full of potentialities and "good faith." But if this faith is not confirmed during the process of maturation by relationships of mutuality, existential anxieties and guilt feelings build up walls of defense. The growing child and the adult may then revert to the infantile role in "bad faith," to escape from the freedom of decision and responsibility in the face of frustration and rage. Existential anxieties and guilt feelings alienate and distort these separated individuals and imprison them in an autistic shell surrounded by the horrors of nothingness. At every stage of human development, however, the healing power of love can transcend the anxieties of defensive egocentricity.

In summary, on the one hand, love implies the risk of surrendering self-identity, in the desire to approximate the identity and ideals of the beloved. On the other hand, love enriches lovers through the process of identification by fostering in each a renewed self-esteem of authenticity and mutuality.

Application of Existentialism to Psychotherapy

The psychotherapist may select the orientation that suits him best from the various forms of existential philosophy. He does not force any philosophy on his patient by sermon or subtle persuasion, but, inevitably, he will radiate the philosophy he lives by. He tries to know himself and his world in order to be flexible enough to enter into the world of his patient. There is no reality valid for all. The psychotherapist is aware of his own limitations, and he will know if the world of his patient is too "strange" for him. In that event, he will not be able to establish a bond of solidarity with the patient. Solidarity represents a basic trust in his own potentialities and those of his patient for a meaningful collaboration. This does not mean that the psychotherapist should force himself to develop feelings of empathy, nor can he rely only on his emotionally guided intuition in his attempts to understand his patient.

The existentialist respects the scientific method, although he may regret the development of a "scientism" that deifies science, where traditional deities have been discarded as illusions. Scientific objectivation is the basis of every therapy. We must study the patient's past development if his *Dasein*—his present being—is to be opened to the possibilities of the future. The psychotherapist tries to remove the barriers of illusion which are products of the compulsion to repeat past anxieties and habits of escape.

Existential anxiety manifests itself in numerous variations—in castration anxiety, in anxiety about loss of physical or psychological integrity, in separation anxiety, and in the fear of death, destruction, and helplessness. Such anxieties, and the defenses which are erected against them in the form of autistic withdrawal, persisting symbiosis, or overbearing egocentricity, are reexperienced in the psychotherapeutic encounter, until mutual trust between patient and therapist is established. For example, the Oedipus conflict persists as an egocentric desire for unlimited parental gratification and/or vindictive triumph over the therapist as rival. In the face of the inevitable frustration of these desires, the unresolved Oedipus conflict is reexperienced, with various degrees of anxiety, as an unauthentic protest against destiny.

The psychotherapist need not provoke existential anxieties. The patient who suffers from a traumatic neurosis relives the shock of the trauma in his dreams, although he may have forgotten it in waking life. Similarly, every neurotic patient tends to relive the hell of past anxieties, although he may have built up walls of defensive protection against such anxieties. Nevertheless, the repressed tends to return from repression. The patient would not seek the help of the psychotherapist if he had not begun to doubt the "bad faith" which has motivated his defenses.

The attention of the therapist is directed, therefore, toward the patient's hidden anxieties and guilt feel-

ings, which indicate that the patient seeks to free his thwarted potentialities. The patient should not receive false encouragement or comforting support of his defenses, lest he become a mere object of custodial care. Some patients seek comfort in repetitive accusations of past injustices, e.g., protest against the "schizophrenogenic" parent. The patient may build up an illusion that exploration of the past could magically alter his destiny, but there is no redress for past injustice. Death, evil, and destruction cannot be abolished. As he relives the anguish of annihilation in a raging protest against destiny, the adult discovers that he can tolerate frustration which was too much for the child. The patient may then find another way out of the dead end street of impotent protest, for he has in him the freedom to make new decisions which transcend the nothingness that is implied in every experience of frustration.

Transference presents the possibility of sharing anxieties and the rage of frustration with the therapist, but positive as well as negative transferences provide illusory solutions to unresolved conflicts. This applies to the counter-transference as well, which indicates the degree to which the therapist is affected by the patient's anxieties without facing them squarely. Transferences in Freud's terminology are resistances; Sartre conceives of them as manifestations of bad faith—self-deceptions in the face of challenging frustrations, an escape from the deadening aspects of life through denial or distortion of the present situation with its necessarily frustrating limitations. Every psychotherapeutic encounter is a situation of limitation and stress. Erotic attraction can play a role in fostering empathy and intuition, but eroticism is transcended in a relationship of responsible care. Recognition and expression of rage, anger, and hatred may clear the way for an encounter of solidarity and trust. Out of bad faith the original good faith can be reborn, that is, the patient's trust in life, the source of renewal, and the freedom for authenticity and mutuality.

Existentialism has not introduced new methods into psychotherapy. Its emphasis in the therapeutic en-

counter lies in the transcendence of excessive anxieties. The deepest repressed anxiety is directed against the risk of genuine trust. The care of the therapeutic encounter is not a defense against anxiety; it is neither appropriation nor surrender. This trusting care does not recoil from the limitations of the therapeutic situation but wrestles with its frustrations. And it enables both patient and therapist to endure periods of failure. The therapeutic trust can endow both patient and therapist with a new freedom which allows them to develop their potentialities in meaningful collaboration. Through insight into past and present situations, the patient can be freed to transcend his protesting nihilism in the face of frustrations by making responsible decisions which will transform the future. In liberating the patient, the therapist broadens the horizon of his own understanding and therapeutic creativity.

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Chapter 9

Personality Theories Derived from Psychology

9.1 PERSONALITY THEORY DERIVED FROM QUANTITATIVE EXPERIMENT

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Introduction

Experiment and measurement in scientific theory. The birth of modern science is frequently placed around the year 1600 when Galileo began to apply quantitative methods to mechanical observation. It is recognized that chemistry separated itself from alchemy and entered a new phase of vigorous development when Dalton, Lavoisier, and others began to apply quantitative methods to establish laws in chemistry. Indeed, it is generally accepted today, as Mach has said, that "the aim of science is to find the formulae which express the relations among observed phenomena." By these touchstones, what is the status, as a science, of psychiatry today?

That it lacks the stability of concepts, the maturity, and the practical effectiveness which are characteristic of a developed science based upon quantitative laws and experiment is surely evidenced by the considerable divergencies of theoretical viewpoints represented in this book. However, this is even more apparent in the excessive swings of emphasis in approved practice, e.g., the recent change from psychoanalytic therapy to behavior therapy, and from the predominance of psychoanalytic treatment in private practice to chemotherapy in mental hospitals. Young and uncertain sciences characteristically seek to create the illusion of progress by concentration on rapid movement. As to progress, Eysenck, in an expectedly unpopular (but nevertheless sound) survey (Eysenck, 1960) has pointed out that in this decade psychotherapy has failed to demonstrate that it can bring about recovery at a more rapid rate than would occur spontaneously, without treatment. At this moment no refutation satisfactory to a scientist has been given to the as-

sertion that the number of recoveries due to psychotherapy do not exceed those to be expected from chance. However, to argue this point would serve little purpose. Even more optimistic psychiatrists will, as realistic practitioners, readily admit that present methods of diagnosis, control of treatment, and insights into the necessary tactical steps fall far short of the standards required of a developed science.

The present section takes the position that psychiatry is an applied science. As such, it has elements of artistic skill; but in its essentials it must be based on what the sciences of psychology, physiology, and sociology offer. Among the most recent developments in psychology, those which are most relevant concern the concepts, laws, and predictive powers arising out of the experimental and, especially, the sophisticated quantitative studies which have been conducted in the last 10 years. Psychology, like psychiatry, has never lacked theories; indeed, it has assembled an orchestra of resounding scholarship which enjoys a considerable scientific reputation.

The correlation between the development of a technology and the development of pure theory in science cannot be perfect; but it is also true that impressive technological development cannot occur unless the basic scientific theory possesses real potency. If we use an acid test, as proposed here, clearly our technological capacity to eliminate mental disorder or reeducate delinquent personalities does not provide convincing evidence that we have made more than elementary advances in the basic science of psychology.

Unification of theory and measurement. The twin pillars which psychology offers in its support of the development of psychiatry are personality theory and learning theory. Until 50 years ago, personality theory developed mainly as a result of clinical observation as exemplified by the formulations of Kraepelin, Freud, Jung, and Janet, for example, or was based on what might be called literary and general human observation, as exemplified by the work of William James, McDougall, Allport, Klages, Spranger, and others. The

subsequent quantitative and experimental phase, which is the primary focus of this discussion, initially framed its questions in terms of the theories inherited from the earlier clinical and literary phase. More recently, however, it has built upon a theoretical structure of its own. To date, it has failed to produce scientific laws which can aspire to the scope and elaborateness of the scientific speculations derived from the earlier phase. But, on the other hand, there is every indication that it has constructed a very sound foundation. It is the kind of foundation which will produce definite results, expressed as basic laws and having predictive powers. We can expect these to develop in applied science with increasing rapidity in the next decade.

Multivariate Personality Theory

Preliminary issues. One reason why the "message" from the quantitative, experimental approach has not yet come through as clearly as it might is that the dust of conflict hangs over the area, sustained by a battle between the bivariate and the multivariate schools of experimental design. The former follows the classical plan of experiments in physical science; typically, it deals with one independent and one dependent variable. For example, it manipulates a stimulus and measures a response, trying (and often claiming) to hold all else constant while doing so. Wundt, Pavlov, and Skinner are among the advocates of this method which has been inherited in its entirety by the reflexological school of learning.

The second school of experimental design, favoring the multivariate method, springs from Sir Francis Galton, Spearman, and Thurstone, and it is more concerned with correlational methods and the simultaneous study of measurement of many variables.

Advantages of the multivariate method. The Galton tradition, enriched by the contributions of many mathematical statisticians in the multivariate field, has recently given us remarkably enhanced access, by the electronic computer, to problems which were previously unapproachable. Thus, the multivariate method has two major claims to superiority over the classical bivariate experimental design. First, the multivariate experimentalist can grasp wholes, i.e., complex pattern entities, such as the clinician deals with, whereas the classical experimentalist usually deals with a single atomistic variable, which is often of minor importance and incapable of representing a complex concept. Second, the multivariate method can claim to uncover complex causal relationships without the actual manipulation of people and circumstances which has always been considered essential to classical experiment.

Manipulation in the life sciences has two serious drawbacks. First, it is apt to upset the very phenomena it wishes to study. For example, a dog whose adrenal glands have been dissected out is suffering from something more than the removal of adrenalin from his bloodstream. Secondly, manipulation in the life of human beings of those cardinal emotional attachments which are typically involved in clinical generalizations is practically and ethically impossible. It is primarily for this reason that the experimentalist who understands only bivariate designs has turned increasingly to animal experiments. But, even under the most ideal circumstances, application of conclusions drawn from animal experiments, which do not include cultural concepts or concepts of self, to happenings in the minds of men propels the scientist toward speculative reasoning to a degree which is grotesquely out of keeping with the precision which characterized his animal experimentation.

The three-cornered argument. Clearly, then, the familiar cleavage, noted above, between the clinical observer, on the

one hand, and the laboratory experimentalist, on the other, is not the most important dichotomy in research methodology. Actually, there is a three-cornered argument in progress. Or rather, while it might serve a purpose if it were an argument, actually, it is in danger of becoming a mere regression into three camps which are isolated from each other—clinician, "brass instrument" experimentalist, and multivariate experimentalist. Curiously, in some respects, there is a stronger bond between the clinician and the multivariate experimentalist than there is between the multivariate and the bivariate experimentalists. Both the clinician and the multivariate experimentalist are concerned with seeking generalizations, while keeping the totality of behavior in view, through the formulation of hypotheses which cannot be caught or operationally represented by a single variable. For example, both can handle the concepts of drives, and of such multifaceted personality structures as the psychoanalytic concepts of ego and superego. But in another respect, the multivariate experimentalist has more in common with the bivariate experimentalist than the clinician, in that both the multivariate and the bivariate experimentalists demand that concepts be referable to measurable operations and reproducible experiments, whereas the clinician makes no such claim and is, very often, prepared to proceed without the kind of recorded and statistically treated results which the experimentalist regards as indispensable.

Then the third side of the triangle becomes shorter once again when one realizes that the relatively sophisticated mathematical models and statistical analytical procedures used by the multivariate experimentalist are stronger and more remote from the clinician's training than are the experimental and control groups used in the typical bivariate experiment, despite the fact that the multivariate experimentalist's methods are comparatively simple. One of the unfortunate results of the development of mathematics in the multivariate approach has been that, although the clinician and the multivariate researcher are very close in principle and in their formal modes of reasoning, when the clinician has attempted to carry out an experiment, all too frequently he has reverted to the simple designs of the bivariate methodologist. Since, except for a few brilliant examples, psychiatrists cannot also be mathematicians, the effective interdisciplinary organization of research today requires the multivariate experimentalist to convey to the clinician the emerging structural concepts, but not their detailed mathematical support. His task, then, will be to equip the clinician with measuring instruments which correspond to these concepts. The clinical researcher can use these in all manner of criterion experiments, employing a purely logical comprehension of the dimensions measured rather than a mathematical one. After all, the psychiatrist's unique skills involve the application of these measuring instruments, in conjunction with his ability to communicate with the patient. It is as unreasonable to expect him to exhibit equal competence in every area of the field of mathematical, quantitative behavioral research as it would be to expect the multivariate experimentalist to be able to conduct a psychiatric interview competently.

To be realistic, it will certainly be a long time before the mathematical prediction of behavior reaches such a level of comparative completeness that it no longer requires supplemental data from the human intuitive arts. However, there is every reason to believe that the results and implements of multivariate experimental research can ultimately be made available for intelligent use by those not engaged in the research on their production, and that they will add accuracy to psychiatric procedures. Thus, one can hope that future training in psychiatry will integrate these new concepts. This is certainly a possibility, but it is equally certain that very little has been done as yet to bring this about. Indeed, too many teachers in the field of personality theory still are not facing in the direction from which the advances in integration of diagnostic measurement and theory are most likely to come.

Structural Measurement versus "Psychological Testing"

The preceding discussion emphasized the fact that theory and measurement need to be closely united. But it should be made clear that the quantitative approach to psychological theory involves much more than psychological testing. Psychologists have constructed projective and nonprojective "scales" for thousands of variables, and laboratory workers have measured myriads of described variables. Nor is this surprising, for the number of aspects of behavior susceptible to being measured by a scale and labeled is literally infinite, and there is small chance that even two or three of the finite number of psychologists will choose to think the same variable important. Nevertheless, few of these scales have uncovered anything of theoretical importance, and most lie forgotten in professional journals.

Wherein lies the escape from this triviality of measurement? Certainly, as in any science, important concepts must be established, essential in the sense that they wield more predictive power, and basic in the sense that they can be correlated with more psychological laws than concepts less happily chosen. Even when they are found, they may not incidentally correspond operationally with some single variable: for example, anxiety score does not correspond with counted beads of perspiration upon the brow but may correspond to the average measure of a whole pattern of manifestations. But how are these more vital concepts to be discovered and the choice of variables most suitable for their measurement determined?

Applications of factor analysis. There are essentially two ways in which a science can move toward development of its truly efficacious concepts. One is by the process of conceptual trial and error, in which investigator after investigator pits his brains against the obscurities of nature and tries out concept after concept until one is found which fits the facts better than any other and provides more accurate predictions. The second is to develop a "representative experimental design" in which one samples variables according to some sampling technique and then uses a mathematical method, such as factor analysis, to isolate the comparatively small number of underlying influences responsible for the observed relationships of covariation among the individually measured variables.

In such sciences as physics and chemistry, the former approach has been quite successful, and not unduly arduous or wasteful. The concepts of mass, time, temperature, radiation by wave transmission, valency, etc., were, in general, the survivors of no more than half a dozen alternative hypotheses. But unfortunately, it is a fact of history that psychology has not achieved a comparable degree of success, and students of behavior should realize that they are confronted by quite a different kind of problem, requiring a different method. The number of influences to take into account in deciding whether the home team will win a basketball game, or whether Mrs. Jones will decide to speak to Mrs. Smith at a cocktail party, or whether patient X will try to commit suicide, is of a greater magnitude than the number of influences which affect the orbit of Neptune or the rate of the emission of electrons from a heated filament. Clearly, something more drastic must be done if we are to cut our way through the thickets of primal phenomena in order to reach the significant variables or concepts,

concepts which, at the same time, will not be too numerous to make prediction possible.

It is vital that the reader understand the philosophy and the impact of multivariate experimental methods if he is to grasp its revolutionary implications for behavioral research. Unfortunately, space limitations preclude further development of this theme. Perhaps it is enough if the evaluator of theory realizes that methods now exist, particularly in factor analysis, which, when they are used flexibly with rotation to simple structure, are capable of reducing the multitudes of variables to a limited set of underlying functional unities capable of predicting those variables. However, correlational methods and factor analysis must be employed with the added restrictions of a scientific method, rather than the "bare" postulates of a purely mathematical method. Only then are they capable of isolating underlying structures and influences in complex phenomena. Even those critics who have doubted this have agreed that factor analysis is capable of predicting, i.e., accounting for the variance in large numbers of variables by identifying the variance in a comparatively limited number of intervening or underlying variables.

A simple demonstration of the method was provided by Dickman and Cattell, who made 32 physical and kinetic measurement observations on the behavior of 100 balls; the factor analysis of these 32 variables yielded 4 factors, i.e., weight, diameter of the ball, elasticity coefficient, and the length of the string on which the balls were swung. These are the concepts which the physicist would use in formulas to explain the 32 measurements. The clinician may not be able to spare the time to follow the mathematical argument in detail. Yet, he can be reassured at the common sense level by demonstrations of this kind that through behavioral measurements the method is capable of elucidating the same root influences he perceives clinically as accounting for individual differences in behavior.

Surface and Source Traits

For a hundred years psychiatry has struggled with the opposing views that taxonomic schemes are its main stock in trade, and that "understanding the individual patient" through insight makes diagnostic categories unnecessary and even misleading. Finding that pigeonholing patients in types of syndrome grouping did not immediately provide such insight or reliable criteria with regard to therapeutic indications, many psychiatrists suggested the elimination of diagnostic procedures altogether. Instead, they advocated deeper, direct understanding of the dynamics of each case.

To get the full value from diagnostic approaches, such as those developed by Kraepelin and Bleuler, the real need was to press beyond the concept of gross syndromes to a more sophisticated taxonomic system, rather than to retreat. The statistical, quantitative methodology of multivariate experimentation, described above, provides a means of doing this with the mathematical model concepts which are briefly designated by the terms "surface trait," "source trait," "type," and "process."

Definition. A surface trait is simply a set of behaviors which are observed to go together, to appear together, and to disappear together; as such, it has the form of a simple correlation cluster. A syndrome is one form of surface trait. Computer programs such as Taxonome are capable of rapidly finding such clusters among the observations fed into a computer.

In contrast, the source trait is defined as a simple structure factor, i.e., one of the underlying influences which we have indicated above may be located by factor analysis. As will be seen below, examples of the source traits found by factor analysis generally include intelligence, the primary mental abilities described by Thurstone—*anxiety, surgency, ego strength, and superego strength*—and a number of drive patterns, technically called “*ergs*.” The relation of source to surface traits will be discussed below; essentially, the surface traits are “*heapings up*” of behavior which derive from interactions of underlying source traits.

It may be useful to review the developments in personality theory which have already occurred through the application of the concept of surface and source traits. Typically, the multivariate experimentalist measures approximately 300 people with regard to 80 different manifestations in behavior. He then produces a correlation matrix among these 80 variables and by factor analysis finds the factors, i.e., the source traits, underlying the variables. When he finds, say, a dozen source traits, he is moreover reasonably sure that he is finding patterns which have a high likelihood of replication, as patterns, by others and which will have psychological predictive value.

This empirically derived emergence of structure provides the dependable concepts for the construction of testing devices. Indeed, it provides a statistical psychometric basis for hitting the “*bull’s eye*” of such conceptual targets. Herein lies the vast difference between ordinary “*psychological testing*” and what might be called functional psychological testing. In “*psychological testing*,” one simply constructs scales for *a priori* notions or for quite specific bits of behavior; in contrast, in functional psychological testing, one discovers the structures to be measured first. That is, one unearths the inherent dynamic, temperamental, or ability structures—the source traits—in the human personality and then sets out to devise functional factor tests which will permit the precise measurement of these structures and nothing else. We are now concerned with personality theory built upon experiment with functional measurement.

Factor dimensions. Thirty years of psychometric research in the personality field, using all three possible media of human observation, namely, behavior rating *in situ*; introspective evidence, as in the questionnaire or the consulting room; and objective test evidence by laboratory or performance measurements, have yielded a steadily increasing harvest of new concepts in personality theory with which the psychiatrist needs to become acquainted.

Analyses of rating and self-rating (introspective) data yield much the same concepts, around 20 in number. These source traits were indexed initially as factors “*A*,” “*B*,” “*C*,” “*D*,” etc., in much the same way the vitamin researchers first indexed their vitamin influences. A period of time must elapse between the

simple identification of a behavior pattern as behavior, on the one hand, and its thorough interpretation and understanding, on the other.

Descriptions of source traits. It is reassuring for clinicians to find that the first broad factor found by multivariate experimental psychologists had been observed clinically by Kraepelin, Bleuler, Kretschmer, and others. Kretschmer called it the “*cyclothyme versus schizothyme dimension*.” Every factor must have a convention as to positive direction of score, although mathematically it is a toss up. Thus, at the positive pole we find easy expression of affect, good contact with people, and a tendency toward mood swings. At the opposite pole, we find aloofness and rigidity, together with some dissociation of affect from cognition.

It was pointed out above that, for the most part, factor analytic work is based on observations on normal subjects. Consequently, there is no reason to suppose that intrinsically either the cyclothyme or schizothyme temperament connotes abnormality. Historically, they were merely first seen in their pathological dress, and it is possible that what was seen was in each case a specific disease process superimposed on an essentially normal deviation. Certainly, the expressions of the “*A*” factor pattern within the normal range are sufficiently different from schizophrenic and manic-depressive phenomena to justify a more conservative terminology. Consequently, in normals, the “*A*” factor dimension has been called “*affectothymia versus sizothymia*.” The term *sizothymia* is derived from a Latin root meaning “*flatness*” which is characteristic of the schizothyme temperament (apart from any abnormality). After this first major “*A*” factor, a second source trait, “*B*,” which connotes intelligence, was found to have the greatest influence quantitatively on a random set of behavior variables measured in regard to individual differences. Then, in the third place, comes the ego strength factor, indexed as “*C*,” which has most of the properties assigned to it by the psychoanalyst. Factor “*D*” is a general excitability dimension. Source trait “*E*” is clearly recognizable as a dimension of dominance versus submissiveness which has also been studied in mammals and primates and has been correlated with hormone concentration. The “*F*” factor is called *surgency-desurgency*; at the surgent pole, it seems to be related to creative capacity, which is associated with comparatively little general inhibition, while at the desurgent pole, we see a pattern with many features of what is clinically recognized as depression.

The personality theorist who wants to get a real grasp of this field should study the exact nature, i.e., the magnitudes of factor loadings in various behaviors, of from 15 to 20 source traits until he recognizes them easily and understands their mode of expression fairly thoroughly. Some of the most important source traits are set out in bipolar form in Table

TABLE I
Brief Descriptions of Some Primary Source Traits Found by Factor Analysis^a

Low Score Description	Technical Labels		Standard Symbol	High Score Description
	Low Pole	High Pole		
Reserved, detached, critical, cool	Sizothymia	Affectothymia	A	Outgoing, warmhearted, easygoing, participating
Less intelligent, concrete thinking	Low general mental capacity	Intelligence	B	More intelligent, abstract thinking, bright
Affected by feelings, emotionally less stable, easily upset	Lower ego strength	Higher ego strength	C	Emotionally stable, faces reality, calm
Phlegmatic, relaxed	Low excitability	High excitability	D	Excitable, strident, attention-seeking
Humble, mild, obedient, conforming	Submissiveness	Dominance	E	Assertive, independent, aggressive, stubborn
Sober, prudent, serious, taciturn	Desurgency	Surgency	F	"Happy-go-lucky," heedless, gay, enthusiastic
Expedient, a law to himself, bypasses obligations	Low superego strength	Superego strength	G	Conscientious, persevering, staid, rule-bound
Shy, restrained, diffident, timid	Threctia	Parmia	H	Venturesome, socially bold, uninhibited, spontaneous
Tough-minded, self-reliant, realistic, "no nonsense"	Harria	Premia	I	Tender-minded, dependent, overprotected, sensitive
Trusting, adaptable, free of jealousy, easy to get on with	Alaxia	Protension	L	Suspicious, self-opinionated, hard to fool
Practical, careful, conventional, regulated by external realities, proper	Praxernia	Autia	M	Imaginative, preoccupied with inner urgencies, careless of practical matters, Bohemian
Forthright, natural, artless, sentimental	Artlessness	Shrewdness	N	Shrewd, calculating, worldly, penetrating
Placid, self-assured, confident, serene	Untroubled adequacy	Guilt proneness	O	Apprehensive, worried, depressive, troubled
Conservative, respecting established ideas, tolerant of traditional difficulties	Conservatism	Radicalism	Q ₁	Experimental, critical, liberal, analytical, free thinking
Group-dependent, a "joiner" and sound follower	Group adherence	Self-sufficiency	Q ₂	Self-sufficient, prefers to make decisions, resourceful
Casual, careless of protocol, untidy, follows own urges	Weak self-sentiment	Strong self-sentiment	Q ₃	Controlled, socially precise, self-disciplined, compulsive
Relaxed, tranquil, torpid, unfrustrated	Low ergic tension	High ergic tension	Q ₄	Tense, driven, overwrought, fretful

^a In ratings and questionnaires, and now embodied in the Sixteen Personality Factor Test.

I. For example, he might be particularly interested in the "G" factor of superego strength, which has all the ineluctable "categorical imperativeness" of the Freudian superego and has a special relationship to anxiety. As he studies this factor, he will encounter a number of interesting refinements, e.g., the correlations among factors and the existence of "second order" factors, which will be commented on here only briefly. For instance, some patterns show themselves more obviously in overt behavior ("L data"), whereas others emerge clearly only in the questionnaire and consulting room ("Q data") responses. A "Q" prefix is used for the latter, and prominent among them, in the Sixteen Personality Factor Test (16 P.F. Test) is Q₃, or self sentiment strength. The score on this measures the development of the sentiment developed about the self, which seems to indicate the extent to which the individual's behavior is determined by attitudes which evolve from a consciously precise self-concept.

Finally, the Q₄ factor, called ergic tension, seems to represent the general persisting level of drive frustration in the total drive endowment of the individual. As far as one can judge from its correlations and manifestations, this does not merely indicate undischarged libido level in the Freudian sense, but represents the amount of undischarged drive from sex, pugnacity, and any other ergs which may be encountering some of the frustration which is inevitable in our culture in the personal life of the individual.

Assessment of source traits

Questionnaire versus the objective-analytic battery. Granted that these structures and concepts give precision and potential measurability to some of the older, important parameters which are the basis for our understanding any individual, how is the practitioner to assess them? In part, he will want to do so directly by clinical interview. In "normals," e.g., officer candidates for the Air Force, they have often

been evaluated by careful rating procedures. In administering tests, one can use either questionnaires, or objective, miniature situation performances (the Objective-Analytic Battery, or O-A). The latter is ideal but cumbersome, so that, in all probability, the most convenient way to assess source trait levels in individuals is by a questionnaire, providing the questionnaire can be constructed with sufficient ingenuity to avoid excessive motivational distortion by faking. The Sixteen Personality Factor Test has been used widely in both clinical and occupational situations to evaluate the level of the individual on 16 of the 20 factors which have proved most relevant and most reliable. The test yields 16 scores, each on a 10-point scale. However, the psychologist or social worker who has not received sufficient training in this area should be warned that in assessing personality source traits either by this method or by the Objective-Analytic Battery, he is not dealing with a profile of immutable levels, which he is likely to associate with I.Q. tests or ability measures, but with personality traits which can develop and be modified by life circumstances, psychotherapy, etc. Nevertheless, repeat measurements with these scales at intervals of 1 or more years have shown that when life circumstances remain fairly stable, most of these traits demonstrate considerable stability even from the age of 10 on.

The original factor analyses which showed these patterns in normal adult subjects have been applied in the past 10 years to groups of abnormals, pathological subjects, and also at different ages, specifically, at 12 and 13 years of age, at 11, at 7, and, recently, at 4 and 5 years of age. The evidence produced in the questionnaire type of response clearly indicates that most of these factors have a continuity of form, i.e., of loading pattern, over the whole age range and in groups representing different cultures. Thus, high and low surgency is a recognizable pattern at all age levels which have been investigated to date, as are the affectothyme versus sizothyme temperament dimension, ego strength, and the various other factors. Furthermore, studies performed in Italy, Germany, Japan, India, and Australia have shown that the essential form of these patterns survives cultural translation. Therefore, the evidence accumulated to date supports the view that these functional unities are relatively fundamental dimensions of human personality, which may undergo some modification in expression, with age and cultural changes, but which retain a real continuity. This has been an important consideration in recent years for the planning of developmental studies which will be referred to below.

Essentially parallel findings appear when personality source traits are measured through the objective (performance or laboratory) type of test. There are some interesting modifications, however, due to the difference in the power of the eyepiece, so to speak. Some magnification occurs in questionnaires, so that

"second order factors" in the questionnaire realm (very broad factors which take the form of groupings of primaries) emerge only as first order factors (narrower in the total field) in the objective test realm. For example, the single general anxiety factor which appears in objective laboratory test measures fractionates into an interrelated set of subfactors in the questionnaire (namely, the factors of ego weakness, guilt proneness, tension, etc.).

To summarize: in general, the use of objective test batteries, as exemplified by the Objective-Analytic Battery, eliminates certain of the shortcomings of the questionnaire, such as the question of reliability of response. But they require more time, skill, and apparatus for administration. Consequently, to date, the objective test measurement of personality factors has not been used in clinics or mental hospitals as frequently as have the questionnaire measurement techniques, though more exact work in the future will require them.

Construction of the Theoretical Model

Elaborate personality theories which do not offer, as a basic prerequisite, the ability to measure recognizable trait structures involved in the theory will not get very far. On the other hand, a system which has nothing to offer but a set of traits cannot be considered potentially significant, no matter how these traits describe the natural history of the observed species. It follows, then, that psychology must experiment with models which will account for trait interaction and development, for the role of situations, etc., and which will permit accurate prediction of the outcome of trait combinations and conflicts.

Moreover, this model must have diagnostic validity, and it must be applicable to pathological phenomena, despite the fact that, as pointed out above, at least half the data on which it is based is derived from observations of normal subjects. Obviously, there may be special disease processes described in clinical material which are never manifested in any aspect of normal behavior. This problem will be discussed below. A description of the main model is our first concern. This is called the "intersection model," for it treats any behavioral event as something which can be accounted for only in terms of concepts of personality, of situation, and of ongoing process. Each of these variables is clearly represented by a specific formula.

Intersection model. Any act is considered, as far as personality is concerned, to involve the total personality, i.e., the whole profile of source trait scores. The simplest mathematical way of handling this is to assign various appropriate and experimentally obtained weights to the action of specific traits in each given situation and then simply to add these contributions together to get the total strength of the final response. However, if one suspects that the relation obtaining in nature is more complicated than a linear

one, then the formula may be modified by introducing, for example, products or exponentials among the trait scores. But so far this has not been necessary, and the basic equation in this "intersectional" factor analysis model remains what is sometimes called the linear specification equation. It can be represented for "*k*" traits as follows:

$$a_i = b_{i1}T_1 + b_{i2}T_2 + \dots + b_{ik}T_k \quad (1)$$

where $T_1, T_2 \dots T_k$ are an individual's scores on the traits; a_i is the act as we want to predict, and $b_{i1}, b_{i2} \dots b_{ik}$ are behavioral indices or weights for these traits when they are manifested in the context of the situation "*f*."

Concept of the linear specification equation.

This is a simple linear equation. As explained above, it states that the magnitude of any particular behavior manifestation (a_i), such as a symptom, is determined by a whole set of source traits or factors, here indicated by the letters "A," "B," "C," etc., from Table I above. So far, this is in accordance with good psychiatric principles which postulate that most behavior is multiply determined and is not due to the independent action of any single trait or dynamic need. The weights (or "behavioral indices"), which express the extent to which each of the standard common factors is involved in performance, are determined by experiment, followed by a factor analysis, and can be assigned any values, ranging from +1 to -1. The application of this specification equation can be illustrated by two examples. The first of these is an equation discovered by Pierson and Kelly for the probability of recovery from delinquency in adolescent children. The second is also an empirically derived equation and expresses the success of psychiatric technicians (evaluated in their own institutions) as a function of their personality factor scores on the 16 P.F. test. These may be stated (See Table I for trait identification) as follows:

$$\begin{aligned} \text{Response to treatment} = & .1B - .5C + .3D - .1F + .6G \\ & - .2H + .2I + .2J + .2O - .3Q_2 + .2Q_4 \quad (2) \end{aligned}$$

$$\begin{aligned} \text{Psychiatric success} = & .2A + .5C - .2E + .3G + .3H \\ & - .3M - .2O - .3Q_1 + .3Q_3 - .2Q_4 \quad (3) \end{aligned}$$

It should be noted here that in any actual calculation the values for the source trait scores, which, typically, represent the values on a 10-point scale, based on the "stens" in the test score, always represent the individual scores on these common traits. ("Sten" is an abbreviation of "standard ten," meaning a standard score in which sigma equals 2 and the total range is 1 to 10.) The I.Q., the affectothyme ("A"), and the ego strength ("C") factor measures would be familiar instances of such source trait scores. The T 's in the first equation above are replaced with letters to denote particular source traits in the second and third equations. The meaning of these letters was

given earlier, in Table I. It should be noted that whereas the T values which express the unique qualities of the individual constitute the profile of his trait scores, the values which define the situation in which he stands are represented by the "*b*" values or behavioral indices. And these indices are unique to the particular situation, not an individual. They can be identified only by factoring data which include that situation. These behavioral indices describe the extent to which the given situation evokes certain personality traits. It becomes more evident at this point that we have called our general approach the intersection theory, because it considers the act as the intersection of a multidimensional personality with a multidimensional situation. This, of course, is no figure of speech but refers to an equation for actual computations which can be applied to any related problem. The validity of these modes of representation of the individual and the situation can be tested in other ways as well.

Predictive validity. The theory has a practical, testable application. Thus, the practitioner can take the particular scores of a patient on a test, such as the 16 P.F. Test, or the High School Personality Questionnaire (HSPQ), or the O-A Battery. After entering these figures in a familiar equation (obtained by previous researches) for some important situation, he can make a rough prediction of the patient's response. For example, the psychiatrist might be interested in the way a particular individual will respond to a certain therapeutic treatment; provided general research has been used earlier to establish the behavioral indices for this situation, he will be able to make an estimate that is probably much better than one that could be made from intuition alone. The accuracy of the estimate can, of course, be calculated by finding the magnitude of the multiple correlation obtainable from the given weights.

Some psychometrists have been content to use personality source trait measurements and ability factor measurements in just this way, restricting themselves to purely actuarial statistical methods. But this is not utilizing the resources of the intersectional theory of behavior to their full capacity. Surely, the very characteristic that distinguishes a good psychiatrist or psychologist from an accountant or a computer is his desire to use psychological laws as well as those laws which are merely actuarial and statistical. And here, once again, we encounter a substantial advantage of functional psychological testing over mere psychological testing: if these source traits are the natural structures of personality, which we have every reason to believe them to be, or if they correspond to functional states, such as anxiety, stress, elation-depression, which we know them to be in other cases, then we can project the prediction beyond that which is possible actuarially. We can reason and predict to future dates and different occasions, by adding to the formal calculation (or to an

estimate which is "made in one's head") what we know about the way in which these source traits will change with time and situation, and as a result of other influences.

Modifications in source traits. With this potential capability it becomes important for personality theory to develop, as soon as possible, its repertoire of laws and resources of information about these source traits. One of the obvious and immediate directions of possible research is to find the way in which each source trait changes and develops characteristically with age. When it became known, for example, that the general intelligence factor, as defined by Spearman, grew rapidly in early childhood and reached a definite plateau at about 15 to 16 years of age, rather than at a much later age as generally assumed, then predictions about learning rate and future achievement, etc., began to be made with much greater reliability and insight. In the last few years, as information has accumulated about the life course of several well known personality factors, many psychologists who had sat on the fence too long, and looked askance at "factors" as mere mathematical abstractions, became convinced of their reality. For one sees that each shows a highly characteristic age course, quite different from that which would arise from a mere averaging of any mathematical (but unpsychological) set of subtest scores. For example, when the anxiety factor is scored on the eight subtests found to load it most consistently, we discover that anxiety is high in adolescence, then drops steadily until the age of about 35, after which it stays low until old age, when, apparently, it rises again. The ego strength factor also follows an unstable course in adolescence; thereafter, it continues to rise very slowly and steadily with life experience. The provision of such norms should also help to enhance the psychiatrist's understanding of how far individual cases may be deviating from the normal development.

In the next decade, however, research on intersection theory has many other important things to explore in regard to source traits. Central among these is the relative importance of constitution and environmental learning in determining individual differences. Preliminary research certainly shows great differences among them in this respect. Personality theory could also be pushing ahead to manipulative, bivariate experiments carried out on factor measurements, such as anxiety, ego strength, surgency, and superego strength. Since measures are now available, no factor analysis would be necessary; the aim of such research would be simply to determine, for example, which physiological influences and family learning situations determine levels of these primary structures.

Diagnosis and prognosis by the intersection model. In regard to the establishment of the patterns of functional unities in personality which we call

traits, the contention of the factor analyst is that he really needs no check from clinical, i.e., nonmetric types of observation, although he welcomes the enrichment of meaning given thereby to the bare bones of his framework. For he has rested his case on the most fundamental principle for establishing functional connections in science, namely, what John Stuart Mill called "the principle of joint variation." Thereby causal and other connections can be proven, and thereby it can be shown that certain elements of behavior do in fact go together when examined by more precise methods than are available to the clinician's eye and memory. Consequently, it is not surprising that the factor analytic experimental methods first elucidated some of the major patterns which have been observed clinically, for the clinician is using the same principles but without benefit of a computer. Correlational investigations have confirmed the validity of such concepts as ego strength, a general factor of anxiety, superego strength, schizothyme tendency, ergic tension, etc.

Although the basis of the newer concept is different, more precise, and more verifiable, these new factors have been given the labels by which the vaguer shapes which preceded them have been clinically recognized. For example, there can no longer be any justification for several different views of the exact pattern of ego strength expression, or for conflicting views about whether ego structure is a single pattern or several. These issues can be quickly decided by experiment, and in Cattell's *Personality and Motivation Structure and Measurement*, precise "loadings" are given for the various expressions of ego strength, schizothyme tendency, anxiety, etc. Table II shows, for example, how various introspected and observed anxiety manifestations load the anxiety factor.

Universal Index series. The factor analyst usually uses indices for traits to avoid possibly false connotations in popular labels. For example, in the Universal Index series, U.I. 24 corresponds to the general anxiety factor. After this pattern is tied down, the psychometrist must also show how U.I. 24 measures behave in clinical situations. In this case, the factor behaves exactly as the popular conception of anxiety has always behaved. That is, measurements on the U.I. 24 show that the measurements for neurotics are decidedly higher than they are for normals. They show that under psychotherapy and chemotherapy the score on U.I. 24 is reduced. They show that U.I. 24 measures increase in individuals subjected to anxiety-provoking situations. The exact identification of a measurable behavioral pattern for anxiety, U.I. 24, permits these associations to be demonstrated and, incidentally, also permits more precise research to uncover those physiological variables which are related to anxiety. Understanding of physiological associations has been enhanced since factor analytic separation of the response patterns has shown that a stress reaction pattern exists, now called effort stress. This

TABLE II
Psychiatric Symptoms Expressive of Anxiety
A. Self-Rating^a

Item Number	Correlations with Pure Anxiety Factor			Symptom
	Average of 1 and 2	Re-search 1 (Sample of 90)	Re-search 2 (Sample of 150)	
1	+.40	+.32	+.48	Jumpy, nervous
2	+.39	+.32	+.45	Feel lonely
3	+.38	+.36	+.39	Want to get away from it all
4	+.36	+.29	+.43	Worry
5	+.36	+.32	+.40	Do foolish or clumsy things, say the wrong thing
6	+.36	+.27	+.45	Nervous movements (finger tapping)
7	+.36	+.31	+.41	Feel depressed or despondent
8	+.34	+.36	+.31	Excitable
9	+.34	+.32	+.35	Have silly, groundless fears
10	+.33	+.30	+.36	Have a fatalistic attitude
11	+.31	+.36	+.26	Lack of self-confidence
12	+.31	+.32	+.29	Irritable
13	+.31	+.22	+.39	Heart pounds when excited
14	+.31	+.29	+.32	Easily distracted
15	+.30	+.28	+.32	Day-dream
16	+.30	+.21	+.39	Get confused for certain lengths of time
17	+.30	+.26	+.33	Tense
18	+.29	+.33	+.24	Cry
19	+.28	+.30	+.25	Pulse rapid
20	+.27	+.21	+.32	Easily embarrassed
21	+.26	+.23	+.29	Get cold shivers
22	+.26	+.46	+.05	Moody
23	+.25	+.33	+.17	Have rapid emotional changes (i.e., hate to liking)
24	+.25	+.28	+.22	Can't concentrate
25	+.25	+.24	+.26	Get tired easily

^a From Cattell and Scheier, 1961.

B. Psychiatrist's Ratings

Symptom	Correlations with Pure Anxiety Factor
Irritability	+.42
Anxiety	+.33
Depression	+.32
Phobic behavior	+.22
Sleep disturbances	+.13

resembles and was frequently confused with anxiety before the advent of correlational factor analytic evidence, but it behaves very differently in several ways. For example cholesterol in the blood stream seems to be related positively to effort stress measurements but not to anxiety measurements.

Diagnostic criteria. The difference between the theories developed from multivariate quantitative research and those based on clinical observation does not stop at some variations in emphasis in descriptive patterns, some greater clarity in the separation of dis-

tinct concepts, and the possibility of resolving otherwise unending verbal disputes by reference to quantitative experimental results. It may alter the whole theoretical picture, as has happened through findings on the number and nature of the factors involved in a specific process, e.g., in neurosis. For it would appear that clinical observation has succeeded in locating only the more grossly obvious of these functional unities and that a much larger number must be considered. Whereas Freud believed that "anxiety is the central problem in the neuroses," and many psychoanalysts continue to treat neurosis as if the main problem were to reduce the deviant degree of anxiety, the factor analytic approach, by the intersection model, has identified at least seven primary factors which distinguish diagnosed neurotics from normals beyond the $p < 0.01$ level of significance. According to current tentative labels, these include "C-" (ego weakness), "E-" (submissiveness), "F-" (desurgency), "H-" (threectia), "I+" (premsia), "O+" (guilt proneness), "Q₃-" (inadequate self sentiment development), and "Q₄+" (high undischarged ergic tension level), as presented in Table I.

In the Objective-Analytic Battery, seven factors have also been found which distinguish the neurotics from the normals with the same statistical potency ($p < 0.01$), although they cover a broader area than was measured in the questionnaire. The degree of separation of neurotics and normals which can, in fact, be obtained just by the use of the O-A Battery is shown in Figure 1.

If we examine these factors in terms of their clinical association, we recognize that classical psychoanalysis has designated ego weakness, guilt proneness, and

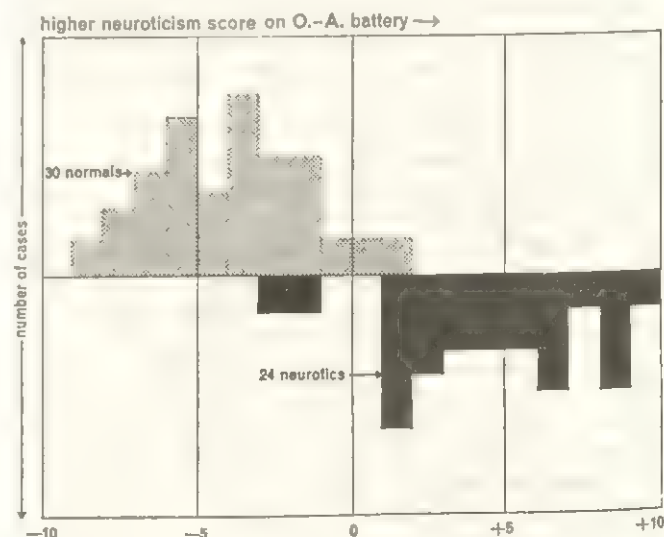


FIGURE 1. Frequency histogram of the linear discriminant function showing degree of diagnostic separation obtainable for 30 normal and 24 neurotic subjects on objective test personality factors. (From Cattell, R. B. *The Scientific Analysis of Personality*, p. 331. Penguin Books, Baltimore, 1965.)

ergic tension as factors in the neurotic breakdown, but it has said nothing about "H—" factor (threitia), "I+" factor (premsia), or "Q₃—" (deficient self sentiment). The evidence produced by studies of twins is that "H" factor is largely hereditary, and represents a general autonomic sensitivity to threat in the low score direction—hence the name threitia. Presumably, this finding of low "H" in neurotics merely indicates that the individual who is highly susceptible to external threats also reacts excessively to threats from internal forces or impulses. It might be that Freud considered this temperamental component too obvious to state, but in any actual calculation of individual differences in neurosis it cannot be overlooked.

The concept of premsia versus harria ("I" factor), on the other hand, adds an entirely new dimension to the theory of neurosis. This factor is largely environmentally determined, although some association has been shown with blood groups. It appears to represent the extent to which the individual has been brought up in an overindulgent and unrealistic environment, as opposed to a disciplined, more self-restrictive atmosphere. The term premsia is an acronym from "protected emotional sensitivity," and the ratings given to children and adults high on this factor stress sensitivity, plaintiveness, dependence, preference for art and drama over science and mathematics, and a tendency toward "fussiness" in personal relations. In school, these children are rated as attentive to, and dependent upon the teacher, demanding of attention, sensitive to criticism, and unpopular with their peers. An unusually high "I" factor is found in neurotics, drug addicts, alcoholics, and a number of other pathological categories. The question of how this predisposition leads into neurosis must be considered still open to experimental check. But, presumably, the attitudes and patterns of behavior generated by this overprotective and indulgent early environment produce the "neurotic hesitation"—i.e., the inability to make a firm decision either to give up some satisfaction or to accept its consequences fully—which has often been noted as one of the origins of the neurotic's unrealistic perceptions.

It is not too difficult to identify the mechanisms whereby subnormal self sentiment development ("Q₃") becomes associated with neuroticism. Low "Q₃" indicates insufficient shaping of, and attention to a clear cut self sentiment, which would help to direct decisions and actions. It has been shown that individuals low on "Q₃" develop more anxiety, presumably because they get into more unstructured and conflicting situations by reason of lack of guidance from the more decided self-concept present in the high "Q₃" individual. Lack of integration follows because behavior is not referred as readily to a defined self-concept.

Similarly, operational explanations have been put forward for the action of others of the new source traits identified through this experimental approach. Space limitations preclude discussion of these traits here, but the hypotheses they have given rise to have already been put to experimental check in some cases. In the main, within the limits of this section, we are reduced to a bald statement that certain source traits have been found and that certain significant score differences have been found among various pathological groups, which, consequently, have resulted in certain diagnostic potencies for the scales concerned. But, in addition, rich theoretical developments have occurred with respect to these concepts in these last few years which require further validation from measurement and experimental findings.

Some clinicians may justifiably feel that, in terms of stimulating clinical research, the approach of the psychometrists has been an unduly cautious one. More specifically, most experimentalists have been very conservative in speculating about

the nature of these entities. Although there is no question that these functional entities are real, one hesitates to name and theorize about them until additional criterion evidence has appeared. And this evidence has not appeared nearly as rapidly as it should, because of the communication gap between the clinicians on the one hand (who have been inclined, when they take to testing, to use some clinically derived test, regardless of its factorial base in research) and the statisticians on the other. The statisticians, whose skills and realm of action have not included the trial of these tests in clinical situations or the testing of them against psychiatric diagnoses, have in the main constructed factor-pure tests—and then simply left them in the clinician's lap. However, now that these factored scales and batteries have been made available in formal publication, in such instruments as the 16 P.F., the HSPQ, the IPAT Anxiety scale, the various factor depression scales, the Objective Analytic Battery, and the Motivational Analysis Test (MAT), we can certainly anticipate a more rapid accumulation of checks against standard psychiatric diagnostic judgments and evaluations of therapeutic gain. From the theoretical point of view, this will result in a much greater understanding of each functionally unitary source trait, which, though we know it already to be established indubitably as functional unit, lacks definitive interpretation with respect to its relationship to age, family background, neurological associates, and, finally, the degree to which it may be modified by therapeutic procedures.

Therapeutic Guidelines

Any personality theory worthy of the name should have intimate contact with the principles and practice of psychotherapy. The traits connected with functional testing and the general intersection theory do indeed give guidance on the strategy and tactics of the individual therapeutic procedure. But discussion of this relationship will also reveal a gap, namely, in relation to what have been called unique traits.

Combination of source and surface trait measurements. Attention must be focused for a moment on the relationship between surface and source traits. Prior to the advent of basic research in personality structure as implemented by the factor analytic experiment described above, most psychological scales consisted of measurements of surface traits or of attempts to relate behavior to a particular test by a kind of blind empiricism. For example, the Minnesota Multiphasic Personality Index (MMPI) was directed to syndromes (surface traits) which had been recognized previously by the psychiatrist. Thus the test served as an aid in assessing the severity of the symptoms of that syndrome in a given case. Essentially, the Rorschach has had a similar aim: to provide independent evidence as to the severity of a particular syndrome, and thereby help to classify the individual's disorder. Ultimately, a host of clinical psychologists discovered many blind empirical relationships between pathological syndromes and response to ink-blots.

This approach to diagnosis, through "special purpose" tests, is the exact opposite of what we have described here as the goal and orientation of the *general purpose structural* test. In the latter, meaningful structures are found first, and tests are then directed to the elucidation of these concepts. However, a sur-

face trait, such as an MMPI scale may offer, can be as much a natural structure as a source trait which is outlined in the 16 P.F. test, for example. Therefore, some reference must now be made to the possible advantages of insightfully combining surface and source trait measurements in diagnosis. It is denied by psychologists, such as Wiggins, who have examined the MMPI by correlations, that its scales have the homogeneity required by the surface trait definition. But in a clinical sense they may have the homogeneity of correlations with actual psychiatric case syndromes. It was pointed out above that a certain correlation cluster or surface trait (e.g., the severity of a conversion hysteria syndrome) may be created by several fairly different patterns of source traits. This can be illustrated by the two following specification equations, each of which describes a group of anxiety reaction symptoms of the same severity. Thus, the first makes the general statement that, typically, anxiety (a in the equation) is due $-.4$ to ego strength ($+.4$ to ego weakness), $+.5$ to guilt proneness, and $+.5$ to ergic tension (frustrated drive level). Other factors are omitted for simplicity of illustration.

$$a = -.4C + .5O + .5Q_4$$

Let us now take two individuals, J and K , with the following scores on the 16 P.F. test.

	C	O	Q_4
J :	.5	.2	.8
K :	.5	.8	.2

When these values are substituted for " C ," " O ," and " Q_4 ," in the specification equation one gets the following result.

$$a_j = (-.4 \times .5) + (.5 \times .2) + (.5 \times .8) = .3$$

$$a_k = (-.4 \times .5) + (.5 \times .8) + (.5 \times .2) = .3$$

In one case, this high anxiety reaction score of .3 (0 is average) can be ascribed to a higher guilt proneness, and in the other to a greater ergic tension. In general, this illustrates that the same surface trait score (overt symptom level) can be understood in terms of different source trait profile scores. It is the latter which provides the understanding essential for effective therapeutic intervention, and the whole movement of recent years to discount the docketing of cases by surface trait scores rests on this fact. On the other hand, experimental examination of the personality factor profiles of psychiatric patients assigned to a given syndrome group does reveal a certain similarity of profiles. For example, as indicated above, neurotics tend to be low in ego strength and surgency, high in ergic tension (" Q_4 "), high in guilt proneness (" O " factor), and high in premsia (" I " factor). Moreover, this still leaves enough room for individual differences: in one patient the level of overt severity of symptoms (i.e., the surface traits) may be

accounted for by a marked ego weakness and a relatively minor guilt reaction, while in another the test results will show that although the patient's ego strength is not deficient to any conspicuous degree, his reaction is much more severe.

Scores expressed simultaneously in surface and source trait structures should be of great value to the therapist in planning his campaign of therapy for the individual patient. Table III provides the weights necessary to estimate the typical MMPI surface trait scores from the 16 P.F. source traits. Thus the former can be analyzed in terms of the latter. To date, this computational approach has had relatively little impact on psychiatric practice. However, several articles now appear in the literature in which a different prognostic outcome has been established experimentally on the basis of one individual's source traits profile as compared with another's, when the actual syndrome measurement by a surface trait scale (such as the MMPI) has been equally severe in both cases and undistinguishable. This does not mean that surface trait measurement, e.g., the MMPI, should be dropped. The purpose of this discussion is to point up the value of a good two-handed use of surface trait (MMPI) and source trait (16 P.F.) measurements in what has been called psychometric depth analysis. One needs to ascertain as accurately as possible both the severity of the actual symptoms and what combination of source traits is most involved in their production. The typical relationships for general surface-source traits have already been established for the average patient as indicated in Table III.

Knowing the causal nexus in a particular patient, at the level of source trait structure, is of obvious value, from both a theoretical and practical standpoint. It can be illustrated from actual measurements by the work of Pierson and Kelly on young delinquents, referred to above. This study showed that in a group of delinquents whose antisocial behavior (surface trait) was equally severe, those with greater ego strength were less likely to modify their behavior in the foreseeable future. On the other hand, subjects who scored high on " D " factor (excitability) were more likely to return to normal behavior. The obvious conclusion to be drawn here is that high " D " factor may result in antisocial, impulsive, behavior, although there is really no serious dynamic (antisocial tendency) distortion in character structure. On the other hand, if the individual has "settled down" to socially maladjusted behavior and, nevertheless, achieved high ego strength, the reconstruction of his modes of reaction is going to be more difficult, because he has a well formed ego and is experiencing comparatively little anxiety. The theories concerning the treatment of delinquency arising from this quantitative experimental approach, as stated by Pierson and Kelly, have turned out to be quite antithetical to those which were developed on previous purely clinical grounds. Theories based on clinical observation have treated the delinquent essentially as a neurotic who is "acting out." As such, he was considered a candidate for the same therapeutic approach, including the reduction of anxiety. The experimental results which showed that delinquents were actually deficient in anxiety led Pierson to argue, instead, that the first task in therapy is to increase the anxiety level of the delinquent, and his results seem to justify this approach.

Precise practical applications of the intersection model theories will require far more survey research than has yet

TABLE III

Predictions (Average Makeup) of MMPI Surface Trait Scales in terms of 16 P.F. Source Trait Scale Scores with Various Attenuation Corrections

For any row in the figures on 16 P.F. trait measures, the weights (rounded to one decimal) are given to apply to the 16 P.F. source trait scores to get the best estimate of the MMPI surface trait scale. The values in the last four columns are the multiple correlations showing how far the 16 P.F. can be expected to estimate the surface syndromes. For example, psychasthenia and anxiety are pretty well estimated, but hysteria and masculinity-femininity are not. These values are based on studies of a "normal" group of 3 cases and should be taken as tentative until checked against the findings derived from investigation of a mixed group of normal and clinical subjects. $N = 300$.

MMPI Surface Trait Estimates	Weights on 16 P.F. Source Trait Measures																Theoretical Value with Reliability Corrections			Uncor- rected
	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄	Corrected for MMPI Scale Unreliabil- ities Only	Corrected for 16 P.F. Scale Unreliabil- ities Only	Corrected to Ideal Scales for Both	
Anxiety.....	0	0	-1	-2	0	0	-1	0	0	0	0	2	0	0	-1	3	49	64	68	58
Lie "L" scale.....	0	0	2	-2	0	0	0	-2	0	1	1	-1	0	0	0	1	27	35	40	32
Validity "F".....	0	-1	0	1	-2	-2	1	0	0	0	-2	0	1	0	-1	1	46	58	73	51
Correction "K".....	0	0	1	-1	0	0	0	-1	-1	0	1	-2	0	0	1	0	37	49	55	43
Hypochondriasis.....	1	-1	0	0	0	-1	1	-1	-1	1	-1	2	-1	1	-1	1	42	55	62	49
Depression.....	0	0	-1	-2	-1	-1	0	0	0	0	0	1	-1	0	0	2	32	36	47	32
Hysteria.....	0	0	1	-2	0	-1	0	-1	0	2	0	-1	0	0	0	1	28	29	43	26
Psychopathic.....	0	0	1	1	0	-2	1	-1	0	1	1	0	0	0	-1	2	32	32	48	29
Masculinity-femininity..	1	0	0	-2	0	0	-1	1	-1	1	0	1	0	0	0	1	25	33	38	29
Paranoia.....	-1	0	0	-1	-1	-1	1	-2	0	1	0	-1	0	0	1	1	30	36	48	32
Psychasthenia.....	0	-1	-1	-1	-1	0	-1	1	0	0	0	1	-1	0	-2	3	55	70	78	63
Schizophrenia.....	0	-1	-1	0	-1	0	0	0	0	0	-1	1	0	0	-2	2	48	66	75	58
Hypomania.....	0	-1	2	-1	2	-1	0	0	1	1	1	-1	1	0	0	2	33	35	48	32
Social introversion.....	-1	0	1	-3	1	0	-2	-1	0	0	1	1	0	2	0	1	47	52	64	47

been accomplished and which focuses on discovering specification equations for a wide variety of pathological behaviors. That is, we need to know which personality source traits are involved, and to what quantitative extent, in response to a wide variety of standard life situations, such as occupation, clinical settings, marriage and the family, etc. This is a very considerable undertaking and can only be accomplished if psychiatrists provide more extensive encouragement in getting systematic measurements than they have to date. Specific theories about the role of particular source traits in certain disorders already exist, but the cautious therapist is not going to feel that he can depend upon them until the necessary measurement relations have been cross-validated by larger samples.

Observation of individual conflicts and measurement of common source traits. This is not the only reason for current difficulties in applying source trait theory. There is also a real theoretical difficulty in reconciling observations of conflicts and fixations which are obviously quite specific and idiosyncratic to the patient, with measures of source traits which are by definition common forms. Is Patient X's symptom formation to be related to a sexual trauma at age 3 or to a low score on the ego strength factor ("C"), and what bearing does the answer to the question have on therapeutic techniques?

When the factor analyst studies individual differences and correlates behavior measures, essentially he is developing concepts of common traits. That is to say, the intelligence, or the anxiety, which he is measuring is considered to have the same typical pattern

for all people, as a measure of mass does for all objects; therefore, he ignores certain variations in form in the individual. He does not ignore them completely, however, for to a great extent the peculiarity of expression visible in one source trait is due to the fact that it is combined in particular measures with some other source trait. For example, in the expression of dominance of an individual rated high on the common dominance trait who is also high on the common measure of anxiety, there will be some measure of anxiety, some qualities of rigidity, etc., which will not be present in the person who scores at the same level on the dominance trait but at a far lower level on the anxiety trait. In short, a great deal of what we recognize as the uniqueness of the individual can be very adequately represented by his unique combination of scores on absolutely common traits.

On the other hand, we must also recognize absolutely unique traits, particularly in the dynamic field and in regard to the patient's interests. For example, the interest of an individual in the house in which he was born, or in the sexual life of his grandmother, are continua on which other people cannot be given any real score. At best, we can say that the rest of humanity has a zero score on this scale—and a scale which is useful to only one person is not very useful. One of the most common causes of misunderstanding between the psychometrician and the psychiatrist, as was evident, for example, in a recent symposium debate at

the American Psychological Association in which Thorne, Cattell, and others participated, is that the psychometrician is rarely concerned with unique traits, and the psychiatrist has not grasped the conceptual distinction between a common trait and a unique trait. It happens that a good deal of clinical work is concerned with the immediate observation of unique traits, and this is apt to obscure the fact that in the long run the psychiatrist may have to give more attention to common traits. For example, initially, the clinician may be interested in the specific dynamic conflicts and personal history fixations indicated above, but his ultimate objective is to raise the level of the common trait of ego strength, and to reduce, say, the level of the common trait of anxiety. Obviously, he must attend to the idiosyncratic and cultural attachments in which a common trait (such as the sex drive or the superego) has become entangled; but his final concern is with a general economics of energy which will produce changes which can be recognized by measurements of the massive common traits.

Parenthetically, there exist potent but costly ways of objectively exploring and measuring individual unique trait structure, dynamic or otherwise, notably, through what has been called "P technique." (P technique repeats a battery of measures on the patient for, say, 100 days; his scores are then correlated over time revealing the functionally unitary factors.) When ways can be found to simplify these research approaches for routine application, one hopes that there will be a more extensive use of measurement in psychiatry in regard to the structure and strength of the unique traits. Meanwhile, psychiatry can go a long way in terms of common traits alone, provided the psychiatrist recognizes that both unique and common patterns exist and that the direct manipulation of the unique trait may frequently contribute to change in the common trait measurement.

Specificity of individual conflicts. In principle, the specificity of conflicts and fixations in the individual patient is no different from the specificity of form of a house. A unique dwelling does not prevent the builder or carpenter from using his knowledge of common materials to construct or manipulate the structure of the house. Similarly, as pointed out above, we can account for much of unique psychological structure in terms of different quantitative combinations of common traits. In the last resort we find attachments, it is true, which are absolutely unique to the individual and his history; the handling of these attachments is discussed below.

Application of Dynamic Calculus to Conflict Measurement

If the universal applicability of mathematical-statistical methods to the discovery of structure, as argued above, is valid, then the dynamic, interest-motivation aspects of personality (which have not yet

been discussed) should also admit of an analysis at least equal in precision to that based on clinical methods. Developments from such research, under the name of the "dynamic calculus," have fully justified these expectations.

The two main devices for dynamic analysis which were developed primarily in the clinical field, namely, free association and hypnotism, have been based mainly on the verbal report of the patient. This is true of the early contributions of the psychometricists as well. For tests of interest, such as the Strong, or the Kuder, and approaches to conflict evaluation through such devices as the ordinary questionnaire, have also depended upon the patient's verbal self-evaluation. It is true that, in principle, the evaluation in free association is at a more sophisticated level than are the self-statements about occupational interests in the Strong Interest Test, for example; but ultimately, both depend upon verbal and self-directed evaluation.

More recently, in projective tests, the psychologist has offered the psychiatrist an avenue to dynamic trait measurement which is somewhat more sophisticated. Unfortunately, it has also proved very unreliable, as numerous studies of the Thematic Apperceptions Test (TAT) and other projective tests, have shown. A fundamentally different approach from all of these began when some 90 different objective devices for measuring motivational strength, ranging from measures of perceptual distortion to ego defense mechanisms, through information and physiological responses, such as blood pressure and galvanic skin reflex, were subjected to factor analysis in order to identify their components. For one cannot assume that all motivational manifestations will have a single underlying factor. Actually, the results show seven types of motivation components which appear regularly, no matter how diverse the content of interest may be. This has permitted the measurement of motivational factors by tests which can themselves be "construct-validated" against the factors. It is from such objective measures that the generalizations which are commonly called the *dynamic calculus* have emerged.

At present, the nature of the seven distinct primary motivational components is not fully understood. One theory considers them to be the contributions to any interest, emanating from the id, the ego, the superego, physiological (autonomic) response, complexes, and certain other sources, that is, the sum total of interest in any response or course of action. For example, wanting to succeed in one's profession is analyzed, by such a battery of tests as the MAT, into relative strengths in these components. However, more recent investigations have shown that for both adults and children the seven components fall into two groups; or, to be precise, they are organized by two second order factors. From their nature these have been called, respectively, the integrated and the unintegrated components in interest. Thus a "U" and an "I"

score can be assigned by the battery to the strength of any interest in any given course of action. Such subtests as autism, perceptual distortion, and galvanic skin reflex are found to contribute to the unintegrated component, while such responses as word association, information, and penetrating perception of jumbled sentences contribute to the integrated component.

Current theory in this area favors the view that the unintegrated component, though not wholly unconscious, corresponds to many manifestations which have been clinically described as emanating from the unconscious and has to do with that component of interest which has never found any "reality testing." On the other hand, the integrated component in the battery corresponds to interest which has been tested out, invested in adjusted performances, educated, and integrated with the self-concept. These two components show relatively little correlation in any individual, but Sweney's work suggests that in general a high magnitude of the unintegrated relative to the integrated component score occurs whenever there is conflict in that particular drive or need area. The validities of these batteries are not yet raised to the same level as those familiar in ability batteries, and their reliabilities are lower, but experiment is broad enough to show that these factor structures exist, and promising beginnings have been made toward their theoretical interpretation.

Being able to measure interest strength by objective tests is, however, only a beginning. The next step is to apply such a battery over a wide array of the typical citizen's life interests, in order to attempt to correlate the grouping and structuring of action-interests.

Dynamic structure factors. Suppose a battery of half a dozen objective subtests (to give a single "intensity of interest" score), applied to about 300 normal subjects, is made for each of about 50 attitudes and interest areas. The 50 widely sampled attitudes, each measured by a score on the total battery, are then correlated. Through factor analysis one then has the basis for discovering empirically the way in which interests are commonly interrelated in our culture. The factor analysis of such matrices has yielded about 20 distinct factors, which we shall call "dynamic structure factors" to differentiate them from the motivational component factors just described. The reader will recall that the motivational component factors are *groupings within measurement devices*, which hold over *all* areas of interest, whereas the dynamic structure factors are statements about the way in which our interests fall into some functional unities.

The main result of the dynamic calculus research, as applied to dynamic structure factors, has been the finding that interest factors are essentially biological drives, on the one hand, and sentiments, or aggregates of interests, acquired by education, about certain objects and institutions, on the other. These two distinct kinds of dynamic structure factors must be taken into account in almost any area in which one works. One consequence of this work has been that the theorizing about the nature of drives in man is no longer on a speculative basis; it is now based upon experimental verification by suitable calculation. This work appears

to have verified the psychoanalytic (rather than the biological) position that there are two distinct sexual needs, which Freud described: one, which is directed toward "object love," is mainly heterosexual in character; the other is narcissistic in character.

On the other hand, this research has not supported the list of drives hypothesized by Murray. In actual fact, among the schemas adopted in various historically important writings, McDougall's analysis is closest to the experimentally based structures. In particular, it disagrees with the Freudian reduction of all drives to merely two or three "instincts." It may be that libido, thanatos, etc., will yet appear as patterns at a higher order of factor analysis, but initially we certainly get no less than 9 or 10 drives, including the 2 sex drives mentioned above, fear, gregariousness, curiosity, parental protective behavior, self-assertiveness, pugnacity, etc., a picture which is more closely akin to what the ethologists have observed in the primates. To avoid confusion with instincts, these new, empirical patterns have been called *ergs* and the measures which have subsequently been set up for them in terms of the objective motivational devices have been called measures of *ergic tension level*.

In terms of the mathematical model, these findings can be brought into exactly the same framework as the general personality source traits. Thus, a particular attitude-interest (i.e., a strength of interest as evidenced by responding with a particular course of action in a particular situation, such as "I want so much to go out with X") can be translated into the specification form as before, namely

$$I_j = b_{j1}E_1 + \dots + b_{jk}E_k + b_{j1M}M_1 + \dots + b_{j1M_p}M_p$$

where I is strength of interest in course of action j ; E_1 to E_k are strengths on k ergs; M_1 to M_p are scores on p sentiments; and the b 's are the usual appropriate behavioral indices, found by correlation, which express the involvement of the drive in the action, etc.

It will be seen that the factoring of objective dynamic measures to reveal these b values amounts to a "quantitative psychoanalysis." By this method we are able to say how much (though still in terms of common traits of *all* people) a given interest derives from certain ergic roots. Some interesting findings have resulted in this field, and, again, several of them confirm psychoanalytic positions. For example, interest in smoking is found to be loaded in sex interest, fitting the oral erotic explanation. Some new insights into the nature of drives (ergs) have also emerged, in that a fair number of aggressive attitudes are found to be more loaded by the fear drive than by a pugnacity or sadistic erg as such.

Clinical research with these instruments (the factored MAT, etc.) and theory construction have only just begun. As indicated above, ergs and sentiments, including self sentiment, can be measured, and equations can be stated in two distinct forms—by the integrated component strength and the unintegrated component strength—and there are many indications that differences in these will have special significance for understanding the dynamic makeup of the individual, notably in regard to conflict.

Conflict. One of the most important propositions arising from the above theorems is that conflict over

a given course of action should be recognizable by the coexistence of positive and negative signs in the specification equation. For example, in equation 4, below, the negative behavioral indices for E_2 and E_4 show that, to follow the interest I_j , one must lose satisfactions on E_2 and E_4 , though gaining on E_1 and E_3 .

$$I_j = .4E_1 - .3E_2 + .5E_3 - .4E_4 \quad (4)$$

$$I_k = .4E_1 + .2E_2 + .3E_3 - .1E_4 \quad (5)$$

Furthermore, the model supposes that the severity of conflict is measurable, in theory, by the magnitude of the amount of canceled (negative) behavioral index variance, relative to the total magnitude loading. Thus, in equation 4, there would be decidedly more conflict than in equation 5, indicating that the interest in equation 4 is an interest which, for most people, involves conflict, whereas the other has presumably developed in a less conflictful atmosphere and situation. (The second equation offers .9(+) to .1(-), whereas the first equation offers only .9(+) to .7(-), a balance of satisfaction of +.8 versus +.2.)

It would also follow from this theory that if we took a broad, representative array of the typical individual's total life interest, determined the amount of conflict in each, and then added the scores for the whole field of self-expression, an individual who showed a high conflict score would be expected to be in a more frustrated and conflictful psychiatric state. In practice, to check this by experimentally determining the values for such a calculation is costly, because the behavioral indices must be determined by a separate experiment on each individual. It requires the use of the factor analytic method called P technique, described above. That is, it is necessary to do a factor analysis of the single individual, by scoring him on a wide array of interests each day, for perhaps 100 days and then correlating the changes in these interests over time and identifying the factors which define the influences behind the day-to-day variation of symptoms. Here, again, it will be observed that, in principle, the multivariate experimentalist is doing something very similar to what the clinician does. The two main differences between them are that the experimenter actually *measures* the changing strength of the symptoms, from day-to-day, and *calculates* covariation to see what is connected with what, instead of forming his judgments about connections on the basis of chance observation and mere intuition. Yet, actually, the multivariate experimentalist has the same goal as the clinician who tries to establish interconnections by observing the covariation of symptoms with the impact of daily events and the clinical interaction of psychiatrist and patient.

A few years ago, J. Williams undertook the monumental task of doing factor analyses on as many as a dozen subjects, each measured daily over months. Six of the subjects were patients in a mental hospital; the remaining six were normal controls. The results of this research clearly supported the theory;

that is, the behavioral indices derived from the specification equations for the psychotics indicated a much higher level of internal conflict, i.e., disagreement of algebraic sign, than did those for the normals. Promising as this theoretical advance is, it may be several years before the methods just described on which it is based can be applied to everyday clinical practice.

Fortunately, the demand for extensive calculation has now been overcome by the computer, so that it would not be impossible for a psychiatrist to hand his measurements to a technician, who could then translate the dynamic structure of an individual patient into quantitative form within the hour. The difficulty lies in collecting the data; it has not proved possible statistically to get clear results after less than about 100 days of repeated measurement. This is a lot of time to devote to one patient, but perhaps before long we can hope that a short cut will be found. The advantage of P technique and its associated diagnostic methods lies not only in the objectivity of the findings and in the fact that it provides an index of total conflict in the way just indicated, but also in its ability to "locate" conflict by measures of severity of conflict in particular areas. Certain valid objections can be anticipated at this point. Obviously it is not enough for the psychiatrist (on the basis of classical psychanalysis, but not behavior therapy) to identify clearly the areas of conflict. The patient must also achieve insight and awareness of his conflicts and their origins. But if the therapist can from an early stage in treatment see more exactly where the tensions lie, surely this will be a great aid to him in bringing the patient to the point of achieving such awareness by the best chosen routes.

Let us summarize briefly the potential advantages of the dynamic calculus theory and measurement. First, they equip the psychiatrist with a set of objective measurements in a field where the psychologist and psychometrist previously had little but loose, projective devices to offer. Second, and more importantly, they offer a theoretical foundation for calculations based on these measurements, to guide diagnostic and therapeutic decisions. Obviously, in general, the dynamic calculus concepts do not differ radically from those which have been presented in a variety of psychiatric theories. That is, they describe a series of drives (redefined with the special properties of ergs), a series of acquired dynamic structures (such as sentiment with regard to parents, to occupation, and, above all, to self), notions of conflict, and integrated attitudes. What is new in dynamic calculus is the possibility it provides for measurement of the properties and the existence of formulas for calculation and prediction in conformity with these concepts. An interesting difference from the traditional psychoanalytic conceptualization appears at certain points, notably in the discovery of two structures regulating morals and manners—the superego and self sentiment—instead of just the superego. This inference is supported by the fact that the self sentiment structure is elicited both through the medium of the questionnaire ("Qs") and through the medium of objective measures of motivation in the MAT. Similarly, these independent instrumentalities agree on the superego factor ("G" in the 16 P.F. test).

Third, the findings derived from application of the dynamic calculus theory leave us less in doubt about the number and nature of ergs (constitutional drives). At present, typically, the dynamic specification equations would also take into account about 8 or 9 sentiment structures, but it would give predominant weight to self sentiment and to the superego among these learned structures. Measurement of ergic tension levels over time enables the psychiatrist to evaluate the patient's progress in terms of whether there is a building up or reduction of tension levels and drives, and the same instruments throw light on development in dynamic structures. At present, the MAT actually measures 10 factors (5 ergs and 5 sentiments); it confines itself to these factors because it is unlikely that clinicians will be prepared to handle a more complex predictive system than 10 variables initially. While the clinical usefulness of these is being explored, research should continue to focus on

the remaining ergs and drives to improve the validity of their measurement.

Space limitations preclude a detailed presentation of the advantages of the dynamic calculus theory. The psychiatrist who is interested in exploring the full possibilities of this theoretical system is referred to the contributions by Bischof, Madsen, and Lindzey. In brief, the theory involves, in addition, the concept of a dynamic lattice, which is a map of the way in which interests within the individual become subordinate to ultimate ergic goals through intermediate subgoals. Factor analysis is only one way of unravelling the structure of this lattice; however it is done, one cannot lose sight of the fact that it is really this lattice which the clinician seeks to understand as he attempts to bring about the individual's readjustment, in terms of those interests and goals which will permit greater satisfaction. Using the model of a lattice enables the psychometrist to avail himself of some of the mathematical treatments applied by electricians to understanding complex electrical circuits, as well as certain propositions in information theory. Another important adjunct of the dynamic calculus is the concept of a series of "dynamic crossroads" at which decisions are made in a necessary, typical sequence. These possibilities are discussed in further detail in the auxiliary reading references cited above.

Additions to the Trait Model: Measurement of Temporary States and Role Effects

The theoretical developments which have resulted from the use of correlational methods to locate functional unities in behavior have succeeded to the degree that experiments have continued to replicate about 20 factors in the general area of personality, and some 10 to 15 in the motivational area, as discussed above. The ultimate aim of research, of course, is to clarify the individual nature of these factors, by relation of them to specific criteria, by plots of the typical life course, by nature-nurture investigations, and by exploration of physiological relationships. However, some 20 years of basic research and much debate and refinement of methods (with existing resources) have been necessary before we reached the point where instruments could be given to the clinician. Consequently, this last phase in which, ideally, hypotheses would be developed about the nature of the factors, according to various clinical criteria, has been belated. Indeed, even while some armchair theorists continue to manufacture alleged unitary traits or concepts and describe their predictive importance before they have even been confirmed as patterns, we have the spectacle of a dozen or more well confirmed and measured factor patterns waiting to be employed and enriched in explanation.

Origins of factor patterns. Since it has become increasingly evident that the desire to interpret these confirmed, constantly reappearing unitary factor patterns is gathering momentum, we should inquire first about the general types of influence which can be expected to produce them. It is clear, from the earlier description of schizothyme temperament, ego strength, ergs, and sentiments, that some appreciable fraction can be considered to correspond to genetic endowments, probably with associated physiological variables and that the pattern of behavior emanates from a gene or genes. For example, it would certainly seem from genetic research that the "H" factor (parmia—a toughness associated with predominance of the parasympathetic over the sympathetic reactivity) in the 16

P.F. test can be so classified, and possibly the "A" factor (the schizothyme temperament) as well. In both instances this interpretation is supported by physiological associations and the fact that they have high nature-nurture ratios (examined in studies of twins). Thus, conceivably, we might look to a temperamental mechanism, such as autonomic, sympathetic high responsiveness as apparently shown in the threctic ("H—") pole of the "H" factor, for several such factors.

On the other hand, it is equally clear from the same initial nature-nurture studies that environmental influences must be largely responsible for other source trait patterns. Consequently, in these, the theorist will look to the family atmosphere, to traumatic experiences, and to associations with particular social institutions such as school and church as sources. Here we are presumably dealing with a set of habits laid down by systematic learning experience, which appear in the same mold for everyone because of some standard social institution, but to different degrees of intensity.

Like some RNA template, it fashions the trait to much the same form in the human molecules exposed to it. To appear as a factor, however, it is necessary that people be exposed to the same experiences and yet adopt the pattern to different degrees. Thus, although the factor pattern we are dealing with in these cases may not correspond to some presently active force but rather to a deposit of learned habit skills representing a force once active, the pattern is still worth scoring as a unitary entity, for it remains descriptively and predictively useful to score all people on the degrees to which they possess it. A well known example of this is what is called the crystallized general ability factor, "G_c," which represents the extent to which intelligence has been channeled into scholastic work and skills and which enables us to define and measure the individual's cognitive apparatus by the traditional "intelligence test," in terms of the typical pattern of verbal and numerical skills which the bright child picks up in our school system.

These explanations do not exhaust the possible theoretical bases for source traits; other more subtle possible origins of discovered factor patterns are discussed elsewhere.

Measurement of states. So far we have assumed that factor patterns represent relatively permanent traits, but at this point we need to ask whether a particular pattern might represent some transient state, such as a state of excitement or of depression, or an adrenergic response. At the outset, the formal mathematical-statistical models included "process." We are now asking how a process (a changing state) would appear in mathematical analysis. Note that when we measure individual differences by testing 300 people at a given hour, we normally catch everyone in a transient mood. It is as if we took a snapshot which captured the deviations of that instant. Consequently, some factors thought to be traits (when we subject them to individual factor analysis) might actually be frozen states.

We are confronted here with complex statistical issues. The usual factor analytic search for structure (across, say, 300 people) is called R technique. Earlier, a different factoring (P technique) was described, where one measures one person across, say, 300 occasions. There is also a differential R technique (dR) in which the 300 people are measured once today and once next week, and their change scores on all the variables are then correlated. From such P and dR technique experiments, we are able to discover how many dimensions of change are necessary to account

for the complex changes in emotional state which human beings experience. When this is done, some nine dimensions have been reasonably confirmed which represent state dimensions, such as anxiety, effort stress response, elation-depression, and general fatigue. Just as batteries can be set up for measuring traits, so collections of performance subtests, identified as highly loading such factors, can be built up into batteries for measuring the level at which an individual stands on a particular state at a given moment.

Thus, a complete description of an individual at a point in time requires not only scores upon a set of coordinates corresponding to the common traits, but also a position in the hyperspace defined by the coordinates for these nine states (and others yet to be discovered). The measurement of relatively pure states which, when combined, describe the complex state of an individual at a given moment has considerable importance for both psychiatric therapy and pharmacology. Previously in ataractic drug research, the beautiful precision on the side of the chemist has been matched by a rather vague evaluation on the part of psychologists with regard to the nature and measurements of the states induced by drugs. Within this new framework, it becomes possible to assign to any drug administered in standard dose, an exact vector describing in terms of states the unique combination of changes which it may produce. It also becomes possible for the therapist to use a state measurement, for example, on anxiety, in much the same way the internist uses a clinical thermometer—to study the patient's changing adaptations in response to various therapeutic measures.

Despite the fact that they are still in a psychometrically rudimentary form, some interesting theories have already begun to emerge in regard to these measures of states. For example, it has been pointed out that the newly acquired ability to differentiate the effort stress state dimension from the anxiety dimension offers a different interpretation of serum cholesterol changes. Scheier's simultaneous measurement of distinct effort stress and anxiety factors has also had some interesting results. For example, the anxiety level of students in relation to examinations was found to be higher 2 or 3 weeks before the examination, and it actually seems to fall during the examination itself, but the effort stress reaction rises as anxiety falls. Studies by Pawlik and others have related these behavioral state measurements to EEG records. And the interesting finding has emerged from other investigations that serum cholinesterase rises in an anxiety state. Work has also begun on motivational states, in terms of particular ergic tensions, as measured by the MAT. This is only in its infancy, though it obviously has considerable potential importance for clinical work.

Role modulation. From the standpoint of a really adequate personality theory, consideration of trait factors alone is ob-

viously not enough. One must consider the transforming effect of the situation as well as the inherent nature of the individual's traits. In the general class of transient states presently under consideration, it is particularly important to include those special transients which we call roles. How are we to know when a given piece of behavior is due to the essential personality, and when it reflects an adopted role? The theoretical model we are discussing handles this by conceiving of role as a dynamic structure in the individual which is provoked only by a particular set of stimuli, which are usually related to social situations. In all probability, such dynamic factors would be organized as facets of the self sentiment, but just how this organization comes about has not been properly investigated experimentally. The theoretical possibility also exists that the role behaviors do not only arise from this single factor, but also evolve from some modulation which it produces in certain personality factors. To illustrate, a policeman out of uniform might respond to a traffic violation according to his personality factor profile. But in uniform, under the same circumstances, a whole set of new habits appears, causing a response to an overall situation, rather than the original focal situation, which, in turn, might lead to an expression of personality which differs from the ordinary specification equation.

Whether we adopt the theory that a simple new role factor intrudes or move to this slightly more complex theory, which has been called the theory of personality modulators, we adopt a model which accounts for both temporary role action and the reaction of the states which we discussed above. (Although it is a technical point, it should be mentioned that role modulator action would be likely to appear as a second order factor among personality factors, and one which will only appear in the analysis of certain types of situations.)

It is still too early to judge the extent to which this "temporary modulation" device in personality theory will prove of practical importance to the psychiatrist. However, the recent factoring of psychiatrist and patient interaction by Rickels points to the existence of a quite substantial role reaction factor which simultaneously affects both patient and the psychiatrist in the interview situation. According to this evidence, certain patients adopt the patient role more completely than others, and their dependent, demanding behavior evokes a more "concerned" reaction from the therapist. This, in turn, affects his rating of the severity of the patient's symptoms, to the extent, as shown by our results, that about as much statistical variance in the ratings of anxiety arises from the intensity of this role factor as from the actual patient differences in anxiety and symptom level as revealed by objective tests. It would seem, therefore, that a personality theory without any model and mode of measurement of temporary states and situation-provoked role effects (i.e., one based only on traits) is unnecessarily crude. At a time when chemotherapy is coming into its own, these additional techniques for locating and measuring state components have their most obvious application in giving precision to our understanding of the psychological effects of pharmacological agents.

Personality Learning Theory and Psychotherapy

Personality learning theory has been distinguished from learning theory because the latter has been based almost entirely on atomistic bits of reflex be-

havior. Eventually, both approaches must merge in a general learning theory, but it would be anything but scientific to assume that reflexology can explain the structural personality phenomena which reflexologists have never studied. Psychoanalysis, to name just one body of opinion, has rejected the claims of reflexology to explain its complex phenomena. From the viewpoint of the intersection theory of personality a noncommittal attitude toward present reflexological learning theory is most appropriate. Meanwhile, intersection theory, working with its well defined and measurable personality and motivation traits, takes the experimental position that personality learning theory must explain changes which have been accurately measured according to these trait dimensions. Two important new models have been introduced for the formulation of laws in these areas: "adjustment path analysis," and the "matrix treatment of multidimensional learning."

Adjustment path analysis. The aim of adjustment path analysis and analytical adjustment theory is to set up a standard paradigm to analyze the possible outcomes from a basic, universal psychological situation. This most elementary situation is one which begins with stimulation of a particular drive in a particular situation. Cattell and Scheier have described this elsewhere in some detail in connection with neurosis; however, such adjustment path analysis theory could apply to any kind of dynamic learning. The paradigm is one of a series of choice points at each of which two or more standard possibilities exist. It is not possible to describe these series of "dynamic crossroads" in detail, but one can easily see that they will include such outcomes as whether or not the drive is frustrated, whether or not the barrier is attacked, and whether or not the barrier is overcome. A decision at one point leads to other possible choice points. Thus, in the event that the barrier is not overcome, the alternative is suppression or repression, or continual nonadjustive behavior. From these possible adjustment paths only a certain combination of choices will eventually terminate in the neurotic end path.

Granted this adjustment path theory assigns certain consequences to certain experimental adjustments, one can proceed to an adjustment analysis theory, in which assumptions are made regarding the effects of particular choices upon the dynamic and general personality structure. Indeed the whole aim of the analytical adjustment theory, which includes these and other concepts, is to provide a framework within which personality learning—and particularly the personality learning that has to do with the acquisition of a neurosis and its resolution by relearning—can be brought to experimental study through quantification.

Thus, this adjustment theory provides a framework of analysis and matrix calculations (described below) which is intended to furnish guidance in research designs and to permit statistical analysis of life record data which can serve as the basis for the formulation of laws about personality factor change in learning. Incidentally, it does not merely assume that exposure to a frustrating, traumatic, repressive, anxiety-provoking, or similar unfavorable experience influences personality, but it maintains that personality may exert a reciprocal influence over the choice of such experiences at the various "chiasms" or dynamic crossroads which the organism encounters in the adjustment process. Admittedly, analytical adjustment theory is only a model which expresses in final form the mass of clinical and other evidence which has been accumulated as to the general manner in which personality and situation interact. But if, as hoped, it should prove an effective model in the gathering and reduction of quantitative data, it will further enhance development

of personality theories which are based upon functionally unitary traits.

Let us examine more closely the way in which personality learning change in these adjustment paths can best be considered. According to the model described above, analytical adjustment theory arises from the conceptual analysis of personality into functionally unitary traits and considers that they interact with the environment. Unlike the reflexological approach, it assumes that any experience produces a multiple change in personality, potentially affecting any and all of the scores in the personality profile. This brings us to consideration of the aspect of analytical adjustment theory which is called path transformation theory, and which introduces, by means of matrix algebra, the concept that the effect of any path in the adjustment path diagram provides a certain total pattern of changes in the personality factor profile.

The contributions to such volumes as the *Kentucky Symposium on Learning Theory and Personality Theory* illustrate only too clearly that attempts by psychologists over the past 20 years to unify learning theory and personality theory have been far from successful, especially from the standpoint of the clinician. The central, but perhaps insufficiently appreciated, reason for this is that most learning theorists have conceived of learning purely in terms of a reflexological and atomistic model. By this we mean reflexology in the classical, Pavlovian sense, not in the sense of punishment and reward for various drive expressions. Some of the latter behavior, by a feat of semantic acrobatics, has been "subsumed" by some reflexologists under reflexology.

There are perhaps two major reasons why reflexological learning theory has also been justifiably rejected in principle by clinicians. First, it deals with changes in highly specific bits of behavioral reflexes, whereas the clinician defines his task as the handling of major dimensions of total personality. Secondly, the type of bivariate, manipulative experiment which learning theory employs most frequently has proven inept in relation to human learning, primarily because, as pointed out earlier, human beings cannot be subjected to sufficiently strong manipulative stimulus situations in the laboratory to bring about noticeable changes in personality. Only life itself provides these situations, and only the clinician has an opportunity to watch their action. Consequently, even when laboratory work is directed to important aspects of personality, rather than the eye blink reflex, or something of that kind, it has failed conspicuously to produce significant laws, and the clinician may rightly suspect that entirely new principles will emerge from adjustment path analysis research.

For here, once more, the technical potency of the multivariate method is revealed, in that it can hope to elicit from actual life behavior, without manipulation, evidence of the causal sequences through which personality is affected by environmental learning. To date, this goal has only produced the statement of a theoretical position, namely, that new and different learning principles remain to be unearthed, for, as yet, virtually no concrete experimental evidence has emerged from this proposal.

Meanwhile, an attempt has been under way for some time to apply the more obvious reflexological principles to relearning in the clinical situation, under the name of behavior therapy. The work of such leaders as Wolpe, Rachman, and Costello has resulted in an impressive array of evidence of removal of symptoms by reflexological extinction methods. As yet, there is no clear indication of what this does to the measurements of functionally unitary traits as such. Provided this approach utilizes a broader concept of learning theory than that stated above, it may well either proceed to greater successes or at least provide clear evidence as to the areas in which it is not succeeding. Definite evidence of that kind would be an advance over any therapeutic technique currently available. It will almost certainly be open to criticism, however, if it is used merely—as it is now being used, for the most part—to remove some specific symptom, such as a phobia to a particular object.

For most clinicians are thoroughly familiar with the phenomenon of one symptom disappearing and another appearing, when there has not been a fundamental change in personality structure. The implication of the theoretical position on personality which runs through this section is that whole source traits must be modified if therapy is to be considered successful. This does not rule out the possibility that the amelioration of a weak ego structure ("C" factor), for example, or the reduction of the general ergic tension level ("Q₄" factor) may be affected by the cumulative effect of a number of highly specific readjustments. But, certainly, any general personality learning theory must operate on the basis of the measurement of source traits as a whole.

Matrix analysis of multidimensional learning.

The matrix analysis that is needed for research expresses the central feature of the intersection theory, in that it brings together personality and situation, each in its multiple dimensionality. On the one hand, we have the natural complexity of life experiences over an interval of time, analyzed according to an adjustment process diagram. On the other, we have the equally complex and composite personality change, over the period of interaction with the situation, expressed and measured as change in profile on the measured source traits. From these two matrices (see Figure 2), the possibility exists of arriving by statistical analysis at an understanding of the specific ef-

fects which particular situations have upon particular source traits. While it is impossible to describe this in detail in this brief space, its general principle will be clear to anyone familiar with matrix algebra from Figure 2.

Let us suppose that there exists, as shown in the figure, a matrix which relates the fate of a particular choice to the change in a particular personality factor. In addition, we have a record of the person's historical associations with such choices. The causal direction, as stated above, is presumed to be both from personality to choice, and from choice to personality. But the two together can, if necessary, be considered simply as an empirical association. The second matrix in Figure 2, which is called a path frequency matrix, aims to express by numbers in the cells the frequency with which particular subjects, p_1 , p_2 , etc., involved in the research, have followed and repeated certain paths of attempted adjustment.

From these two matrices we can, by multiplication, produce a third, as shown, which will indicate the extent to which a certain personality profile is likely to be associated with particular persons, in view of this history.

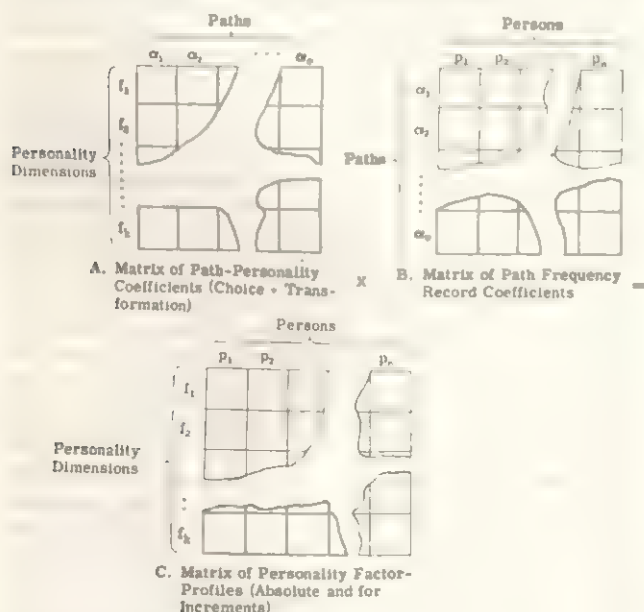
On the whole, this mathematical expression of analytical adjustment theory is nothing more than a means of recognizing that the experience of a particular path of adjustment will simultaneously affect several personality dimensions in characteristic ways, and that different persons will characteristically attempt certain paths of adjustment with characteristic frequency. This could be used, primarily, as a means of calculating what the associations of persons with different personality paths will eventually produce in terms of personality change. However, the calculations and inferences could be made in either direction. If one prefers to make certain assumptions, this calculation can be applied to the solution of unknowns in original personality, to facilitate a desirable set of therapeutic experiences. Thus, the therapist should eventually be able to consider therapy, or various alternatives in therapy, as possible adjustment paths and to work out the effects which these alternative therapies would be likely to have upon the average personality or a given personality. For example, there is some indication that, quite apart from any other effect it may have, group therapy may increase the extroversion of the patient, whereas some other mode of therapy may not do this, and chemotherapy, for example, may reduce anxiety and raise ego strength.

Whereas (in relation to the over-all structural theory outlined here) objective personality measurement and its clinical applications constitute an immediately available practical aid today, applications from the analysis of personality learning are entirely a matter for the future. No experimental use of the design yet exists; consequently, certain technical problems remain to be solved. But it is described as a development which is consistent with the theoretical

CHIEF MATRIX CALCULATIONS IN ANALYTICAL ADJUSTMENT THEORY

1. Calculation of Expected Personality Profiles from Record of Path Frequencies (Experience)

Formula (i) $C = AB$, which can be set out in detail as follows:



2. Calculation of Path Frequency Experience from Personality Profile

Formula (ii) $B = A^{-1}D^{-1}C$, where $D = AA^1$

3. Calculation of General Path-Personality Coefficients from Experimental Data

Formula (iii) $A = CB^1D^{-1}$, where $D = BB^1$

FIGURE 2. Chief matrix calculations in analytical adjustment theory. (From Cattell, R. B., and Scheier, I. H. *The Meaning and Measurement of Neuroticism and Anxiety*, p. 341. Ronald Press, New York, 1961.)

position, and one which would give new power to therapeutic procedure and planning if implemented.

Functional Testing in Clinical Diagnosis and Therapy

There is a widespread illusion on the part of both psychiatrist and psychometrist that the increasingly liberal use of psychological testing by psychiatrists in this generation implies a real use of true quantitatively based theory as here described. Useful though psychological testing practices have been, their application has often had a nonorganic and even patchwork quality. This has been due to the fact that psychiatric theory itself originates from quite different sources from that of test theory. Consequently, tests have tended to be extraneous gadgets (e.g., "special purpose" tests like Rorschach), subordinated as diagnostic instruments to concepts which originated within a different frame of reference.

One can now hope that this relatively ineffective, scientifically unsatisfactory compromise is likely to change radically in the near future, as psychologists trained in functional testing—related to personality theory from experimental origins—become more active in clinical practice and theory. For although much of the new, quantitative theory has turned out to be consistent with earlier clinical impressions (which have thereby been extended and made more precise), it has also produced radically new theory and created a demand that theory and measurement now enter into a truly fruitful relationship.

To get the most out of these possibilities, perhaps the average psychiatrist needs to get over the "inferiority complex"—or, at least, the diffidence—with which he has often approached the technical aspects of psychological testing. In fact, he has no need to apply advanced statistics, such as factor analysis; he must only apply a logical principle which is close to his own, i.e., the concept of a unitary trait. He needs only the simple algebraic formula which sees traits as acting in additive fashion (and linearly) in the specification equation. Similarly, although he uses his knowledge of chemistry to get a general idea of the composition of pharmacological products he prescribes, he would be quite unprepared to understand the steps of synthesis or the abstruse issues of stereochemistry.

Effective use of the proposed measures of anxiety, ego strength, surgency, intelligence, and schizothymia, does, however, require that he comprehend the logical properties of the source trait concepts with which he is dealing and the theoretical setting in which they are embedded. That is, he needs to understand that these source traits derive from factors obtained by correlational methods; that they have a demonstrated functional independence; that they can be considered to interact additively (at least, at first approximation) according to weightings which are decided by the situation in which the action takes place. It would help, too, if he had some idea of second order factors as influences which modify first order factors, and if he would undertake to become as thoroughly familiar with the nature of 20 or so factors, their typical nature-nurture origins and life history, as he is with anatomy or the action of the principle organs in the body.

It has been asserted for some years, partly on the basis of Meehl's interesting work, that six independent bits of information constitute about as much as the human mind can effectively handle in forming a composite judgment. This is

supported in the clinical field by the fact that there is no appreciable increase in predictive power when more than six bits are added to the clinician's basic information. However, as will be pointed out below, in connection with the possible harnessing of computers to clinical work, this conclusion that information on more than six factors is lost must depend upon the way in which clinical work is conducted. Certainly, in terms of how many trait descriptions can be absorbed in psychiatric education, no one is going to make the absurd claim that instruction has to be restricted to half a dozen concepts. Still less, one hopes, will convenience and acceptability be allowed to dictate that nature be simplified to the trinity id, ego, and superego, which is for some the main attraction of Freudian theory. In factor analysis, too, there have been oversimplifications of the real personality factor position which we have tried to describe in a more complete way here. If biochemists can keep 21 amino acids in mind, and chemists can remember more than 100 elements, it is surely no harsh dictum that the psychiatrist should be well aware of the properties of some 20 general personality factors and perhaps an equal number of factors in the motivational structure field. He may not be able to keep the scores on all of them aptly in mind in making a particular diagnosis, but certainly his psychological theory should include them all. For, as mentioned earlier, his quantitative and diagnostic use of them can be augmented and assisted by computational aids in ways we can now discuss, beginning with the choice of tests themselves.

The choice of psychological tests is difficult for the psychologist, and perhaps even more difficult for the psychiatrist, but their bewildering array is brought into some order by the standard Buros' *Mental Measurements Yearbook*, which, like a pharmacopoeia, condenses evaluative research evidence. Actually, the number of tests based on replicated oblique simple structure factor analyses is perhaps 5 per cent of the published total, and if this is one's criterion, the choice is much simplified. However, as pointed out above, in making a measurement of a factor, one has a choice of several media. For example, the superego strength factor ("G" in the 16 P.F. test) can be measured by questionnaire, by objective motivation measure (in the MAT), or by objective tests (including projective, stylistic, and many other varieties of performance) in the O-A. The psychiatrist can also take his choice as to whether he will operate at the primary factor level, as in the factors in the 16 P.F. tests and the HSPQ, or at the second order factor level, using such concepts as anxiety, extroversion, and cortertia. Secondaries can be derived from primary scores by suitable weighting. The second orders enable one to use fewer scores but give rougher results, and for most purposes (especially with clerical or computer aid) primaries are better.

In using factors which psychologists have currently been able to incorporate in their tests, the psychiatrist may well ask whether the methods of investigation have been such as to guarantee an inclusion of most dimensions of theoretical and practical importance. The basing of the first "sweep" on the personality sphere concept has done much to ensure this, but undoubtedly some factors are not yet included in available tests. Research now under way in this area of personality theory is almost certain to add a few new testable dimensions. For example, preliminary work suggests that there are no fewer than eight factors in the area of depression, and a "Pa-

thology Supplement" of several new scales for psychiatric deviations is consequently now being added to the 16 P.F. test to expand its clinical coverage. As pointed out above, there is also some value in measuring certain surface traits (symptom strengths) directly, e.g., by the MMPI, while getting at the general personality source traits by such tests as those just discussed through psychometric depth analysis. There is, of course, room for improvement in all of these tests, but the techniques for progressively moving to more valid factor measurements have been mastered to an increasing extent.

Granted a certain adequacy in source trait measurements themselves, the practice of clinical measurement will also require procedural revisions. The psychiatrist must expect that the time allotted to testing will have to increase. At the present stage of psychometric research, it is simply not possible to cover 20 or 30 personality factor measurements in an hour or two. Even so, the efficiency will be much higher; for testing, as it is traditionally carried out in mental hospitals and clinics today, is definitely wasteful in terms of the number of demonstrably independent pieces of information it yields per hour. Typically, the psychologist spends as much as an hour in getting just one factor, intelligence, and then spends only 5 minutes on some two or three other personality factors each of greater clinical importance than intelligence. Whereas with tests of the pre-factor era he gets 2 dimensions in, say, 80 minutes, the 16 P.F. test, which takes about 40 minutes, gives a score on no fewer than 16 dimensions, including intelligence. Of course, one could not recommend such an extreme condensation as measuring a factor in $2\frac{1}{2}$ minutes by about 12 items. Indeed, it is strongly recommended that no less than 5, and preferably no less than 10 minutes be given to one factor. The compromise presented by the former would result in the practice of using the 80 minutes to give both A and B forms of the 16 P.F. test; the latter would enable the use of the full quota of forms (A, B, C, and D), thus giving about 8 to 10 minutes to each of 16 factors, including intelligence. No adequate reliabilities can be expected unless several equivalent forms are used, for the period of testing is simply too short. Furthermore, there is considerable unnecessary duplication of areas in traditional practices with unfactored tests, whereas any kind of factoring approach, even though it may not be oriented to functional unitary traits, does at least guarantee that the various dimensions are given approximately equal representation in any battery.

Use of the Computer in Clinical Practice

Not infrequently, psychiatrists have been known to complain that training in physical medicine has done them a disservice, because it has set up the model of a definite disease, whereas the pathological phenomena with which they are concerned usually do not fit this model, and, instead, correspond to a "tangle" in the functioning of traits and processes which are, in themselves, as normal as those in any normal individual. There may be instances where a disease process, as abnormal and specific as some germ disease, may play a role in psychiatric illness, e.g., in the organic psychoses. But over the past 20 years, there has been a definite attempt on the part of psychiatrists to emancipate themselves from the incubus of the "sickness" prejudice. They have become disposed to question sharp line disease categories drawn between normality and pathology, and even to regard the behaviors of the psychotic as essentially normal processes, which are merely exaggerated and out of control and context. As pointed out above, the whole of the intersection model and the dynamic calculus theory which

forms part of it are in accord with this view of psychopathology as a problem of disequilibrium and loss of adjustment rather than one of the appearance of specifically malignant disease processes.

In the first place, the factor analytic studies of mental hospital populations, as carried out by Dubin with Cattell some 15 years ago, and with Tatro recently, showed quite early that essentially the same personality dimensions can be found in psychotic as in control groups, even though they stand at significantly different absolute levels of score. Theoretically we would take the position that pathology is either an extreme deviation in particular source traits on a normal continuum, or (probably with greater frequency) an extreme combination of malfunctioning source traits which are not so deviant individually. Empirical evidence which could give a decision on the latter has not been accumulated in sufficient quantity. However, one constantly sees suggested indications. For example, in the paranoid it is not acute anxiety alone, or rigidity alone, but a particular combination of acute anxiety with acute addiction to the reduction of tension by the projective mechanism which seems to characterize this profile. Also, although the source traits of anxiety (U.I. 24) and regression (U.I. 23) are uncorrelated in the general population, they show specific correlation in neurotics. That is, there is not only the repeated evidence, notably from the work of Eysenck and the Maudsley group, but also from Rickels at Philadelphia, and from Cattell's laboratory, that neurotics are highly deviant on each of these factors; there is also evidence that anxiety and regression become highly correlated. Surely, the most promising indication for these findings is that some spiral of interaction between them is setting in. Still another empirical indication that we are dealing with a functional type of disorder, rather than the appearance of a disease due to some foreign agent, lies in the evidence, as yet sparse, but significant, that under therapy the deviant measurements retreat toward normal values. If the process is reversible in this way, and if grades of deviation can be found in our population, surely we are dealing with something which is best described as maladaptive, or having to do with the economics of energy, rather than with some qualitatively distinct disease entity.

In conclusion, it might be said that if a theory properly consists of a model plus a set of laws about its operation, then the intersection theory (and the dynamic calculus concepts) represent only the beginnings of a theory. It is true that the model is clear, and that it fits the facts closely enough to permit a great deal of effective research to be done. For example, it has sufficed to produce experiments which reveal the nature of several source traits, and it has been demonstrated that their interactions fit reasonably closely to the additive model. But all this has occurred too recently for the measurement devices to have been very widely circulated among psychiatrists, so that only a brief early harvest from the use of the concepts and the measurements which arise from them is available as yet. Consequently, the body of laws about the way in which these factors behave is quite fragmentary. Compared with many other theories which are discussed in this book, the present structure, therefore, inevitably lacks several necessary "floors." To see the theory in its proper perspective, one may, on the other hand, claim that its foundation is such as to admit in the long run a far higher and more effective architectonic growth than is possible from the nonexperimental and unquantitative theories. The latter is still preeminent in the field of psychiatry in terms of a sheer count of its adherents, but it is to be hoped that a progressive minority can appreciate what the radical difference of method here means in long term promise. The architectonic growth believed possible will occur most readily if we can bring about the dissolution of the communication barriers between the psychological model theorist and statistician working with the computer in the backroom, and the psychiatrist working with the patient in the

clinic. The writings of such psychiatrists as Werry and Rickels and such psychologists as Cohen and Lorr do much to convey a sense of the gains possible from such communication. What the theoretical development most needs at the present moment is a clear grasp of the particular source trait concepts (temperamental and dynamic) by psychiatrists, and an application of these concepts in relation to the rich clinical criteria to which they alone have ready access and in relation to which new intuitive leads for confirmatory research are needed.

Two important matters have found little or no space in this condensed section: the blending of a scientific theory with psychiatric art, on the one hand, and the specific aids which a quantitative theory can gain from the electronic computer, on the other. If little has been said about the art of psychiatry, and if little space is given to illustration by individual cases here, it is because our primary purpose had to be to provide a highly condensed statement of a still tentative theoretical structure, with very wide ramifications to be followed up. In the application of any theory, however precise and complete, there must, of course, ultimately be art and intuition. However, the theories described here are as different from the most common species of clinical theory in their scientific structure as they are in their suggestions for the art of application. For, essentially, these developments imply that the psychiatrist might advantageously be using his art and intuition at a very different level than that of direct observation and interaction with the patient. Effective interaction at the human level with the patient is, of course, absolutely necessary. But the more developed model here presented means that the psychiatrist can be presented with an array of quantitative evidence of a hitherto unprecedented richness and precision and that he will need to develop his artistic judgment especially in inferring from this evidence what steps are to be taken in his immediate relation with the patient. He is being asked, so to speak, to stand off for a moment from immediate impressions about the patient, and view his makeup and his environmental problem in the perspective of a complex quantitative model.

This will be seen by some as a threat and by others as a remarkable opportunity. The opportunity is inherent in the fact that if the theories are truly quantitative theories, then they should admit of all kinds of actual computations helpful in the diagnostic and therapeutic action with individual patients. This fortunate conjunction of the scientific advent of quantitative theories with the social advent of electronic computers needs to be recognized and seized upon. Here we have an opportunity to inaugurate a very sensitive use of our theoretically required computations, without involving the time and brain power of the psychiatrist in the more routine phases of it. We have been accustomed to an engineer needing mathematics and to a physician getting along without any at all. But as physical medicine and psychological medicine assume more and more the status of advanced sciences, they will necessarily require quantitative methods to be applied to the individual case for their most outstanding feats. Already this is becoming evident in the use of technicians' estimates on hormone concentrations, on basal metabolic rates, and in calculations in physical medicine, in which the doctor either has some calculation carried out for him or makes a rough estimate as he proceeds. Since a human being has a more complicated organization than a bridge or an automobile engine, the psychiatrist of the future is likely to need to have more subtle calculation carried out for him than those which are carried out in engineering.

At a simple level, this impact of our theoretical position can be seen in the use of the specification equation above. It should be possible to store in a computer the weights reached by research for a considerable array of behavioral predictions and prognoses. Profiles can also be stored for an array of patterns needed in diagnosis. However, the psychiatrist may be in need of something more than a service in which the data is sent to the computer and comes back in tomorrow's mail. The psychiatrist is surely almost as much in need as the surgeon is of information and analyses fed back very swiftly. Practical de-

cisions have to be made in therapy in the light of information appearing at the same session, or test results made an hour or two before. Fortunately, the physicists have given their answer to this type of need in the Telstar satellite which potentially is capable of instantly feeding back answers from a considerable bank of information to any location.

Probably, the practical use of such an information bank, in computer calculations of diagnoses and dynamic probabilities, is still 1 or 2 decades away. In recognizing this radical new direction as an important and a likely one, we must also recognize that as an organic outgrowth from quantitative personality theory its effective development must depend on the shaping of theories and effectively predictive laws. What has been described in this section is only a clearing of the foundations, a statement of principles, and some fragmentary beginnings of the superstructure yet to be built. The computer technological development will follow easily enough. The more difficult task is to call psychiatrists and psychologists from their verbal theorizing to the quantitative methods which can give us this superstructure of behavioral science.

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9.2 OTHER PSYCHOLOGICAL PERSONALITY THEORIES

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The aim of this section is to provide an eclectic picture of personality theory derived from "psychological theory," by presenting a survey of all activities in the field. For obvious reasons, such an attempt to integrate so many different levels of methodological sophistication and types of approach can only be made at the sacrifice of internal consistency: our guiding thread is one of historical narrative, and our common focus is on those activities and writings which are concerned with some aspect of personality theory.

Nevertheless, an attempt will be made to present a comprehensive (albeit only one) survey of personality theories derived from all sources, as viewed from the standpoint of the discipline of psychology. No framework for such a wide comparative treatment would be equally suitable for all theories; however, the main categories for this discussion of personality will include the concepts of personality structure, motivation (i.e., dynamics of action), developmental sequences, and environmental determinants (i.e., classification of environmental, as opposed to constitutional forces).

The family resemblance of these various theories, with respect to the concepts within the categories delineated above, would not have been so evident 50 years ago. Furthermore, although it is possible to distinguish constitutional theories, as postulated by Sheldon, or sociological theories, as formulated by Sarbin, it is no longer customary (nor is it actually possible) for a sociologist to deny completely the role of hered-

ity; nor can a constitutional psychologist deny the importance of interpersonal expression or the relationship between personality and social institutions. Emphases differ, but the conceptual framework is becoming increasingly uniform.

Historical Perspective

For the Greeks, a consanguineous relationship existed between man and nature. According to the philosopher Collingwood, a prominent view of nature held that earth, air, fire, and water (the Empedoclean elements) constituted the basic units of composition for all things. The commingling and the separation (synthesis and diacrisis) of these irreducible elements, Hippocrates reasoned, produced different vital fluids (humours), such as phlegm, blood, and black and yellow bile, which constituted the basic determinants of individual temperament and personality types. Thus, in Hippocrates' typology of the sanguine, melancholic, phlegmatic, and choleric personalities, a fusion of physics and psychology may be witnessed. The specific theory of temperament types sought a congruence between personality organization, on the one hand, and distal determinants of the physical world, on the other.

Western man has continued to think in terms of types. In fact, however, while they permit an orderly view of the universe, typologies remove us from specific consideration of individual personality. Typologies may be simple (such as that of Hippocrates), or highly stylized, as seen in the Jungian system, which permutes the conscious-unconscious dimension with the attitudes of introversion-extroversion and the functions of thinking, feeling, sensing, and intuiting. In either case, the "finer grains" of individual differences are sacrificed for broader nomothetic description.

There is some indication of a counter-trend in the contributions of Theophrastus, the founder of literary characterology. In *The Characters*, Theophrastus focused on human traits, as they develop to give color and flavor to the life of the individual. Thus, the slightest nuance of behavior was woven into a composite view of the individual's "life style." In his description of the "Flatterer," for example, Theophrastus described the machinations of the person whose primary life goal is to ingratiate himself with others. For the most part, however, the esthetic tradition of literary characterology has been confined to the writing field and has failed to penetrate the boundaries of academic psychology. (One is reminded here of Lord Dunsany's remark that the excavations of psychologists, like those of road menders, extend for only 2 inches, whereas those of poets, like miners, extend for a mile.)

Consider another relevant contribution from the past. In *The Republic*, Plato conceived of an ideal society consisting of commoners, warriors, and philos-

opher-kings. Within the framework of this global sociology, he further postulated that the individuals who form these ordered classes are motivated by three distinct categories of impulses. The philosopher-king is propelled by strivings for truth and knowledge (for "Good"); the warrior is motivated by courage and strength; the commoner is motivated by desire and baser needs. Thus we have the concept of a sociology sustained by a psychology of individual motivation. On closer study, one finds that Plato went beyond these formulations to link these motivations to somatic structural determinants. Thus, he speculated that the philosopher-king was well developed in the cerebral region (the locus of reason), while the warrior excelled in thoracic development (the locus of courage), and the commoners were characterized by an overly developed visceral zone (the locus of desire; see *Philebus*). In Plato, the stage is set for a theory of man that pays due respect to sociological and biological, as well as psychological determinants.

Preoccupation with change and development within living structure may be traced back to ancient Greece. In Aristotle one finds an interesting notion of process. In reply to the question: "What is an acorn?" Aristotle observed that one must look not only at what something appears to be, but what it tends to become (i.e., being-in-capacity versus being-in-perfection).

The following set of questions, which derive from the intellectual climate of the 3rd century, B.C., may be formulated to assess contemporary theories of personality:

What are the basic units of individual personality organization? The problem of "how" the person is constructed intrapsychically, the proper elements in theory building, constitutes the structural problem.

What are the wants, needs, and desires that propel a man into action? In contemporary psychology, we phrase this issue in terms of instigation, regulation, and maintenance. Essentially, it constitutes the problem of motivation.

What is the relationship between early personality development and personality structure in later life? How does change take place, and how is the person modified over time? Investigations of changes over time (diachronic processes) seek to elucidate developmental sequences.

What is the relationship between environmental events (stimuli) and personality organization? What are the forces that mold and modify behavior in everyday life? This concern with the role of immediate (synchronic) influences on personality focuses on identification of the environmental determinants of behavior.

Within the framework provided by these four broad rubrics (structure, motivation, developmental sequences, and environmental determinants), this section will briefly outline several of the outstanding approaches to contemporary personality theory.

Henry Murray

Personality structure. Henry Murray, who is a psychoanalyst as well as a Professor of Psychology at Harvard University, has adopted Freud's schematic model and formulated his theory around the central structural elements of id, ego, and superego, with some theoretical differences. Thus, for Murray, the id is not only the repository of asocial (and antisocial) impulses; nor does the ego function solely as an inhibitor and repressor. The id is the source of all psychic energy, but this energy derives from instincts which are acceptable both to the self and society, as well as those which are not. To quote Murray, "It seems best to think of the id as consisting of all the basic energies, emotions, and needs (value-vectors) of the personality, some of which are wholly acceptable." Murray conceives of the superego as a cultural implant, which represents an internalized subsystem of "inner" directions which regulate the person's behavior in much the same way external agents once acted. And he includes peer and literary and mythological figures, as well as parents, among the external agents who can contribute to the formation of the superego. Finally, the ego-ideal is related to the superego and represents an idealized picture of the self. It represents the person "at his future best, realizing all his ambitions."

Motivation. Murray has insisted that if we are to achieve adequate understanding of the individual, our investigations must include a sufficiently large number of variables in keeping with the basic complexity of the subject matter under study. And the elaborate theory of needs that he has evolved to explain the problem of motivation supports this viewpoint. Numerous variables have been proposed to permit description of the nature of these motivating "forces." For example, needs may be viscerogenic, that is, linked to organic events, or psychogenic in origin. They may be expressed in overt behavior or revealed in covert phenomena, such as fantasy and dream. Specific needs do not function in isolation within the organism but interact to produce fusion, conflict, prepotency, and subsidization. Finally, Murray fully accepts the pervasive and powerful role of unconscious needs, as postulated by classical psychoanalytic theory. Although Murray's formulations in this area have incorporated some experimental findings, notably those derived from the Thematic Apperception Test (TAT) and from the psychoanalytic research conducted by Rosenzweig and others, basically it rests on clinical observations, almost to the same extent as the purely clinical theories reviewed earlier in this chapter.

Developmental sequences. Consideration of the development of personality over time is of crucial importance in Murray's theory. And in this area, he has elaborated on the psychoanalytic view of the various stages of development, to hypothesize the formulation of five complexes. More specifically, the sequelae of

experiences involving five areas of the body form the nuclei of the claustral, oral, anal, urethral, and castration complexes.

Environmental determinants. Murray has conceptualized two sets of behavioral determinants—press and social-cultural variables. A “press” is defined as the property or attribute of an environmental object or person which facilitates or impedes the individual’s efforts to reach a given goal. These press forces may be objectively discovered (alpha press), or function as subjective, anticipated obstacles in the environment (beta press). Murray draws an interesting distinction between cathexis and sentiment in this connection: Cathexis is the capacity of an environmental object to attract or repel an individual; sentiment refers to the capacity of the individual to be attracted or repelled by these objects. In any event, need and press generally interact and ultimately form a thema, a molar and interactive behavioral unit. Murray and his colleagues have been extremely inventive in their attempts to develop projective devices to uncover the major themas in human personality.

Theodore R. Sarbin

Personality structure. Theodore R. Sarbin, of the University of California at Berkeley, has developed a theory which is multidisciplinary, derived from studies of culture, society, and personality. In addition, the theory is presented within an interactional framework. Personality is conceived of as the integration of role and self. A role is a patterned sequence of learned actions or deeds performed by the individual in interaction with a given situation. The position of the person in a social structure is a function of a set of expectations or acquired anticipatory reactions. That is, an organized system of role expectations is equivalent to a position in the social structure. Varying degrees of organismic involvement accompany various role enactments. For example, level I, which is labeled “role and self differentiations,” is the lowest stage of interactional involvement, while level VI, the highest stage of involvement, is exemplified by ecstasy and *rites de passage*. The second important component of personality, the self, is a cognitive structure which develops as a result of the interaction between the organism and various stimuli (objects and events). The personality word card (PWC), consisting of 200 trait terms, has been developed to quantify dimensions of the self (e.g., self-acceptance versus self-criticism).

Motivation. In early life, the “motivating conditions” which lead to action arise from disturbances in the steady state of the organism. In the neonate, the steady state is maintained by means of chemical equilibrium or homeostasis. In the process of maintaining equilibrium, trace residuals are deposited within the nervous system to form the earliest cognitions. The application of the equilibrium principle from chemical homeostasis to conceptual constancy in Sarbin’s

theory is extended to all cognitive substructures. (This parallels Lecky’s thesis of self-consistency.)

Developmental sequences. The self is an organization of qualities which are un verbalized and un verbalizable at first and are verbalized in part later by gestural devices, such as self-drawing, or linguistic devices, such as naming, the use of adjectives, “I” sentences, etc. The self has its origins in the interaction between two series of events: the maturational series and the personal-social series. The first series, the maturational series, is assumed to remain fairly constant from culture to culture. In contrast, the personal-social series, which is of paramount significance, is characterized by specific modes of interaction at particular times. The self evolves on the basis of the interaction between these series of events through various stages, including the somatic self (S_1), the receptor-effector self (S_2), the primitive constructed self (S_3), the introjecting-extrojecting self (S_4), and, finally, the social self (S_5).

Environmental determinants. The extensive influence of sociological concepts on Sarbin’s theory has led to an emphasis on the social-interactional determinants of personality. Associated with this concept of role as a structural component of personality are hypotheses concerning role expectation. These represent the basic determinants of human behavior. Concomitantly, since personality is defined as the integration of self and role, Sarbin has elaborated on self-role and role-role conflicts as the basis of personality disorganization.

Gardner Murphy

Personality structure. Gardner Murphy, who is Director of Research at the Menninger Clinic, has delineated the basic components of personality to include: (1) physiological dispositions, which stem from genetic and embryological dispositions; (2) canalizations, which are formed early in life; (3) conditioned responses, which are ingrained through repeated reinforcement; and (4) cognitive and perceptual habits which are the joint products of canalization and conditioning. Another structural component of personality is the self, which Murphy defines as “the individual as known to the individual.” The ego, which represents still another component, refers to a system of habits which enhance or defend the self and therefore serve the same function as the mechanisms of defense described in classical psychoanalytic theory. In addition, habits, values, attitudes, percepts, images, and character are cited in Murphy’s theory as structural elements of personality.

Motivation. Murphy has stated that “the ultimate elements in personality structure are the needs or tensions.” A tension is described as a concentration of energy in a particular tissue or group of tissues. Intercommunication among various motives is achieved by the transmission of energy, i.e., tension,

from one region to other regions of the body. As a consequence of this intercommunication, a network of motivation develops. An important feature of Murphy's theory of motivation is his emphasis on sensory and physical needs. For example, the transmission of tensions which have their locus in the sense organs and muscles are the basis for esthetic motivation and for the individual's delight in a variety of esthetic experiences.

Developmental sequences. Murphy contends that there are three distinct stages of personality development. The first stage is one of undifferentiated wholeness (e.g., the mass activity of the newborn); the second stage is marked by a differentiation of functions; the third stage is characterized by a blending of functions into organized, coordinated activity. These stages have been termed globality, differentiation, and integration, respectively.

Environmental determinants. Murphy conceives of the learning process as the interaction between an organism and a specific environment. Through the learning process, connections are formed between needs and responses. These connections are established by means of two processes, canalization and conditioning. The concept of canalization is similar to the psychoanalytic concepts of cathexis and fixation. It is the process by which a motive or "energy pool" finds an outlet by discharging itself in behavior. An important concomitant to early canalizations involving one's own body is the emergence of the concept of self. Since canalization cannot fully explain all learning, Murphy introduces the idea of conditioning to implement this theory. He also recognizes the influences of socialization and the impact of cultural expectations on behavior. Finally, Murphy's emphasis on the immediate stimulus field as a determinant of behavior finds expression in his concept of situationism.

Gordon W. Allport

Personality structure. Possibly more than any other personality theorist, Allport, who is a Professor of Psychology at Harvard, has attempted to construct a personality theory which will take into account the complexity and uniqueness of individual human behavior. And this view is reflected in his definition of personality as the "dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment." The central structural element in Allport's theory is the trait, which may be defined as a determining tendency or a predisposition to act. In reality, no two individuals ever have exactly the same trait, but biological and cultural similarities allow for "a limited number of roughly comparable modes of adjustment." Thus an individual trait stands in opposition to a common trait. A number of other distinctions as well merit consideration, such as trait versus habit, trait versus attitude, and trait versus type. A trait represents the

result of the combination or integration of two or more habits. An attitude is related to a trait; but an attitude is linked to a specific object or referent, while a trait is not. Allport regards a type as a construction that man is fitted to. A person may possess a trait but not a type.

Motivation. On close inspection, one finds a fusion of structure and motivation in Allport's theory. Thus, traits serve not only as a basis of personality description, but also refer to generalized predispositions to behavior. For example, a cardinal trait is "so dominant that there are few activities that cannot be traced directly or indirectly to its influence." In *Becoming*, Allport describes the propriate functions of the personality which form the basis of all attitudes, intentions, and evaluations. This concept of the proprium, which is pivotal in Allport's theory, includes all the aspects of personality that make for inward unity: body image, self-identity, ego enhancement, ego extension, rational agent, self-image, propriate striving, and the knower.

Developmental sequences. Allport's theory minimizes the importance of the individual's history. His goals and strivings provide more important clues for the understanding of an individual than the early child-rearing practices to which he was subjected. To support his theoretical position, Allport has proposed the principle of the functional autonomy of motives. Basically, this principle states that a given activity or form of behavior may become an end or goal in itself, in spite of the fact that it was originally initiated to serve some other purpose. For Allport, the extent to which an individual's motivation pattern is autonomous is a measure of his maturity.

Environmental determinants. Allport's learning theory is an eclectic one. His emphasis on an idiographic approach and the central role accorded the proprium (propriate motives) leaves little room for consideration of environmental influences.

Kurt Lewin

Personality structure. The basic ingredients of personality structure in Lewin's theory are the person and the psychological environment. The life space (L) may be defined as P (the person) + E (the psychological environment). Thus, the life space contains the totality of facts which are capable of determining behavior. Behavior (B) is defined as a function (F) of the life space, i.e., $B = F(L)$. Facts that exist outside and adjacent to the boundary of the life space form a region referred to as the "foreign hull." However, there is two-way communication between the life space and the foreign hull; and this permeability between the two means that facts in the external world may influence the inner world. The person is differentiated into two zones: the perceptual-motor region ($P-M$) and the inner-personal region ($I-P$). The psychological environment (E) is articulated and divided into regions. The characteristics of the psycho-

logical environment are nearness-remoteness, firmness-weakness, and fluidity-rigidity.

Motivation. Lewin subscribes to the theory that each person is a complex energy system. The kind of energy that performs psychological work is called psychical energy. An increase of tension or the release of energy within the *I-P* region is caused by the arousal of need (either biological or quasi biological). This produces disequilibrium within the system. Tensions in the *I-P* system are described in Lewin's theory as vectors or forces operating on the person as he is represented in the life space. These vectors have strength, direction, and point of application and propel the person to a valenced (valued) region of the psychological environment. Tension may be reduced and equilibrium restored either by direct locomotion or by purely imaginary locomotion.

Developmental sequences. Although Lewin does not reject the idea that heredity and maturation play a role in development, the extent of their influence is not elaborated. Rather, he discusses three important concepts in relation to the developmental process, namely, differentiation, boundary properties, and integration. Differentiation refers to an increase in the number of parts of a whole. With age, the psychological environment becomes increasingly differentiated. Boundary properties change in respect to permeability from childhood to adulthood. The subsystems within the adult show greater organizational interdependence than they do in the child. Since development is conceived of as a continuous process, the delineation of fixed, discrete stages is not developed in the Lewinian theory.

Environmental determinants. Lewin did not develop an elaborate learning theory to account for modifications of behavior. Influenced by the Gestalt school, Lewin discusses learning in such terms as cognitive restructuring, differentiation, and organization.

Andras Angyal

Personality structure. Organismic theories of personality, such as proposed by Andras Angyal, are characterized by their emphasis on the unity of functioning of the normal personality. The concept of the biosphere is proposed to describe the holistic entity which includes both the individual and the environment. The biosphere has two poles: the social pole refers to the individual's interpersonal interactions in society; the psychological pole refers to his symbolic functions. An important property of the system is the extent of its rigidity. Plasticity in a system may result in a wide array of functional variations; a rigid system reacts in a uniform and stereotyped manner. Angyal has described three important dimensions of the biosphere, the vertical, the transverse, and the progressive. The vertical dimension refers to a graduated series of actions that lead to a goal; the transverse refers to the coordination of activities into unified behavior units. Since man can form sym-

bolic ideas about himself, the sum total of these perceptions defines the symbolic self. Behavior is a function of a person's self-image.

Motivation. Typical of the organismic penchant for sovereign drive theory, Angyal maintains that system energy comes from the tensions that arise between the social pole and the psychological pole. In this sense, disequilibrium creates the energy necessary for self-expansion. Two phases of self-expansion are autonomy, or movement by the organism to master the environment, and homonomy, which is the submerging of individuality within the social group. These two trends within the biosphere constitute the dynamic elements of Angyal's theory.

Developmental sequences. Angyal has not evolved a theory of learning but relies upon the language of Gestalt psychology. Development of the organism is viewed as a unified process in time. Such theoretical terms as differentiation, reorganization, and shifting are employed to cover the changes that take place in the evolving personality system. Inherent in the biosphere is a central design or pattern that gives coherence to the individual.

Environmental determinants. The major source of environmental determinants is the biospheric occurrence, that is, the dynamic interplay of the environment-organism unit. Experiences that inhibit or impede the total functioning of the organism (e.g., anxiety), are termed bionegative.

Kurt Goldstein

Personality structure. Strongly influenced by the Gestalt school, Kurt Goldstein, who is a psychiatrist, views the organism as an entity that possesses differentiated factors. The concepts of figure and ground, borrowed from the perceptual domain, are used to describe the primary organization of organismic functioning. A figure is defined as any process which emerges to stand out against a background, with properties similar to those described by Rubin. Goldstein differentiates between natural figures, on the one hand, which are functionally embedded in a background consisting of the total organism, and unnatural figures, on the other hand, which are isolated from the total organism and stand out against backgrounds which are also isolated parts of the organism. A figure emerges in response to demands made on the organism, and natural figures are orderly, flexible, and appropriate to the situation. Although there is a potent dynamic emphasis in Goldstein's formulation, he recognizes that many activities of the organism remain relatively constant. To handle this contingency, Goldstein has introduced the concept of constancy (analogous to perceptual constancies in the visual system) to explain the issue of invariance in behavior over changes in the stimulus situation. There is little explication of subsystems within the organism, but Goldstein does draw distinctions with regard to behavior between performances (which are conscious,

willed activities), attitudes (which are moods, feelings, and elements of the "inner life" of the organism), and processes (which are bodily functions).

Motivation. The major concepts employed by Goldstein to deal with the dynamic properties of the organism are (1) the equalization process, or centering of the organism, and (2) self-actualization. In the equalization process, an available energy supply is postulated within the personality which is relatively constant and evenly distributed throughout the system. While the absolute amount of energy available may vary from one person to another, there is an "average" parameter for each individual system. When states of tension (disequilibrium) occur, the organism automatically attempts to return to its "average" state. The compensatory shift to a psychological plumb line defines the centering process and explains the coherence, consistency, and orderliness on the part of the organism faced with a constantly changing environment. The second dynamic property of the organism, self-actualization, is the sovereign motive in the Goldstein theory. The various phenotypic drive states are all manifestations of this single system drive. The fulfillment of any void within the organism is a manifestation of self-actualization. Although this is a universal principle, each person has different innate potentialities, and therefore people strive for self-actualization along different paths.

Developmental sequences. Although the self-actualization concept might suggest various stages of organismic development, Goldstein does not elaborate a developmental sequence, except for some generalities suggesting that behavior becomes more evenly and orderly as the individual matures.

Environmental determinants. Goldstein clearly recognizes the influence and interplay of hereditary and environmental influences. Many of the constancies, for example, are viewed as inborn. The concept of reorganization is used, but no systematic account of the learning process is developed. The effects of environmental determinants are heavily weighted in his concept of "coming to terms" with the environment. The environment produces imbalances in the organismic system; but at the same time it sets the stage which enables the individual to find (or construct) an environment that will "fulfill his destiny." Essentially, coming to terms with the environment means mastering it, for only in this manner can the obstacles to self-actualization be overcome.

Abraham H. Maslow

Personality structure. Maslow, who is a Professor of Psychology at Brandeis University, has developed a theory of personality which focuses on the "psychiatrically healthy man." Thus, in contrast to many personality theories, especially those in the Freudian tradition, which are primarily concerned with pathology, Maslow argues for a reorientation to a concern for a formulation built around the positive view of

man. The structural position of his holistic theory parallels the Gestalt-organismic theories which were described earlier in this section. That is, on the whole, less attention is devoted to structure than to dynamics.

Motivation. Maslow's theory of human motivation assumes that needs are arranged according to a hierarchy of priority or potency. When the needs that have the greatest priority for satisfaction are dealt with, the next stratum of needs emerges and presses for fulfillment. The needs of the individual are arranged on a continuum which ranges from physiological needs (linked to somatic processes) to higher order esthetic needs.

Developmental sequences. Although he does not elaborate a theory of developmental sequences, Maslow recognizes that the young organism is dominated by physiological and tissue needs. As the organism matures, the needs for safety and security become potent. In the optimally adjusted adult, the higher order needs are prepotent.

Environmental determinants. Maslow's studies of self-actualized individuals and his speculations concerning organized societies constitute a unique contribution to personality theory. Maslow believes that man is essentially good. Society may foster antisocial behavior by denying the individual the opportunity to fulfill his inborn needs. However, institutions can be developed which will contribute to self-actualization.

Stimulus-Response Theory

Personality structure. In the tradition of Pavlov, Watson, and Thorndike, *S-R* theory attempts to provide a rigorous, scientific approach to personality. The work of Dollard and Miller typify this orientation, which derives from reinforcement learning theory. Thus, the major structural element in *S-R* theory is the habit, which is a link or association between a stimulus (cue) and a response. The concept of habit replaces the earlier Thorndikian notion of the *S-R* bond.

Motivation. The dynamic component in *S-R* theory is the concept of drive. Generally defined, a drive is any stimulus strong enough to instigate the organism into action. Drives are divided into two categories: primary and secondary. The primary drives are unlearned and innate and are linked to physiological processes. On the other hand, the secondary drives are acquired on the basis of association with primary drive stimulation. The latter account for a large segment of behavior in the socialized adult.

Developmental sequences. Dollard and Miller handle the problem of development and change in terms of a survey of the innate equipment of the organism and the learning process. At birth, the child is equipped with an array of specific reflexes, an innate hierarchy of responses, and a set of primary drives. While these authors have not elaborated a theory of

crucial stages, attention is directed toward the ability to use language and early learning conditions.

Environmental determinants. A great amount of attention is devoted by Dollard and Miller to the four elements of the learning process: drive, cue, response, and reinforcement (i.e., reward). The basic premise of *S-R* theory is that learning only takes place under conditions of drive reduction. To buttress the theory, the concepts of spontaneous recovery, gradient of stimulus, and response generalization are discussed in detail. Recently, Mowrer has extended the boundaries of the original *S-R* position to deal with the broader "crises" in psychiatry and religion as well.

O. Hobart Mowrer

Personality structure. Mowrer, who is on the faculty of the University of Illinois, has developed an original and important theory of personality. However, its originality does not reside in its structural concepts, which are essentially eclectic. In general, Mowrer subscribes to the psychoanalytic structural model of ego, id, and superego, although in contrast to psychoanalysts, such as Freud or Murray, or an experimentalist, such as Cattell, he makes no attempt to specify the number and nature of hypothesized instincts or drives. Rather, his concepts introduce modifications in regard to the dynamic relation of these structural components. Moreover, one must recognize a quality in these structures which differs from the comparatively loose descriptions of the psychoanalysts, for example. More precisely, Mowrer has brought to learning the concepts of habit formation, of the defense mechanisms, and an attempt to translate structures into classical reflex learning theory, couched in Hullian formulations at first, and later in his own. This translation hinges on concepts of internal stimuli and expectation.

Motivation. As indicated, drives are recognized as the primary motivators, but no specific list has been proposed in his scheme. However, he is specific to the degree that he reflects a set of simple biological goals, e.g., hunger, thirst and sex, with which other animal experimenters have been content, and states that social needs (gregariousness), avoidance of loss of "honor," and various relatively intangible nonviscero-genic needs must be considered. Drive-instigated activity, then, is controlled by ego and superego, strengthened in the course of the learning process.

Developmental sequences. Mowrer has outlined four main stages of development, which are not derived from zones of the body as is the libido theory: (1) infantile indulgence, which embodies such psychoanalytic concepts as narcissism and infantile omnipotence; (2) the onset of socialization, beginning with toilet training and similar impositions of social standards; (3) a phase of negativism, involving conflict both with society and with the developing superego; and (4) the outcome of such conflict at adolescence

which may take the form of delinquency, neurosis, or successful adult integration.

Environmental determinants. It is in this area that Mowrer has made his most creative contribution to clinical psychology. Whereas the classical psychoanalytic position sees conflict principally as occurring between ego and id impulses, which lead in practice to attempts to mitigate the repressive acts of a too severe superego, Mowrer believes that the core conflict stems from an alienation from society, and from a superego that is too lenient, rather than too strict.

More precisely, while many clinicians think of the delinquent and the neurotic as deviating from the normal, the former toward excessive, and the latter toward defective impulse expression, Mowrer sees both as "cheating" and as refractory in meeting the role expectations of society and the demands of the superego. The refractory phase in development becomes outright revolt in the delinquent; in the neurotic it is expressed as a defect and results in the repression of superego urges. Translated into the language of learning theory, the neurotic is making a 2-fold error in "punishment avoidance." First, he seeks to hide his misdemeanors, an attempt which is rarely successful; second, he turns his back on guilt, using various defenses, (e.g., escape into hyperactivity, alcoholism, hysteric or compulsive symptoms).

In what Mowrer defines as "integrity therapy," the neurotic is encouraged to confess his deviance and duplicity (which usually refers to his actual behavior, past or present, not merely his "imagined" sins); to recognize that even then society may not accept him again until he has served penance; to satisfy the demands of his superego by social service; and to sever inconsistent ties and seek new alignments. In contrast to the Freudian position, Mowrer has succinctly stated his belief that "the super-ego knows best."

Multivariate Personality Theory

The theories derived from experimental psychology and particularly the application of multivariate statistical procedures are fundamentally different in origin from the theories described above. The concepts and procedures of this approach have been set out in the preceding section of this chapter. Nevertheless, they should be represented in this context as well, however briefly. For one, the presentation of these rather complex hypotheses within the simple framework adopted throughout this section may contribute to their further clarification. Secondly, it will permit comparative evaluation of this rather revolutionary approach to personality theory, as opposed to other, more traditional theoretical systems. There have been relatively few researchers in this complex field, and this discussion rests largely on the work of Cattell and Eysenck, and the less systematic and comprehensive investigations of Baggaley, Burt, Digman, Goldberg, Guilford, Horn, Hundleby, Meredith, Messick,

Pawlik, Peterson, Scheier, Sweney, Warburton, and Wiggins.

Personality structure. Depending on whether the discovered personality factors are described at the primary level (Burt, Cattell, Guilford, Scheier), or only at the second order (Eysenck, Peterson), more or fewer structures will be listed. Typically, however, some 30 factors in questionnaire response and objective tests are recognized as primary personality components which, in turn, give rise to perhaps 6 to 10 higher order components. Some of the primary factors (e.g., ego strength, schizothymia, superego strength) serve to facilitate experimental mental confirmation of clinical theory; others (e.g., cortertia, parmia) proceed to new concepts.

These unitary structures comprise three modalities—abilities, temperament dimensions, and dynamic traits—and have been shown to be determined to varying degrees by heredity and environment. In the dynamic field they proved to be primary drives (i.e., nine of them, including sex, fear, and curiosity); acquired social sentiment structures (to home, to religion, to self); and defense mechanisms.

Because they are simple structure factors, these factors are measurable mathematically on the 16 P.F. test, the M.M.P.I., O-A Batteries, and the Motivation Analysis Test (M.A.T.). The basic theory of their interaction assumes that they are simply summative in action (although speculations regarding complex curvilinear relations are also entertained) so that the magnitude of any particular action or symptom may be accounted for by a specification equation, as follows:

$$\text{Response} = b_1T_1 + b_2T_2 \cdots + b_kT_k$$

where T_1 to T_k are k source traits (factors) with values appropriate for the given individual, and the b 's, or behavioral indices, are peculiar to that response and the situation in which it occurs. The b values for each situation are obtained by correlation methods and express the extent to which the given response involves the given trait.

Motivation. Besides the T 's, which are abilities, there are others which, as stated, represent drives and sentiments (acquired attachments). The former are the primary motivators, stabilized in expression by the sentiments and governed and directed by self-sentiment and the superego, with characteristics defined by the discovered factor loadings.

Objective devices for measuring motivation prove to separate into I (integrated) and U (unintegrated) components, and a good many inferences about conflict, suppression, and repression can be drawn from their relationship in a particular case. Factoring of motivation data by Cattell and his co-workers has confirmed the existence of repression, projection, and other Freudian mechanisms, as well as the existence of complexes. Eysenck, however, has rejected psychoanalytic terminology in regard to any resemblances found.

Developmental sequences. Twenty years of work by correlational methods have been devoted largely to determining temperamental and dynamic structures and demonstrating that they hold true across different ages and cultures. Recently, through Eysenck's application of extroversion-introversion to concepts of inhibition in learning and through Cattell's reduction of personality change observations to algebraic matrix analyses in "adjustment process analysis," this theory of personality structure has become increasingly related to learning theory. Both authors stress the reality of constitutional and genetic components and the methods which enable their identification. They have also accorded the generalization of learning, experience, and specific "social molds" a significant role in determining the observed structures.

Environmental determinants. Cattell has suggested three classes of learning experiences: classical conditioning, reward learning, and integration learning. Eysenck has focused on the application of conditioning principles to personality change in "behavior therapy." One of the main learning issues in multivariate experimental theory at the moment concerns the manner in which specific learning experiences generate the general factor dimensions found structurally. Ferguson, Tucker, and Fleishman have investigated this in relation to ability. Similarly, Cattell's "adjustment process analysis" represents an attempt to account for the impact of sociological institutions and acquired social roles.

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NEUROLOGY

NEUROLOGY

Chapter 10

NEUROLOGY

The inclusion of a section on neurology in a psychiatric text is unusual but appropriate, for organic diseases of the central nervous system may cause both psychiatric and neurological symptoms. Understanding the function and dysfunction of the mind must be based upon knowledge of the structure and diseases of the brain. This chapter is an outline of those features of neurology essential to the psychiatrist's understanding of the complex structure from whence psychiatric illnesses arise. With rare exceptions the spinal cord and peripheral nerves and muscles have been excluded from this presentation.

The chapter is divided into four sections: 10.1, the neurological evaluation, including electroencephalography and other laboratory techniques useful in establishing a diagnosis; 10.2, the anatomy and physiology of the central nervous system with a review of the mental and emotional syndromes associated with lesions of different parts of the brain; 10.3, clinical neurology correlated with neuropathology; and 10.4, other neurological syndromes including those diseases which do not present well defined pathology, with special attention to epilepsy, symptoms of pain and dizziness, and mental and emotional syndromes commonly encountered in neurology. This material is not intended as a substitute for a neurological text, for the data presented must be necessarily brief. Only basic facts are recorded in the section on anatomy and physiology. Similarly, only the highlights of neurological diseases can be included in the subsequent sections. The diseases have been outlined so as to enable the physician to approach the neurological differential diagnosis in a systematic, logical manner.

10.1 THE NEUROLOGICAL EVALUATION

SEYMOUR SOLOMON, M.D.

Neurological Evaluation of the Adult

In making a neurological diagnosis, one must first decide whether the illness is psychogenic, patho-

physiological, or organic. If the last, the anatomic location and then etiology must be established. Finally, the precise name of the disease may be appended.

The history. An adequate history is probably the most important step in establishing a diagnosis. The source and reliability of the history should be recorded. The patient's age, sex, and handedness are best noted at the outset. A detailed and chronological resume of the present illness is the essential feature of the history. Each complaint should be evaluated with regard to onset, duration, and frequency of occurrence. Note should be made of aggravating as well as alleviating factors. Specific qualities of the complaint must be evaluated. For example, if pain is a chief complaint, the type of pain and its location and radiation are important. If dizziness is the chief complaint, the exact meaning of the term to the patient must be elicited, for "dizziness" may mean a spinning sensation, an unsteady sensation, a feeling of generalized weakness or faintness.

To be sure that the patient has not omitted pertinent information, it is wise to review a set of neurological symptoms. Thus, the patient should be specifically questioned with regard to the occurrence of headache, dizziness, episodes of fainting or faintness, "fits" or convulsions, shaking or trembling, unsteadiness or incoordination. He should be asked about past or present weakness, stiffness or paralysis, aches or pains, numbness or tingling, either focal or generalized. The patient should be queried as to symptoms referable to the special senses. Was there a history of double vision, spots before the eyes, temporary blindness, or blurring of vision? Did the patient experience ringing in an ear or hearing impairment in one or both ears? Was the sense of taste or smell impaired? Perversions of these special senses might be neglected by the patient unless specifically questioned. "Do you ever smell or taste anything peculiar? Do you ever hear or see things out of the ordinary?" Visceral symptoms may be important neurological phenomena. Has there been a history of disturbance of swallowing or speech, an alteration of bladder or bowel control? In female patients the history of pregnancy and menstruation may be significant. Sexual potency or recent change in sexual activity are important features of the history. Alteration in sleep pattern may be pertinent. Symptoms of mental illness should be sought. Indications of organic disease manifested by memory impairment or confusion are as important as symptoms of psychological disturbance manifested by personality change, anxiety, or past history of delinquency or "nervous breakdown."

The past medical history should include queries as to trauma, surgery, and medical illness (e.g., diabetes and hypertension) as well as history of allergy, exposure to toxins, and weight gain or loss. The use of medication or drugs, particularly in the recent past, should be noted. Sometimes, defects in the patient's memory for past illnesses may be overcome by inquiring about all past hospitalizations.

Social history should include occupation and drinking and smoking habits. Family history should note not only the diseases which caused death, but the presence of epilepsy or mi-

graine headaches. Other diseases, both mental and neurological, particularly with regard to motor activity, may have been present and yet may not have been related to death.

Physical examination. A general physical examination need not be considered a routine part of the neurological examination, but evidence of acute or chronic illness should be noted, as well as indications of recent weight loss or excessive weight gain. Obvious physical deformities should be recorded. The blood pressure and pulse of both arms may be significant. Portions of the physical examination may be singled out as particularly appropriate. If there is suspicion of cerebral metastases in a woman, palpation of the breasts for primary carcinoma would be indicated. One should listen for a heart murmur on suspicion of subacute bacterial endocarditis. Other infectious processes affecting the central nervous system would lead one to examine the lungs for evidence of infection. Hepatic or splenic enlargement should be sought if there is suspicion of leukemia. Hair texture and distribution over the body may be disturbed in hypopituitarism, and evidence of testicular atrophy may be important in certain neurological diseases, e.g., myotonic dystrophy. Poor or absent peripheral pulses in the extremities may be a clue to similarly diseased vessels in the head.

Neurological examination

Mental status. An evaluation of the mental status has been covered in detail in another chapter of the book and only an outline of the tests for intellectual functioning and emotional status is included at this time. It is essential to note the patient's level of consciousness. His language can then be carefully evaluated.

Intellectual functions. If the patient is alert, the degree of his attention or distractibility and cooperativeness is pertinent. It is essential to know the degree of the patient's orientation to place, time, and person. His memory, with regard to both remote and recent events, must be tested. The patient's retention and immediate recall are examined by asking him to recite a span of three to five digits in sequence both forward and backward. General knowledge is tested by asking him the names of well known individuals. (It is surprising how many "normal" people do not remember the first name of the President.) Calculation can be judged by asking the patient to subtract 7's from 100 in serial fashion. Reasoning can be evaluated by noting the patient's ability to deal with abstract concepts. (For example, he might be asked the similarity between an apple and an orange and asked to interpret a simple proverb.)

Emotional status. The patient's emotional status should be noted, particularly with regard to his perception of reality, the presence of illusions or hallucinations. The production of his thought processes, their progression, preoccupation, and content are important observations. The patient's judgment and insight should be noted. His affect and its appropriateness, depression or euphoria, emotional lability and degree of anxiety are pertinent. Behavior, neatness, mannerisms, and other forms of motor activity can be seen. Determination of the patient's motivation and special appetites may require more thorough evaluation. Psychometric studies have been discussed elsewhere in the text.

Language disturbances. Disturbance in language is in itself a manifestation of organic mental disease. The term "dysphasia" is usually more appropriate than the term "aphasia," for rarely is communication completely lost. Defects in language can best be evaluated by dividing those which are primarily disturbances in reception from those which are primarily an impairment of expression. Each of the latter may again be divided into spoken and written language. It must be emphasized, however, that defects of a single type are unusual. First to be noted is spontaneous speech. When expression is impaired, very little spontaneous speech is evident, whereas if the defect is primarily receptive, incoherent jargon or "word salad" speech often occurs. In testing for receptive dysphasia, one must find out if the patient can understand the examiner. Ask him to repeat words or phrases. Can the patient carry out simple commands? (His inability to understand verbal instructions should be clearly

differentiated from the physical inability to carry them out.) Can the patient pick out an object or point to an object that is named? Can he recognize familiar sounds such as running water? Similar questions can be asked in writing. The inability to understand the meaning of written symbols is termed "dyslexia" or "alexia" and is often associated with receptive dysphasia or aphasia.

The patient should then be tested for the ability to express himself. Motor or expressive dysphasia will be manifested in its mildest forms by the inability of the patient to express the proper word within a sentence and, in its most severe forms (aphasia), by the inability of the patient to express himself vocally in any way. Can the patient name objects and name parts of the body? Can he then express himself in more complex terms? Can the patient write spontaneously or write from verbal dictation or copy words and sentences? A defect of expression in written language is termed "dysgraphia" or "agraphia" and may be associated with motor dysphasia or aphasia.

Inability to recognize objects or symbols by specific senses is called "agnosia." Visual agnosia is the inability to recognize a familiar object visually. Auditory agnosia is the loss of ability to identify familiar sounds. Tactile agnosia (better known as astereognosis) is the inability to recognize familiar objects placed in the hand, in spite of the preservation of superficial and deep sensations in the extremity. Defective cortical motor integration results in apraxia, i.e., the incapacity to carry out purposeful or skilled acts while maintaining the motor and coordinative abilities to perform these acts. Such simple acts as drinking from a cup or closing a safety pin may be tested. More complex defects of cortical integration are impairment of right and left discrimination and the inability to recognize body parts.

Most language dysfunctions occur with lesions of the dominant hemisphere. In approximately 90 per cent of right-handed individuals and 50 to 90 per cent of left-handed individuals the left cerebral hemisphere is dominant. The lesions causing aphasic phenomena are not so precisely localized as was once thought. Extent of cerebral disease is at least as important a factor as the location of the lesion. Lesions in or near Broca's area, i.e., the inferior posterior portion of the frontal lobe of the dominant hemisphere, are most often associated with expressive dysphasia. Receptive dysphasia is commonly present with lesions of the temporal lobe. Dyslexia occurs with lesions of the temporal and occipital areas. Dysgraphia is associated with lesions in the posterior frontal, parietal, or temporal lobes.

Examination of the head and neck. Inspection may reveal asymmetries of the head and unusual postures of the neck. On palpation of the scalp one may note exostosis as that overlying a meningioma. The temporal, carotid, and radial pulses should be palpated and cervical lymph nodes noted. Direct percussion of the skull, comparing the right with the left side, will sometimes reveal dullness overlying a subdural hematoma. Auscultation over each eyeball (allowing the opposite eye lid to open will greatly diminish adventitious muscle sounds) may reveal bruits of a vascular malformation or of collateral circulation associated with carotid artery stenosis. Bruits over the carotid arteries or subclavian arteries may also be indicative of stenosis of these vessels. (Note that the loudness of a bruit does not have a direct relationship to the degree of stenosis.) Mobility of the neck to passive movement may be diminished after cervical injuries. Restriction of neck flexion as an indication of meningeal irritation may be associated with the following signs. The Brudzinski sign is characterized by pain in the neck and back with flexion of the thighs on an attempt to flex the neck passively. The Kernig sign is manifested by pain of the back and neck with tendency to flex the neck slightly upon straight leg raising.

Examination of the cranial nerves

I. Olfactory nerve. The patient is asked to identify familiar odors such as coffee or tobacco. Each nostril is individually tested. The most common causes of defects in olfactory sensa-

tion are not due to disease of the first cranial nerve, but rather to obstruction of the nasal passage or disease of the nasal mucous membrane (e.g., allergic rhinitis). Thus, bilateral impairment of the sense of smell is usually not significant. Loss of the sense of smell on one side, in the absence of local causes, may be due to an olfactory groove meningioma.

II. The optic nerve. The patient's visual acuity is determined either by using a Snellen chart or, at the bedside, by having the patient read ordinary newsprint. Each eye should be tested individually, both with and without the patient's corrective lenses. Ophthalmoscopy is then performed, and the optic discs and retinal arteries and veins are noted. Retinal hemorrhages and exudates may be seen in a large variety of diseases, particularly of a vascular nature. Pallor and sharpness of an optic disc may be due to optic atrophy. Hyperemia of the disc, blurring of its margins, disappearance of the physiological cup, venous engorgement, and absence of venous pulsations are indications of papilledema.

The most common causes of increased intracranial pressure and papilledema are intracranial masses or hemorrhages; block of cerebrospinal fluid outflow or absorption; and swelling of the brain due to traumatic, inflammatory, toxic, or metabolic factors (for example, water intoxication or pseudotumor cerebri; see Section 10.4). Papilledema may also be due to optic neuritis (see Section 10.3) and other lesions within the orbit. Extracranial factors sometimes cause papilledema. This sign may be due to increased venous pressure, as seen in cardiovascular diseases (for example, pulmonary emphysema), or to increased arterial pressure or flow (for example, malignant hypertension or arteriovenous fistula). Papilledema occasionally occurs with acute polyneuritis or spinal cord tumors. The mechanism of papilledema in these diseases is uncertain; but markedly increased spinal fluid protein, usually present, probably impairs absorption of the fluid. Other extracranial diseases that may be associated with papilledema are anemia, polycythemia, and other blood dyscrasias; vitamin A poisoning in children; hypoparathyroidism; and adrenal hypofunction (Addison's disease).

The visual field of each eye can be tested by having the patient cover one eye, look at the examiner's nose, and note the examiner's moving fingers at the periphery of the field. Each quadrant, as well as each half of the right and left visual fields, are tested. When more precise information is required, standard perimetry and the tangent screen examination are necessary to determine the exact peripheral and central visual fields. The most common examples of visual field defects are the following. An irregular central scotoma within one visual field is usually a residual of retrobulbar or optic neuritis, as seen in multiple sclerosis. Enlargement of the blind spot occurs in papilledema. Constriction or loss of the visual field in one eye is due to a lesion of the optic nerve. Bitemporal hemianopsia is caused by a lesion of the optic chiasm. Homonymous hemianopsia is associated with a lesion of the opposite optic tract. Homonymous superior temporal quadrantanopsia is found with a lesion of the opposite temporal lobe. Homonymous hemianopsia with macular sparing is due to a lesion of the opposite occipital lobe.

III, IV, and VI. The oculomotor, trochlear, and abducens nerves. These nerves are tested together since they supply the muscles of eye movement and, in the case of the oculomotor nerve, the constrictors of the pupil and the elevator of the eyelid. The size, shape, and symmetry of the pupils are noted. The response of the pupil to accommodation is tested by noting the pupillary constriction as the patient focuses from a distant to a close object. The reaction of the pupil to light is seen by shining a light into each eye from the side. (Direct approach of the light might cause the pupils to constrict because of accommodation.) Both direct and consensual pupillary reactions should be tested. A unilaterally dilated pupil may be the first sign of oculomotor nerve compression. Constriction of a pupil associated with ptosis and impairment of sweating over the ipsilateral forehead are manifestations of Horner's syndrome indicative of an ipsilateral sympathetic nerve pathway lesion.

The range of extraocular movements is noted by asking the patient to follow the movement of the examiner's finger in all directions of gaze. The examiner should pause briefly in every direction to look for nystagmus. Ptosis of the lid is a sign of involvement of the oculomotor nerve, but the palpebral fissures may be asymmetrical from other causes. (For example, disease of the facial nerve causing weakness of the orbicularis oculi muscle will result in a larger palpebral fissure on the side of facial involvement.) A complete loss of function of the oculomotor nerve will be manifested by the patient's inability to deviate the eye up, down, or medially, with associated ptosis of the lid and dilation of the pupil. In lesions of the trochlear nerve affecting the superior oblique muscle, the patient will have difficulty looking in the down and out direction. As a consequence, the head will be tilted toward the shoulder of the opposite side. With disease of the abducens nerve, the patient will not be able to look laterally. In all cases the patient will complain of double vision. Involvement of the third, fourth, or sixth cranial nerves, may be due to direct or indirect compression of the nerve fibers within the cranial cavity or to lesions of the cranial nerve nuclei in the brain stem. In patients with conjugate gaze palsy, the eyes will be deviated away from the side of an irritative cerebral lesion or toward a destructive cerebral lesion.

V. The trigeminal nerve. Sensation of the face and cornea is first tested by observing the patient's blink response when a wisp of cotton lightly touches the cornea. The same wisp of cotton can then be used to test touch over the three divisions of the trigeminal nerve (forehead, cheek, and chin), comparing the right to the left side. Response to light pin prick is tested in a similar distribution. (When hypalgesia is mild, temperature impairment over the same distribution confirms the objective nature of the defect.) Loss of corneal reflex may be the first sign of trigeminal nerve compression by an ipsilateral acoustic neuroma, and analgesia over one side of the face may be seen in brain stem infarction (e.g., the lateral medullary syndrome). The masses of the temporal and masseter muscles are palpated with the jaws tightly closed. An open jaw will deviate toward a weakened external pterygoid muscle. A jaw jerk is elicited by tapping the middle of the chin with a reflex hammer while the patient's jaw is loosely open. Hyperactivity of this reflex may be a manifestation of pyramidal tract disease. The trigeminal nerve carries pain and touch sensations from the mucous membranes of the nose and mouth, but these need not be routinely tested.

VII. The facial nerve. The muscles innervated by this nerve are observed at rest and after asking the patient to show his teeth and wrinkle his forehead. Sometimes minimal asymmetries noted on movement of the face to command are exaggerated during expression of emotion or other spontaneous activity; other times the reverse is true. The strength of the orbicularis oculi is tested by attempting to open the patient's eyes against his resistance. Paralysis or weakness of all the facial muscles on one side, including the forehead, is indicative of ipsilateral lower motor neuron disease as seen in Bell's palsy. If the muscles of the forehead are spared, the facial weakness is presumed to be due to a contralateral corticobulbar lesion, e.g., cerebral infarct. The sensory portion of the facial nerve carries taste from the anterior two thirds of the tongue. The patient is asked to protrude the tongue and indicate presence of taste by raising his hand. Sugar and later salt in solution are placed on the anterior portion of the tongue. The rapidity of responses on one side is compared with that on the other.

VIII. The acoustic nerve. This nerve is composed of two portions, the cochlear and vestibular nerves. During a routine neurological examination only the cochlear nerve is examined. Auditory acuity may be determined by noting how far from his ear the patient is first able to hear a watch tick (the examiner may use himself as a control). The Weber test is performed by placing a vibrating tuning fork on the midline of the patient's skull. If the sound is referred to one ear, the test is considered positive. When air conduction deafness is present

(as due to accumulation of wax in the canal or in otitis media), the Weber test lateralizes to the affected ear; if there is nerve deafness, the Weber refers to the normal ear. The Rinne test is performed by placing the vibrating tuning fork on the mastoid portion of the skull behind the patient's ear. When the patient can no longer hear the sound, the fork is then placed next to the ear. Under normal circumstances, air conduction of sound is better than bone conduction. Bone as well as air conduction is impaired on the side of nerve deafness. Audiometry is of value in quantitating hearing loss precisely. When nerve deafness is suspected, the caloric test should be performed to evaluate the vestibular portion of the acoustic nerve. Injection of 2 to 15 ml. of ice water into the external auditory canal normally evokes, within a few seconds, vertigo, nystagmus (with fast component to the opposite side), and past pointing to the stimulated side. When the acoustic nerve is compromised, loss of auditory acuity and of caloric response is evident on the side of involvement. Other tests of the vestibular system are less practical and not commonly used.

IX and X. The glossopharyngeal nerve and vagus nerve. These are tested together. The gag reflex is tested by touching each side of the pharynx with a tongue depressor. Bilateral impairment of the gag reflex need not be abnormal, but loss of gag reflex on one side and pulling up of the soft palate toward the opposite side is indicative of involvement of the ninth and tenth nerves. Hoarseness may be an indication of weakness or paralysis of a vocal cord. Difficulty in swallowing (dysphagia), noted earliest with liquids, is indicative of bulbar (medullary) or pseudobulbar disease. Dysarthria may be due to motor disease affecting the tongue or other portions of the vocal mechanism, but more commonly it is due to defects in coordination of the speech mechanism secondary to cerebellar pathway disease. The glossopharyngeal nerve carries taste from the posterior third of the tongue, but this is not routinely tested. The autonomic functions of the vagus nerve, having to do with cardiopulmonary activity, are usually noted during the general physical examination.

XI. The spinal accessory nerve. The trapezius muscle is tested by having the patient shrug his shoulder against resistance. The sternocleidomastoid muscle is examined by having the patient turn his head against resistance. These muscles are affected by lesions compressing the nerve at the jugular foramen or, less commonly, by lesions in the lower medulla. The trapezius and, less commonly, the sternocleidomastoid may also be weakened or paralyzed owing to a contralateral cerebral lesion. (Note that the sternocleidomastoid muscle is commonly uncrossed in its supranuclear innervation.)

XII. The hypoglossal nerve. The protruded tongue normally is in the midline. It will deviate to the weakened side, that is, ipsilateral to the lesion, if the lower motor neuron is involved and contralateral to the lesion in upper motor neuron disease. If lower motor neuron disease is present, atrophy or fine fasciculations of the tongue may be seen on the side of involvement.

Cranial nerve signs. The following is a summary of cranial nerve signs that may be found in a lesion of one cerebral hemisphere, e.g., cerebral infarct or tumor. (Roman numerals refer to cranial nerves.)

- I. Contralateral homonymous hemianopsia
- III, IV, VI. Conjugate deviation of eyes away from side of the irritative lesion or toward side of the destructive lesion
- V. Contralateral impairment of pain and touch over the face and diminished corneal reflex
- VII. Contralateral paresis of the face, but not including the forehead
- XI. Contralateral weakness of the trapezius muscle and ipsilateral weakness of the sternocleidomastoid muscle
- XII. Contralateral weakness of the tongue

Pseudobulbar palsy. This is a syndrome characterized by symptoms implicating the brain stem but due to bilateral disease of supranuclear corticobulbar fibers, most commonly mul-

multiple small cerebrovascular lesions. (Since most bulbar musculature has a bilateral cortical representation, a unilateral supranuclear lesion will not cause bulbar signs.) Dysarthria and dysphagia are most common. Speech has a nasal, slurring, and often explosive quality, and the volume of voice is diminished. Chewing and swallowing are impaired, and food may accumulate in the mouth with drooling of saliva and frequent choking. The patient's gait is often impaired, particularly because of dysequilibrium. All movements may be slow and poorly performed. The facies may be flattened as in parkinsonism. Exaggerated emotional responses are prominent and spontaneous laughing and crying frequently occur. The latter are involuntary and unassociated with appropriate emotions. Gag reflexes are preserved, and deep reflexes, including the jaw jerk, are hyperactive.

Motor examination. Posture and contractures and deformities of the extremities or trunk should be noted. The muscles are inspected and palpated, and symmetry, atrophy, fasciculations, and tenderness are noted. Accurate measurement of circumferences of the extremities documents the degree of atrophy. Fasciculations may be evident in lower motor neuron disease but are not pathognomonic. Muscle tenderness is frequently present in a patient with myositis. Consistency of muscle may be fibrous or rubbery in myopathies or myositides. A prolonged depression occurs when a myotonic muscle (thenar eminence or tongue) is briskly tapped. The hand grip of a myotonic will be slow to relax. Muscle tone, i.e., the resistance to passive movement, is characterized by flaccidity in lower motor neuron disease; knife clasp spasticity or simple increase in tone with an upper motor neuron lesion; and rigidity (often of the cogwheel type) in certain extrapyramidal diseases, e.g., parkinsonism. Voluntary muscle strength must be determined. If there is suspicion of nerve root or peripheral nerve involvement, individual muscles of the extremities are specifically examined. With minimal spinal cord involvement, slight differences may exist between the strength of the upper and lower extremities. In the presence of minimal unilateral cerebral disease, slight weakness of the contralateral extremities may be manifested first in the extensor and supinator muscles of the upper extremity and in the flexor and internal rotator muscles of the lower extremity. Thus, with the patient's eyes closed and the arms extended, one may see slight downward drift, flexion and pronation of the affected upper extremity. With the patient prone, slight downward drift of the affected flexed lower leg may occur (Barre's sign), and, with the patient supine, slight external rotation of the leg and slight foot drop may be noted.

Classification of involuntary movements

a. **Extrapyramidal dyskinesias:** The involuntary movements associated with disease of the basal ganglia tend to occur at rest in contrast to the intention tremor of cerebellar disease. They are invariably increased by emotional stress and disappear during sleep.

Parkinsonism is characterized by a resting rhythmic tremor affecting the extremities, particularly distal parts, and, in the hands, having a "pill-rolling" quality. Cogwheel rigidity and bradykinesia are other features of the parkinsonian syndrome. Akathisia, the inability to sit or stand still, may be seen in this condition. The predominant lesion in parkinsonism is located in the substantia nigra and globus pallidus, to a much lesser extent in the putamen.

Athetosis is manifested by slow writhing, twisting movements affecting predominantly the distal portions of the extremities; associated similar movements of the face cause grimacing. Spasticity is present more often than hypotonicity. The globus pallidus is more severely involved than other basal ganglia.

Chorea is characterized by rapid, irregular, asymmetrical jerks of the extremities, particularly the distal portions. The movements are purposeless but terminally may be turned into semipurposeful movements. Hypotonicity is usually present. The disease in childhood is a manifestation of rheumatic fever

(Sydenham's chorea). In adult life, Huntington's chorea or senile chorea are the underlying diseases. The caudate and putamen are the basal ganglia predominantly involved.

Dystonia musculorum deformans or torsion spasm is manifested by slow writhing torsions of the trunk and pelvic and shoulder girdles. Scoliosis and lordosis are common. The pathology of this condition is not well defined, but the globus pallidus appears to be more involved than other nuclei of the basal ganglia.

Hemiballismus is characterized by unilateral violent flail-like movements of the extremities. The individual appears to be trying to throw his extremity away from his trunk. A lesion (usually vascular) of the subthalamic nucleus causes this condition.

b. Diseases of the liver and brain: Wilson's disease is manifested by one or a combination of irregular resting or intention tremors or chorea-athetoid movements. The basal ganglia, cerebellum, and cerebral cortex are implicated in this disease.

Asterixis is a flapping motion of the hands, best demonstrated with the hands and arms extended. It is characteristic of impending hepatic coma.

c. Tics or habit spasms: These are sudden, repetitive, irregular twitches and are almost always psychogenic. They usually consist of grimacing, blinking, or other facial movement, twisting of the head and neck or shrugging the shoulders. Torticollis, the involuntary persistent turning of the head to one side, may be the first sign of dystonia musculorum deformans but is more often of psychological origin.

d. Restless legs syndrome: The individual experiences peculiar, uncomfortable (sometimes painful) crawling sensations in the muscles or "bones" of the lower legs. These sensations are partially relieved by almost constant movement of the legs. The phenomena occur at rest, especially at night. No cause is known.

e. Convulsive seizures: Epilepsia partialis continua is manifested by slow continuous clonic movements of a portion of one extremity (for example, the thumb) lasting for hours or days. Paramyoclonus multiplex consists of jerking or brief single contractions of muscle groups scattered over different areas of the body. Status epilepticus is included for purposes of completeness but is rarely a difficult diagnostic problem, except for those rare cases of petit mal status, wherein slow clonic movements of the trunk and upper extremities may occur. All of the above are associated with epileptogenic lesions of the cerebrum.

Coordination. Coordination may be divided into equilibratory and nonequilibratory functions.

Equilibratory functions. These are noted by observing the patient's customary gait as well as by watching him walk on heels and toes. A tendency to drift to one side, as in ipsilateral cerebellar disease, may be exaggerated by having the patient walk with eyes closed or in tandem fashion (touching the heel of one foot to the toe of the other). The associated movements of arm swing may be lost in ipsilateral cerebellar or contralateral extrapyramidal or pyramidal tract disease. The patient should be asked to stand erect with feet together, first with eyes open and then with eyes closed. The Romberg sign is an inability to maintain posture under the latter circumstance and is usually indicative of posterior column disease of the spinal cord, but the sign may also be present with a cerebellar lesion. Impairment of truncal equilibrium may be noted by the awkward manner in which the patient arises from a supine position or gets up from or sits in a chair. These manifestations of truncal ataxia suggest midline cerebellar disease.

Nonequilibratory functions. Coordination of the extremities is tested by having the patient touch the heel of one foot to the knee of the other leg and then run the heel down the shin of the leg, first with eyes open and then with eyes closed. The patient is asked to touch his nose and then the examiner's finger, first with the eyes open and again with eyes closed. The ability to alternate movements rapidly is tested by having him tap his foot on the floor and pat his thigh with his palm and then with the dorsum of his hand. A defect in rapid alternating

movements is called dysdiadochokinesis. Rebound phenomenon occurs with inability to check a movement quickly. This may be tested by suddenly, and without warning, releasing an extremity that has been forcefully restrained. Fine skills are noted by observing the patient button his clothes and write. Defects in any of the above coordinative skills suggest ipsilateral cerebellar disease. Ataxia may also be caused by position sense impairment or weakness, and one must always note whether the degree of ataxia is commensurate with or out of proportion to the weakness.

Signs of cerebellar or cerebellar pathway disease. Defective equilibrium and posture are associated with tendencies to deviate toward the side of the lesion. Associated movements are impaired on the affected side. Ipsilateral incoordination is manifested by ataxia of the extremities with intention tremor, dysmetria, past pointing, dysdiadochokinesis, and rebound phenomenon. There is ipsilateral decrease in muscle tone, and pendular reflexes may result. Fatigability and slowness of movement are common. A scanning (staccato) type of speech and nystagmus may be present.

Classification of gait disturbances

a. **Neurogenic alterations of gait:** Upper motor neuron disease is characterized by a spastic gait. In a hemiplegic, the lower extremity is extended and circumducted while walking. In paraparesis, such as that seen with spinal cord disease, the gait is stiff-legged and wide-based. In paraparesis of cerebral palsy (diplegia) adductor spasm causes a scissors gait, wherein extended lower extremities are alternately crossed.

Lower motor neuron disease causes a steppage gait. The leg of the flaccid foot is raised higher than usual and the foot is slapped down to prevent stumbling over the toe.

Diseases of the basal ganglia. In parkinsonism, gait is characterized by small steps and festination, i.e., a tendency to accelerate. Chorea-athetotic gait is intermittently irregular and jerking. Dystonic gait is characterized by pelvic and truncal torsion. In Wilson's disease, both cerebellar ataxia and extrapyramidal features may be present.

Cerebellar disease is characterized by a staggering gait with tendency to fall toward the side of the lesion.

Proprioceptive defect, particularly when due to disease of the posterior columns of the spinal cord, is manifested by an ataxic wide-based gait that is worse at night or with the eyes closed.

b. **Gait disturbances not associated with neurological disease:** A limping gait may be due to pain or orthopedic defect of the leg, low back, or hip. A mincing gait is often seen in patients with spinal rheumatoid arthritis, in senile individuals, and in male homosexuals. A waddling gait is associated with bilateral dislocations of the hip or muscular dystrophy.

The gait of hysteria may be bizarre and variable. The disability is often so great that, if organic, one would expect the patient to fall frequently, but the contrary is the case. Astasia-abasia is the inability to stand or walk in spite of adequate muscle strength and coordination.

The sensory examination. This portion of the examination is often the most difficult and frustrating. Both patient and examiner must be alert and cooperative. Since it is not practical to stimulate every square centimeter of the body, in eliciting sensory signs the examiner must have an idea of the location of the neurological lesion for which he is searching. Only gross lesions will be found by asking the patient to differentiate pain from touch sensations. In almost all instances one must ask the patient to differentiate a stimulus applied to a normal portion of the body from the same stimulus applied to a portion of the body that is presumably affected. Thus, in searching for a peripheral nerve defect, the examiner asks the patient to compare a stimulus in the area of presumed deficit, with a similar stimulus over the opposite extremity. When searching for polyneuropathy manifested by distal sensory impairment, one asks the patient to compare the sensation over the toes or fingers with a similar sensation over the more proximal portions of the extremity. In the search for a spinal level, the examiner

asks the patient to compare a stimulus below the presumptive sensory level with one above. Finally, when dealing with an intracranial lesion, one asks the patient to compare a sensation over the affected side of the body with a similar sensation over the presumably unaffected side. During all sensory testing it is preferable to have the patient's eyes closed. Superficial touch sensation is examined by means of a wisp of cotton, superficial pain by a pin or, preferably, a pin-wheel. Sensitivity to temperature may be tested by using test tubes containing hot and cold water. (If the latter are not readily available, the "cold" handle of the reflex hammer may be used.) Vibration sense is evaluated by means of a tuning fork (preferably with frequency of 236 cycles per second), placed on bony prominences of the extremities. Position sense is examined by passively and slowly moving the patient's finger or toe, asking him to indicate promptly the direction of movement. The examiner should take care that pressure on the skin of the finger or toe cannot be used by the patient in interpreting the direction of movement; this is best done by grasping the sides of the digit. Deep pain can be tested by squeezing the Achilles tendon, the muscles of the calf or forearm. Impairment of vibration, position, and deep pain sensations are manifestations of disease of the posterior columns of the spinal cord, whereas impairment of superficial pain, touch, and temperature sensations are indicative of lesions of the spinothalamic tracts. Any modality may be impaired by a lesion of its pathway from the peripheral nerve through the spinal cord and brain stem to the thalamus and parietal lobe.

Fine discriminatory sensations require the cerebral cortex for interpretation. In cerebral defects, especially of the parietal lobe, extinction of the stimulus on the opposite side of the body may occur when right and left sides of the body are simultaneously stimulated by touch or pin prick, with the patient's eyes closed. Two-point discrimination is tested by simultaneously applying two stimuli in close proximity and asking the patient whether he feels one or two points. The distance between points that can be distinguished differs from one part of the body to another; as might be expected, this discrimination is best in the fingers. As with all of the above studies, the normal part must be compared with the presumptive abnormal part. Stereognosis is tested by asking the patient, with his eyes closed, to identify familiar objects placed in his hand. One tests for graphesthesia by asking the patient to recognize letters or numbers written on his skin. The patient is asked to differentiate the textures of cotton, silk, and wool. It is obvious that defects of these "cortical sensory phenomena" will not implicate the cortex or cerebrum if more peripheral sensory pathways are affected.

Reflexes. Again, one must compare symmetrical areas and apply the stimulus with equal intensity to relaxed extremities. Tendon and periosteal reflexes are elicited by tapping the tendon or the bony prominence associated with a specific muscle. Contraction of the muscle may be graded as slight, normal, or hyperactive. In the upper extremities, the reflexes most commonly tested are the biceps (C5-6), the triceps (C6,7,8), the radial (C5-6), and ulnar (C6-7). In the lower extremities, the patellar (L2,3,4) and the Achilles (S1-2) tendons are tapped. Ankle clonus may be elicited by briskly dorsiflexing the foot and maintaining sustained pressure. Clonus is a manifestation of hyperreflexia but, as with all forms of hyperreflexia, need not be pathognomonic of pyramidal tract disease. Loss or decrease of tendon reflexes is found in lower motor neuron disease or myopathy. The superficial reflexes are tested by stroking the skin with a semisharp object. The four quadrants of the abdomen should be tested (D7,8,9 upper; D11-12 lower). The cremasteric reflex (D12-L1) is elicited by stroking the medial aspect of the thigh. Stroking the medial aspect of the buttock normally causes the skin to tense; this is the gluteal reflex (L4-5, S1-2).

Certain pathological reflexes are indicative of pyramidal tract disease. The Babinski sign is elicited by stroking the lateral aspect of the sole of the foot with a semisharp object.

Flexion of the toes is the normal response; dorsiflexion of the big toe and sometimes spread of the other toes is the abnormal response. The Chaddock sign (stroking the lateral aspect of the dorsum of the foot), the Oppenheim sign (forcefully stroking the anterior surface of the shin), and the Gordon sign (squeezing the calf muscle), show toe responses like that of the Babinski sign but are not as pathognomonic of pyramidal tract involvement as is the latter. Hoffmann's sign is elicited by forcefully flicking downward the distal portion of the patient's middle finger. In a positive response, flexion and adduction of the thumb occurs. An alternate method of obtaining the same response by abruptly tapping the volar surface of the distal portion of the middle finger is Tromner's sign. Both the Hoffmann and the Tromner signs have the same significance as deep reflex hyperactivity. They are indicative of pyramidal tract disease when unilateral but may be due to tension if bilateral.

The autonomic nervous system. Observation of the patient often provides valuable information about his autonomic nervous system. Signs of endocrinopathies (see Section 10.4) may be evident on inspection. Evaluation of vital signs should be part of the general physical examination. Trophic changes of the skin and mucous membrane and of the hair and nails and alteration of vasomotor tone of the extremities may give many clues of autonomic dysfunction. Note should be made of alterations in secretions, i.e., perspiration, salivation, and lacrimation. Obesity and other alterations of fat metabolism may be readily evident. Certain disease of bones and joints may be of trophic nature (e.g., the Charcot joint of tabes dorsalis). Horner's syndrome has been mentioned above. Sphincter tone must be evaluated, especially in the incontinent patient.

There are many special tests of autonomic function. Most common is the test for localized disturbance in perspiration performed by sprinkling a starch and iodine powder over the skin. Moisture will reveal the iodine pigment.

Neurological Evaluation of the Child

History. A child's history is obtained in a manner similar to that outlined for the adult but with different emphasis. Review of systems will prove to be less helpful in the child. The social history will concentrate on environmental factors. The family history must be more thorough.

The importance of the prenatal, perinatal, and postnatal history cannot be overemphasized. Was the mother's pregnancy normal or was there a history of vaginal bleeding? Did the mother experience illness during the pregnancy and what drugs, if any, were taken by her? Was the labor unusually prolonged or in any other way abnormal? Was the delivery of the infant difficult or in any other way potentially traumatic? Was the infant of good color and did he cry immediately? The neonatal history should include the weight of the infant at full term, or the extent of the prematurity.

The assessment of the neurological status of the infant and child is primarily a measurement of the maturation of the nervous system. The developmental history is essential. Figures 1 and 2 indicate milestones in the maturation of a child. The parents may not be aware of all of the features in the infant's development but often can remember some of the following events. The infant should begin to lift his head while prone from the time of his birth and lift it well by 4 months of age. He should begin to smile at 2 months of age and laugh, as well as recognize his mother, by 4 months of age. The baby should sit unsupported by 8 months of age and begin to crawl and creep between 10 and 12 months of age. He should wave "bye-bye" at 10 to 11 months of age. At 11 months of age he should pull himself up to the standing position and begin to walk with support at 1 year. The word "mama" becomes meaningful at 10 months of age and by 1 year an additional one- to

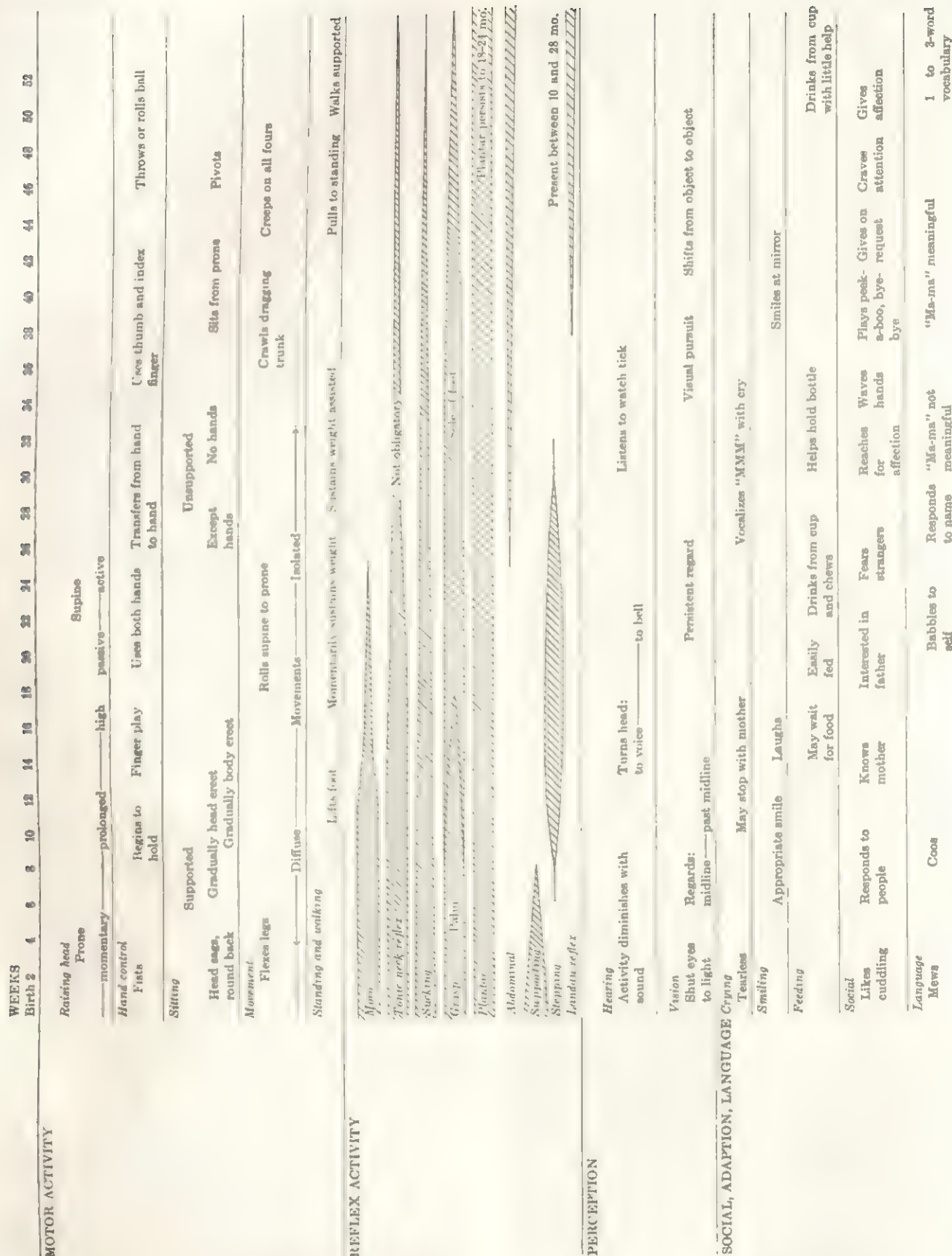


FIGURE 1. Developmental landmarks during the 1st year of life.

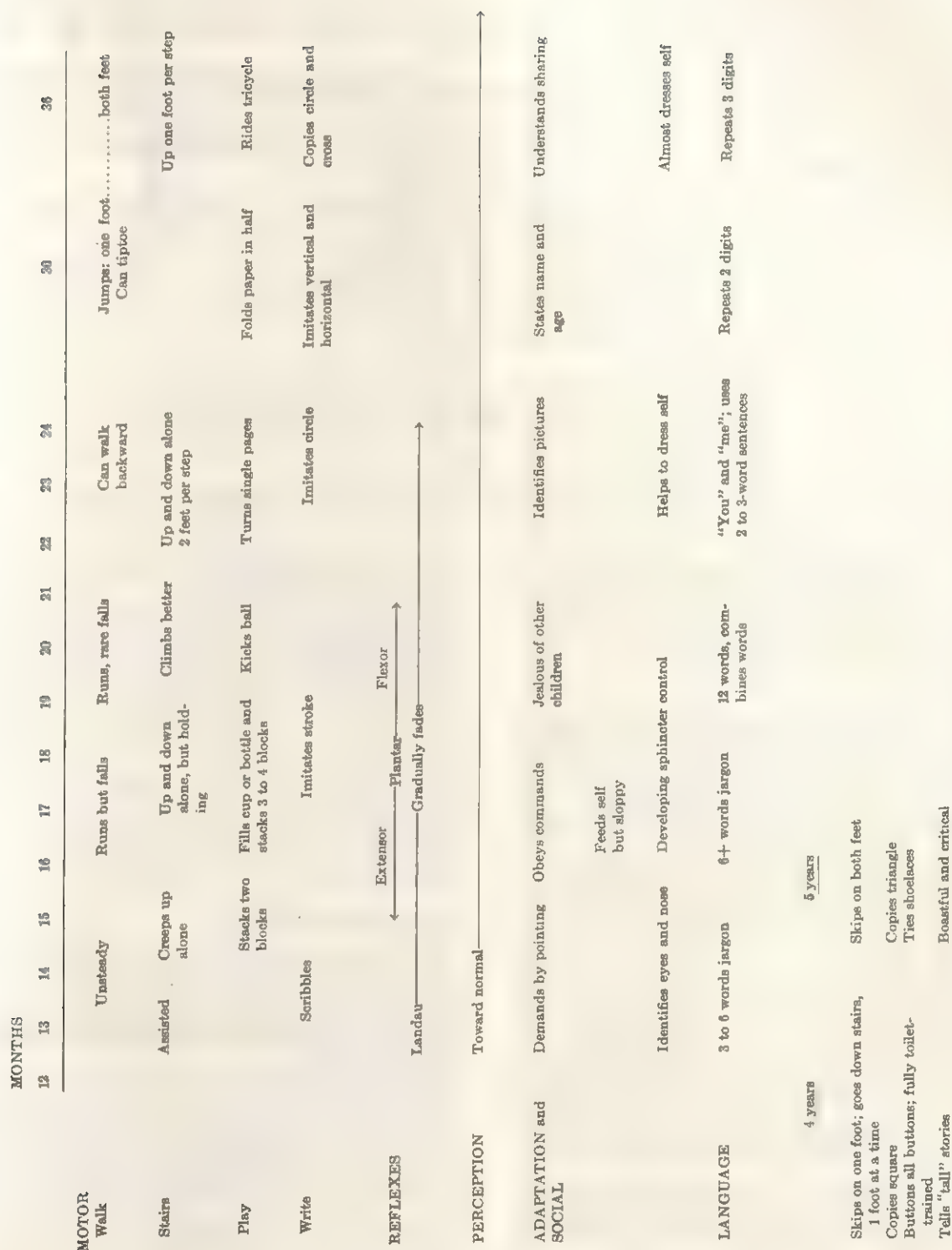


FIGURE 2. Developmental features during the ages 1 to 5 years.

three-word vocabulary should be evident. There is a wide range of normal, of course, and slow development of one or two features should not be taken as evidence of significant retardation. For example, although the average child walks without assistance soon after 1 year of age, retardation of gait is not considered present before 18 months of age. In addition to these landmarks, other history during the 1st year of life may be pertinent. Was the child "colicky"? Did the infant sleep excessively; i.e., was she an unusually "good" baby? On the other hand, was evidence of hyperactivity manifested during the 1st year of life?

Neurological examination. An essential objective of the neurological examination of the infant is an assessment of the maturity of the patient as related to his chronological peers. Repeated observations are often essential before drawing conclusions. (Tremulousness, for example, may disappear after the hungry child is fed.) The patient is often too young for the examiner to conclude that a lesion is static or progressive without reexamination weeks or months later. As with the adult, the general physical examination may be helpful. For example, the child may exhibit the skin manifestations of a phakomatosis or the skeletal characteristics of mongolism.

The neurological examination of the infant must differ from that of the adult in that one must first evaluate those features which will least disturb the child and then progress to those parts of the examination which may require restraint. (For example, the ophthalmological examination is performed early in the neurological evaluation of an adult, but last when examining an infant.) In performing the neurological examination, one observes the social adaptability and language of the child, his motor activity, perception, and, finally, postural reactions and reflex activity. These features have been outlined in Figures 1 and 2. Other tests, as discussed for the adult, are integrated into this general pattern of examination wherever applicable. Certain reflexes (or, more properly, reactions) found in infants will be described here. Other features of the examination peculiar to infants will also be noted.

Special reflexes

Moro reflex. This reflex is elicited by sudden mild extension of the neck or any stimulus which suddenly startles the infant. In response to such stimuli, there is extension of the trunk and upper extremities, then flexion of the upper extremities, with or without extension of the lower extremities. This reflex is normally present at the time of birth, diminishes by 3 to 4 months, and should be absent after 6 months of age.

Tonic neck reflex. Turning of the head to one side when the infant is supine results in extension of the arm and leg of that side, with flexion of the opposite extremities. This reflex, normally present at the time of birth, diminishes after 4 to 6 months, but fragments of this reaction may be present during the remainder of the 1st year.

Sucking reflex. Touching a finger to the infant's lips elicits the sucking reflex. This reflex diminishes after a few months and is absent after 1 year.

Grasp reflex. The infant's hand and fingers flex when the examiner's finger is placed in the palm of the hand, and similarly the foot and toes flex when the examiner's finger is pressed to the ball of the foot. The palmar grasp reflex diminishes after a few months and disappears after 4 months, but the grasp reaction of the plantar surface of the foot may persist into the 2nd year.

Plantar reflex. Stimulation of the lateral aspect of the sole of the foot elicits an extension of the big toe (Babinski sign). This sign is normally present from the time of birth until 1½ years or, at the most, 2 years of age.

Abdominal reflex. Contraction of the abdominal wall results from stroking the overlying skin. The abdominal reflex may not be easily elicited until 6 to 12 months of age.

Supporting reflex. With the infant held upright but at a somewhat acute angle to the examining table, extension of the

legs occurs when the infant's feet touch the table. This reflex, present at birth, ends after 1 to 2 months of age.

Stepping reflex. With the infant held in a position similar to that described for the supporting reflex, stepping movements should be noted between 2 and 6 months of age and proper walking movements should be evident after 10 to 11 months of age.

Landau reflex. With the infant held prone, he assumes the position of hyperextension of the spine and neck. Flexion of the head in that position results in flexion of the spine and extremities. The reverse phenomena are observed with the patient held supine. The Landau reflex occurs normally between 10 and 28 months of age.

Additional factors for consideration. The posterior fontanel should be closed by 6 weeks of age. The anterior fontanel should close between 9 and 18 months of age.

Measurement of the head size is important, particularly serial measurements for evidence of increasing hydrocephalus.

Percussion of the skull may elicit a "cracked pot" sound as evidence of suture separation due to increased intracranial pressure.

Transillumination of the skull may aid the diagnosis of hydrocephalus, porencephalic cyst, or subdural hematoma.

Bruits over the eyeballs are commonly heard in infants and young children and should not be considered abnormal.

Eye movement may be tested by rotating the infant's head and noting whether the eyes appear in all directions of gaze (doll's eye maneuver).

Movements are diffuse rather than isolated and voluntary movements are not evident until 4 to 6 months of age.

By 9 months of age, alterations in motor tone, posture, or use of extremities can be considered abnormal (see the discussion of minimal brain dysfunction in Section 10.4). (1) Alteration of muscle tone is manifested by asymmetry of tone or generalized hypertonicity. (2) Abnormal posture of extremities is revealed by persistence of abduction, adduction, flexion, or extension of the arms; persistence of extension or scissoring of the legs; or persistence of fisted hands or other abnormal hand postures. Abnormal posture of the trunk, or head and neck is noted by a rounded back when sitting; or head sagging forward, tilting or retracting. Abnormal posture when standing is manifested by the infant attempting to stand on an unusually narrow base, failing in attempt to support the body while standing with assistance, or standing on toes. (3) Altered use of an arm or hand is revealed by the tendency to avoid use of one extremity, difficulty in retaining a grasped object, persistence of grasp, other impairment of grasp, or maldirection in reaching for an object.

Electroencephalography

This topic is discussed in greater detail than other diagnostic measures, not necessarily because it is a more useful test in the neurological evaluation of the patient, but because it is a test more commonly used by psychiatrists.

The electroencephalogram (EEG) is a record of the electrical activity of the brain. This activity represents synaptic potentials of apical dendrites in the cerebral cortex. Only the sum of inhibitory and excitatory potentials of large groups of neurons is recorded. Great amplification is required for purposes of recording; a 7-mm. deflection of the recording pen is usually calibrated to correspond to 50 μ V. In interpreting a tracing, the electroencephalographer scans the entire page as a single picture, rather than evaluating each individual wave. The interpretation is therefore, in large part, subjective.

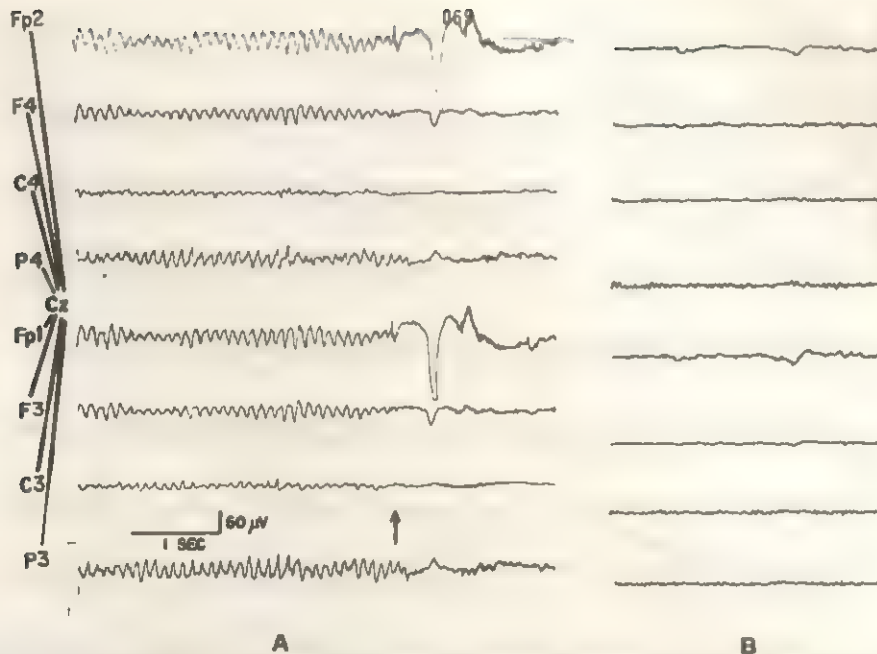


FIGURE 3. A, The normal adult EEG. At the arrow the eyes of the patient were open; note the "blocking" of α rhythm. B, The normal low voltage fast adult EEG.¹

Analysis of the EEG. In analyzing the EEG, three major components must be considered. (1) The individual waves are evaluated with regard to their frequency, form, and amplitude. (2) Series of waves, i.e., their rhythmic qualities, are analyzed. (3) The locations of waves are studied, particularly with regard to differences between one cerebral hemisphere and the other.

Probably the most important feature of the EEG is the frequency of the electrical activity. The frequencies of an adult record normally range from 8 to 13 cycles per second, α (alpha rhythm). Other frequencies are often abnormal. Frequencies of 4 to 7 per second are termed theta activity; 1 to 3 per second, delta activity. Activity faster than α rhythm, 14 to 30 per second, of voltage averaging 20 μ V. or more, is called beta activity.

The wave forms are normally those of a simple sinusoidal pattern, although complex forms with faster rhythms superimposed upon slow frequencies may also be noted. Fast waves have sharp features. Cycles less than $\frac{1}{2}$ sec. in duration are considered spikes and are most often abnormal.

The amplitude of a normal adult EEG is usually "moderate," i.e., it averages 50 to 75 μ V. Considerable variation in voltage may normally occur. The cerebral electrical activity of a normal awake adult consists of moderate voltage sinusoidal waves occurring at 8 to 13 (predominantly 9 to 10) cycles per second. These waves occur in rhythmic series that form spindle patterns and are located primarily over the occipital areas of the head (Figure 3A). Low voltage fast activity also may be normal (Figure 3B).

The normal cerebral electrical activity will be altered with changes in the conscious state of the patient and in response to stimuli and will vary from childhood to adult life.

Effect of state of consciousness on EEG. The conscious state of the individual has a tremendous influence on the EEG. Decrease in frequency and increase in amplitude occur as the individual becomes drowsy and falls asleep. In an adult, during early drowsiness, α rhythm decreases in amplitude and sometimes in frequency. In the transition between drowsiness and sleep, a relatively flat record alternates with series of α rhythm and low voltage θ activity, especially over the temporal parietal areas, is noted (Figure 4A).

During light sleep, vertex sharp waves (formerly termed biparietal humps) occur singly or in short series. Groups of positive (downward deflection) spikelike waves over the bioccipital areas may occur in the adult record. Theta activity is predominant over the convexity of the head. Sleep spindles (sigma rhythm) averaging 14 per second, especially over the parietal areas, are noted (Figure 4B). In moderately deep sleep, the activity further decreases in frequency to the δ range and increases in voltage. Sleep spindles decrease from 14 to 12 per second and become predominantly frontal. During deep sleep, very slow irregular δ activity is noted, especially over the convexity of the head, with superimposed θ activity and spindles of 10 per second present in a more generalized fashion. Stimulation during sleep will evoke an arousal response manifested by a K complex (one or two high voltage slow waves resembling vertex sharp waves or humps). In light sleep, fast activity may briefly follow the latter and there is quick return to the waking state, whereas in deep sleep, a lightening of the sleep pattern may occur. Variations from these adult sleep patterns will be described in the discussion of the child's EEG. Rapid eye movements (REMs) during sleep are associated with dreaming, although not invariably so. During this phase of sleep there is desynchronization of the sleep pattern. The electrical activity is similar to that of the transitional stage between drowsiness and sleep, with low

¹ The designation of electrode positions is that adopted by the International Federation of Societies for Electroencephalography and Clinical Neurology: F_p (frontal pole), F (frontal); C (central), P (parietal); O (occipital), T (temporal); C_v (vertex), A (ear). Even numbers as subscripts indicate the right hemisphere, odd numbers the left.

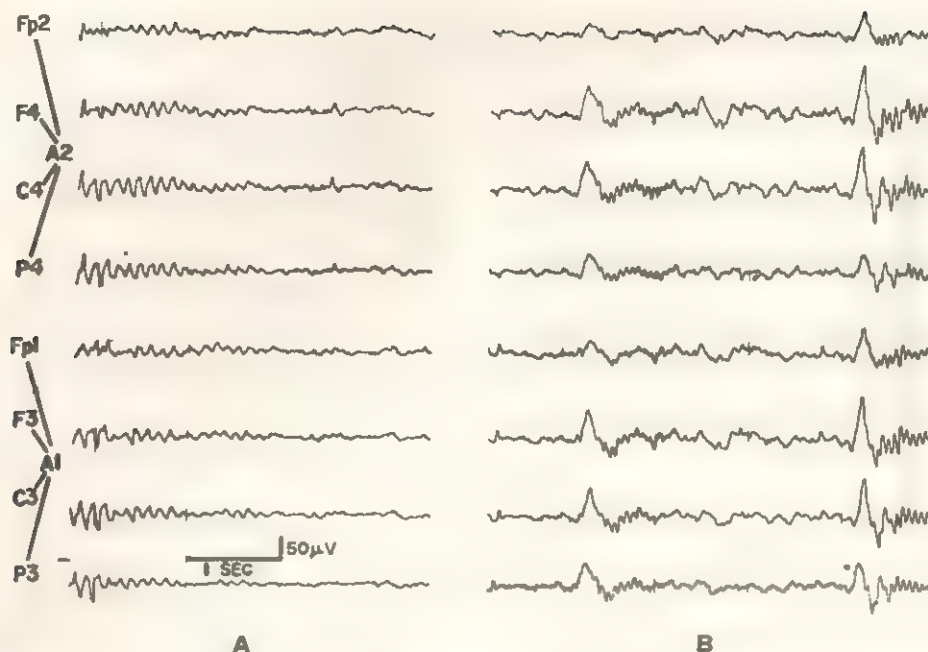


FIGURE 4. A, The normal adult drowsy EEG. Note the dropping out of α rhythm and its replacement by low voltage slow activity. B, The normal sleeping EEG with 14 per second sleep spindles and bilaterally synchronous sharp waves of predominantly central origin.

voltage activity of variable frequency. In addition, saw-tooth waves are usually noted. Periods of REM sleep occur throughout normal sleep but are not necessarily indicative of lightening of the depth of sleep (see Section 2.4).

Response to stimuli. The response of the cerebral electrical activity to stimuli is routinely tested. The α rhythm will normally disappear during stimuli. The EEG is performed with the patient's eyes closed, and opening of the eyes will interrupt the series of α rhythm. Mental stimulation (asking the patient to perform a complex mathematical task) will "block" the α rhythm. Emotional tension often obliterates α rhythm, and the normal EEG of an unusually tense person may consist of nothing more than low voltage fast activity.

Lambda waves are sharp or saw-tooth waves over the occipital areas evoked by the patient's visually scanning an object such as a picture. MU rhythm is a series of waves within the 7 to 11 per second range that appear as the written letters M or U over the central areas of the head and are abolished by movement or stimulation, particularly of the hands.

Hyperventilation is performed for 3 min. A buildup of slow activity, i.e., decrease in frequency and increase in voltage, commonly seen in children (Figure 5, left side), may persist for as long as 100 sec. after the cessation of hyperventilation. A relatively low blood sugar and the erect posture increase the response to hyperventilation. The exact mechanism of slow activity during hyperventilation is still uncertain, but it is agreed that cerebral hypoxia is the basic underlying factor.

Photic stimulation is attained by means of a bright flashing stroboscope held close to the patient's closed eyes. A "driving response" often can be evoked over the bioccipital areas. This normal response consists of bilaterally symmetrical activity, synchronous with the flash frequencies, usually near or within the α range (Figure 6A). Sometimes the EEG frequency is a subharmonic or multiple of the flash stimuli. Photic stimulation may evoke a photomyoclonic response characterized by twitches of the face and eyes with associated muscle artifact in the EEG. This should not be interpreted as a manifestation of epilepsy.

EEG characteristics of children

EEG of the premature and newborn. The EEG of the premature child will manifest low voltage slow activity of 1 to 3 per second over the occipitotemporal areas, with superimposed low voltage fast activity. These features alternate with long periods of electrical silence. No difference can be discerned between the waking and sleeping state.

The newborn, while awake, will exhibit a pattern similar to that of the premature, but even flatter. The most common state in the newborn is that of drowsiness. The EEG of this transitional state consists of low voltage, almost flat, activity except for occasional random slow waves. Activities of 4 to 6 per second may be noted over the central areas and are sometimes saw-toothed. These transitional state patterns closely resemble those of rapid eye movement sleep, and the percentage of time spent in these states decreases as the infant grows older. When the newborn is asleep, the record reveals high voltage (150 μ v.), 1 to 3 per second activity alternating with a relatively flat record (*tracé alternant*).

EEG during the 1st year of life. During the 1st year of life, the waking record shows the gradual development of occipital rhythm beginning with random low voltage slow activity. By 3 to 4 months of age, frequencies of 4 to 6 per second are noted and can be interrupted when the eyes are opened. Toward the end of the 1st year, the activity further increases in frequency and voltage.

A great many changes occur in the maturation of sleep activity during the 1st year of life. By the 6th to the 8th week of age, well defined sleep spindles (series of 14 per second activity) are seen over the frontocentral areas of the head. After 3 to 6 months of age, long series of high voltage slow activity occur during drowsiness. By 3 to 6 months of age, sharp waves over the central areas of the head (biparietal humps) are noted during light sleep. After 6 to 8 months of age, paroxysmal series of high voltage slow activity are seen, particularly over the central areas of the head, during drowsiness. There is little arousal response in the newborn, but after the 2nd month, and especially by 6 to 8 months of age, K com-

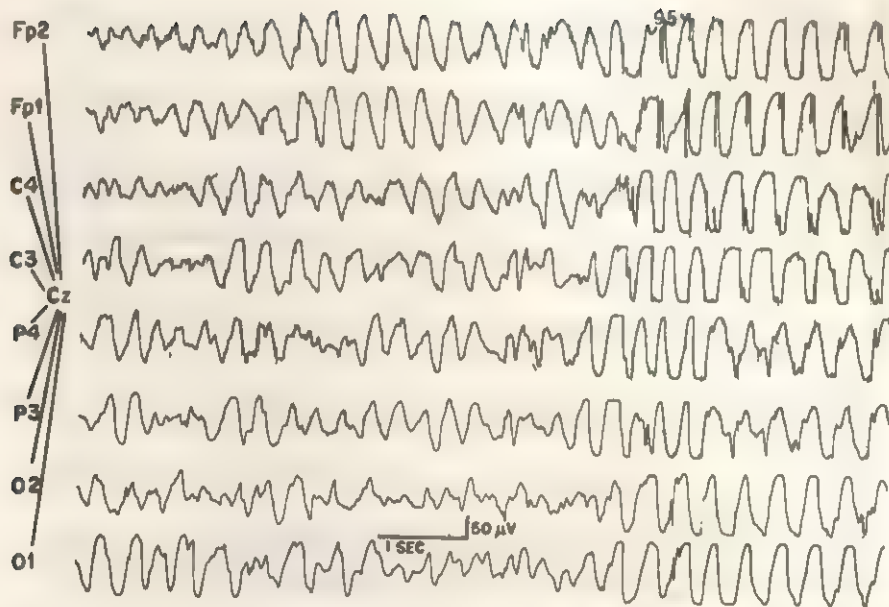


FIGURE 5. Hyperventilation. On the *left*, the normal buildup of high voltage slow activity in a 9-year-old child. On the *right* the superimposed spike activity alternating with the high voltage slow waves is an abnormal response.

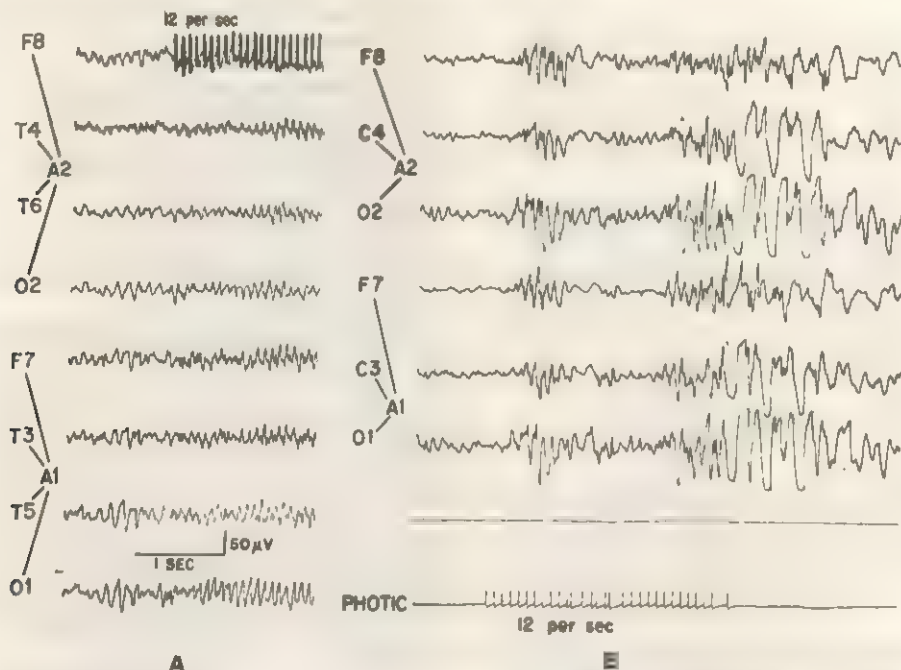


FIGURE 6. Photic stimulation. *A*, The normal response to photic stimulation. Note the change from a slower background pattern to a 12 per second rhythm synchronous with the photic flash. *B*, An abnormal response to photic stimulation characterized by polyspike and slow wave activity persisting after cessation of the photic stimuli.

plexes occur and are followed by series of moderate to high voltage slow activity.

EEG after the 1st year of life. The waking EEG after the 1st year of life reveals a gradual increase in frequency (especially over the occipital areas). Between 2 and 9 years of age, frequencies increase to approximately 7 to 9 per second, but a great deal of slower activity is also present (Figure 7).

Waves as slow as 2 per second may be seen as late as 8 years of age, but this activity either is of low voltage or occurs as single waves. Between 10 and 16 years of age, frequencies within the adult range of 8 to 13 per second are seen. Less and less slower frequencies are noted within the faster rhythms. Particularly between the ages of 8 and 15 years, MU rhythms appear.

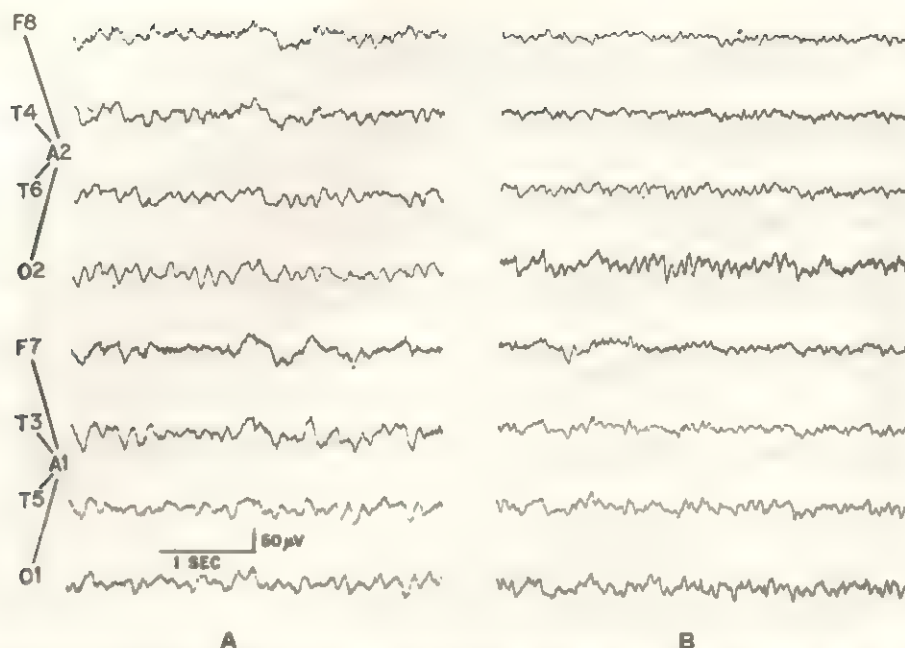


FIGURE 7. A, The normal child's EEG, age 3 years. B, The normal child's EEG, age 9 years. Note the increase in frequency but with persistence of scattered and underlying slow activity.

Drowsy EEG activity in children after the 1st year of age is characterized first by disorganization of the record. Increase in voltage and in diffuse slow activity with 1 to 3 per second frequencies over the posterior portions of the head are noted. The steady slow activity of drowsiness usually disappears after 6 years of age. Paroxysmal bilaterally synchronous high voltage slow activity during drowsiness rarely persists after 15 years of age.

Central sharp waves of very light sleep occur in a bilaterally synchronous fashion. The first stage of sleep is manifested by 14 per second sleep spindles. With moderately deep sleep, there is an increase in 4 to 6, then 2 to 3 per second activity, and 12 per second sleep spindles are noted. Finally, in deep sleep, very high voltage, very slow activity is seen with no further evidence of spindles or central sharp waves. Continuous slow activity, following the K complex of arousal, usually disappears by the 15th year or earlier. Approximately between the 10th and the 15th year, paroxysmal slow activity may follow the K complex.

Abnormal characteristics of the EEG. It must be emphasized that these features are abnormal only when not accounted for on the basis of youth, change in the conscious state of the patient, or response to stimulation.

Frequency. Activity slower than 8 per second, i.e., θ or δ activity, particularly if occurring in series, is abnormal. Generalized slow activity is suggestive of diffuse organic disease or a pathophysiological metabolic cerebral disturbance. Focal slow activity (Figure 8) is indicative of underlying organic disease although minimal θ activity over the bimtemporal areas is of doubtful significance. Activity faster than α rhythm (β activity), is abnormal; however, the clinical significance of β activity is less well defined than that of slower activity. Generalized fast activity is seen in some drug intoxications. Particularly if intermittent, β activity may be noted in records of patients with convulsive disorders. Focal fast activity is usually indicative of underlying organic disease that may be epileptogenic.

Voltage. Low voltage diffuse activity may be a manifestation of suppression of cerebral electrical activity seen in severe

organic disease. Low voltage activity of a focal nature indicates underlying disease, for example, a subdural hematoma. Very high voltage activity may precede a seizure.

Sharp waves and particularly spikes. Anterior temporal spike activity is most commonly associated with psychomotor seizures (Figure 9). Other spike activity, or spike and wave activity, may be indicative of an underlying epileptogenic lesion. Multiple spike foci in children suggest seizure activity or mental or physical retardation. Spikes in children's EEGs may change location from one time to another. Fourteen and 6 per second positive spikes (Figure 10A) may be associated with visceral phenomena or behavioral symptoms and are discussed elsewhere (see below).

Paroxysmal activities. Bilaterally synchronous paroxysmal slow activity is seen in patients with generalized convulsive disorders and in disease or dysfunction of deep midline structures. Three per second spike and slow wave bilaterally synchronous paroxysmal bursts are characteristic of petit mal epilepsy (Figure 11). Spike and wave bursts of other frequencies are often indicative of grand mal (Figure 12). Mitten patterns are spike and wave complexes over the frontoparietal areas, sometimes seen as the last portion of a sleep spindle in adults. Gibbs has classified these mittens by the frequency of the "thumb" or spike. Mittens of $\frac{1}{6}$ to $\frac{1}{4}$ sec. in duration are associated with deep organic disease; mittens of $\frac{1}{6}$ to $\frac{1}{4}$ sec. ("A" type) are correlated with parkinsonism; mittens of $\frac{1}{4}$ to $\frac{1}{2}$ sec. ("B" type) are most often seen with psychoses and seizures.

Determination of EEG abnormality depends upon a large number of variables. Only two examples are cited. There may be many single slow waves in a normal record, but the same slow waves occurring in a few groups (series) are usually abnormal. Slightly slow activities over the temporal areas may be normal, but the same activity over the occipital areas is often abnormal.

Abnormal EEG patterns of the 1st year of life. Abnormal slow, fast, or spike wave activities may occur in infants. In addition, the record of an infant that is too well organized or appears more mature than expected for the age is probably abnormal. Occipital spike activity in infants and children is often associated with seizures, prematurity and visual symptoms. The following EEG abnormalities, peculiar to the infant,

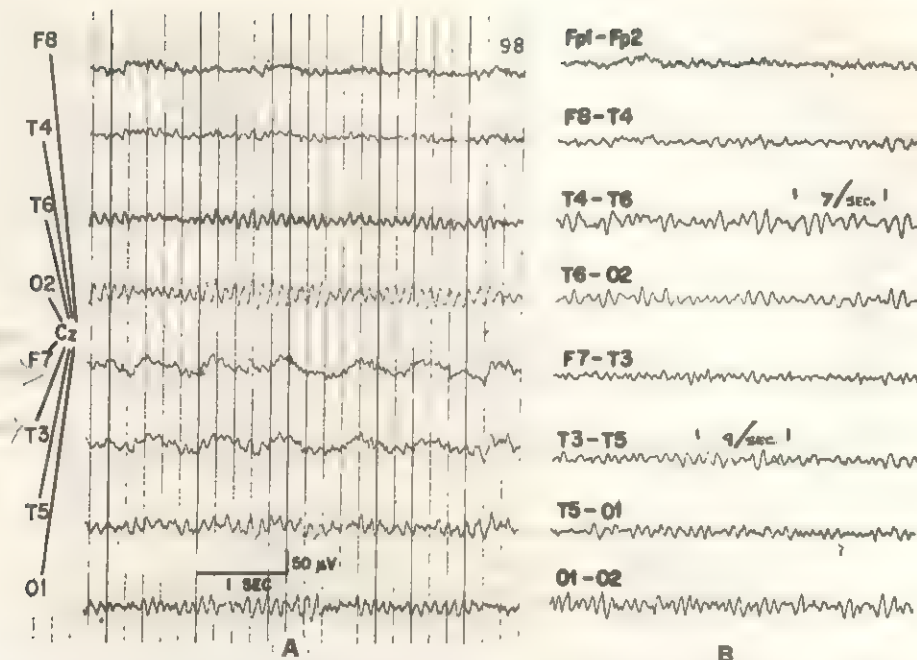


FIGURE 8. *A*, Focal 2 per second δ activity from the F7 and T3 electrodes, indicative of a left anterior temporal lobe lesion, in this case a glioblastoma multiforme. *B*, Slightly slow activity of 7 per second, predominantly from the T6 electrode, indicative of a right posterior temporal lobe lesion, in this case an infarct.

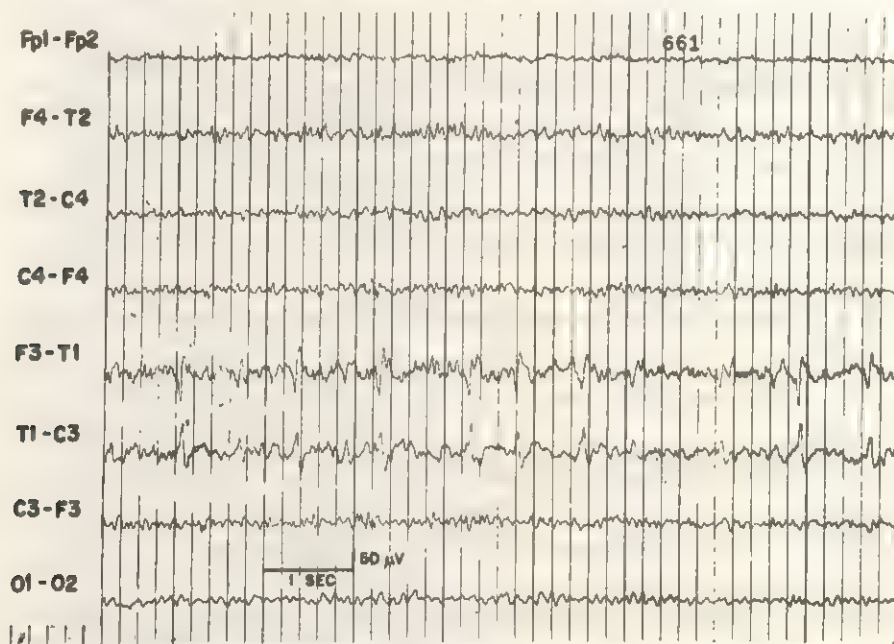


FIGURE 9. Psychomotor (temporal lobe) epilepsy characterized by random spikes from the T1 (left anterior temporal) electrode. Note phase reversals from this area.

carry a very poor prognosis for physical or mental development.

Hypsarrhythmia. This pattern is characterized by high voltage irregular spike and slow wave activity occurring frequently and asynchronously, with marked disorganization of the record (Figure 13). Such activity, seen in patients with infantile spasms (see Section 10.4), commonly resolves after 2 years of age and is rare after 4 years. Physical or mental retardation is almost invariable.

Extreme spindles. These are sleep spindles of higher voltage, occurring in a wider distribution and more continuously than normal sleep spindles. They usually are seen after 6 to 7 months and before 5 years of age. This pattern is indicative of mental retardation, often with cerebral palsy, particularly of the extrapyramidal type.

Diagnostic value of the EEG. There are no EEG patterns pathognomonic of specific disease (with the

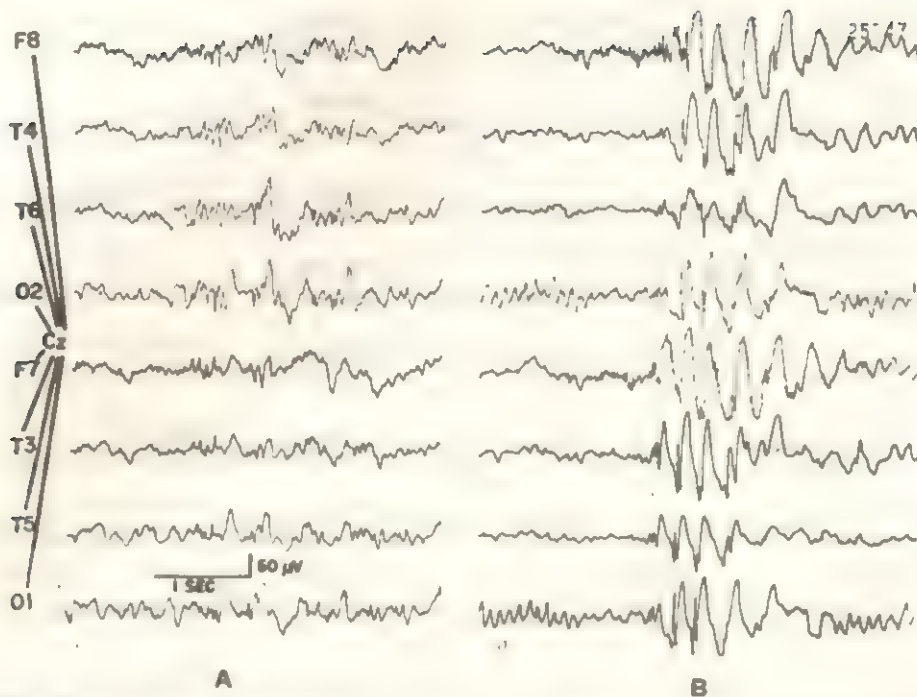


FIGURE 10. *A*, 14 per second positive spikes seen in a 10 year old with behavior disorder and intermittent episodes of abdominal pain; *B*, paroxysmal irregular spike and slow wave bursts occurring in a bilaterally synchronous fashion at approximately 4 per second, seen in another 10-year-old child with sudden paroxysms of abdominal pain (abdominal epilepsy).

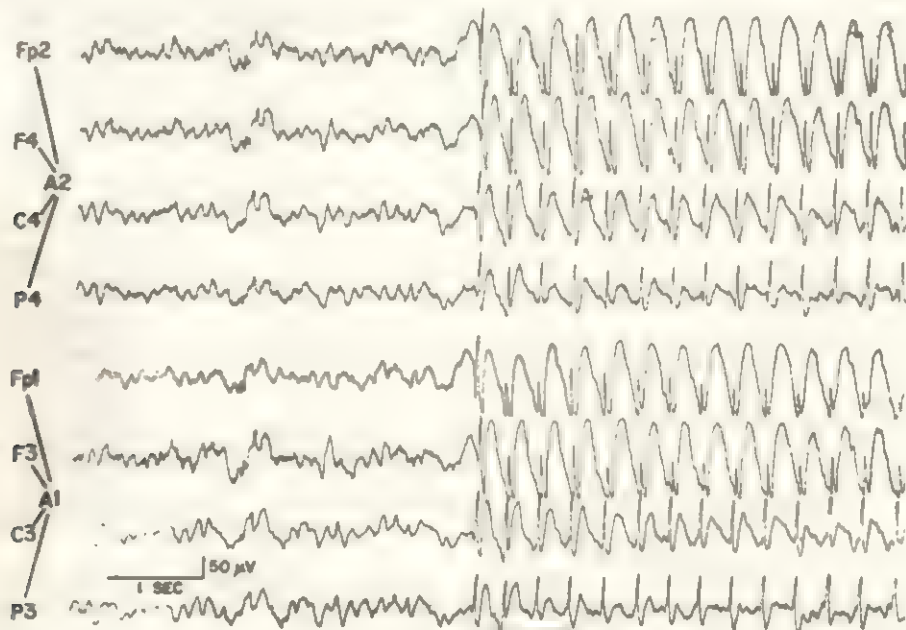


FIGURE 11. Petit mal epilepsy characterized by bilaterally synchronous, 3 per second spike and slow wave activity.

possible exception of petit mal). The response of cerebral electrical activity to injury of any type is relatively limited, and it makes little difference whether the injury is organic (anatomic) or pathophysiological. The initial response of the EEG to injury is manifested by slow activity. As a rule of thumb, the slowest frequencies correspond to the most

severe lesions. Spike or sharp activity is usually a manifestation of the resolution of injury. Focal spike activity may indicate that an old or relatively old lesion has become epileptogenic. Focal slow activity is indicative of an underlying anatomic lesion but the lesion does not always exactly underlie the site of maximum EEG abnormality. A lesion within a

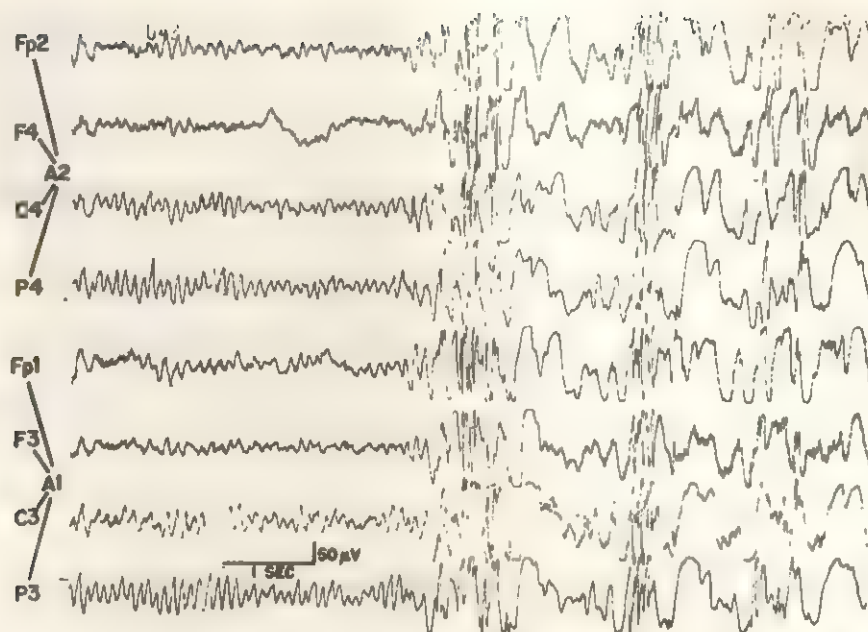


FIGURE 12. Grand mal epilepsy manifested by paroxysmal bursts of high voltage polyspike and irregular slow wave activity occurring in a bilaterally synchronous fashion.

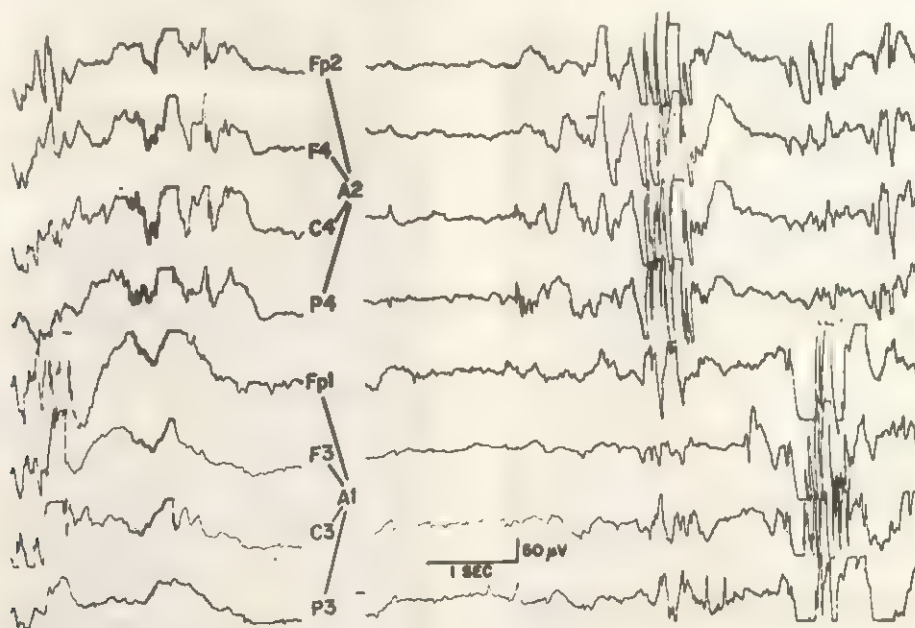


FIGURE 13. Hypsarrhythmia characterized by asynchronous bursts of high voltage polyspike and irregular slow wave activity occurring in a haphazard fashion from all leads (age, 8 months).

cerebral hemisphere will often be associated with slow activity that is reflected predominantly over the occipital lobe in children, or over the temporal lobe in adults. It is not practical to consider the EEG characteristics of every neurological disease, and only the large etiological categories are discussed.

Neoplastic cerebral disease. This is usually manifested by focal δ activity (Figure 8A). If the tumor is deep or causes increased intracranial pressure, diffuse slow activity may occur.

Cerebellar tumors in adults sometimes are associated with bifrontal or frontotemporal slow activity whereas such tumors in children are often associated with bioccipital slow activity. The EEG is often normal in slowly growing extracerebral intracranial tumors such as meningiomas. Sometimes focal δ activity may be found in a relatively "silent" area of the brain, giving the clinician the only, or major, clue to the presence of an underlying neoplasm. On the other hand, the EEG focus is not sufficiently reliable to allow surgery without more definitive study.

Vascular lesions. These are usually associated with focal

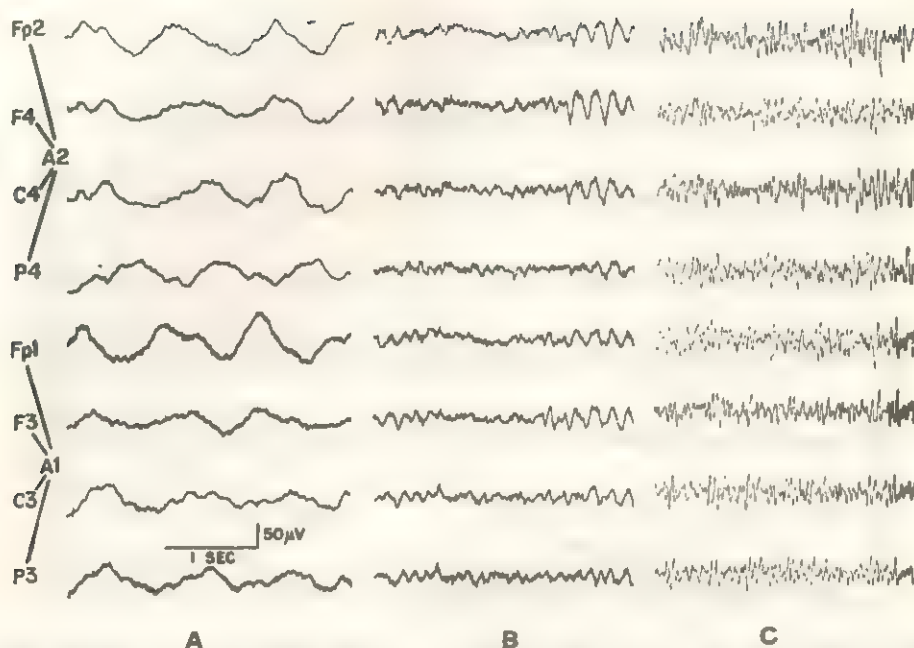


FIGURE 14. A, diffuse moderate to high voltage very slow (δ) activity seen in a patient with severe encephalitis; B, diffuse θ activity seen in a patient soon after cerebral trauma; C, diffuse fast (β) activity seen in a patient with barbiturate intoxication.

θ activity (Figure 8B). If the cerebral infarct is recent, large, or superficial, or if a hematoma is present, focal δ activity may occur. Scattered small vessel disease often results in diffuse or scattered θ activity. A subarachnoid hemorrhage is most commonly associated with diffuse slow activity, but in some instances focal EEG changes may be the only clue to the site of the ruptured aneurysm. Serial studies are extremely valuable in differentiating neoplastic from vascular disease.

Inflammatory diseases. Inflammatory diseases affecting the cerebrum as a whole, such as meningitis or encephalitis, usually manifest diffuse slow activity (Figure 14A) with occasional focal qualities. An abscess, on the other hand, causes focal δ activity just as any other space-occupying lesion. In children, the EEG is useful in differentiating encephalitis associated with convulsive seizure from a benign febrile seizure, for the EEG usually is normal in the latter. Serial studies may be helpful in evaluating meningitis of children, for, if improvement in the EEG does not occur after two weeks, one should suspect the development of sinus thrombosis, subdural empyema, or subdural effusion. Subacute inclusion body encephalitis is often characterized by an unusual EEG pattern of sharp and slow wave complexes occurring periodically every 2 to 8 sec.

Cerebral trauma. Cerebral trauma may produce focal or diffuse EEG abnormality (Figure 14B) and sometimes paroxysmal slow activity. (The latter may be due to the shearing effect of the brain on its pedestal, the brain stem, with associated dysfunction of the diencephalon.) In children, the response of the EEG to trauma is more severe than in the adult, but the return to normal is faster. A comatose patient manifesting a normal EEG probably has severe brain stem injury with its concomitant poor prognosis. Diffuse slow activity soon after severe cerebral trauma may obscure focal slow activity overlying an area of contusion. Focal depression of amplitude in a patient with head trauma raises the suspicion of an underlying subdural hematoma. Since a spike focus is usually the result of an old injury, such a focus seen on the day of cerebral trauma or a few days after, indicates that the focus is not related to the recent trauma. The incidence of

post-traumatic epilepsy in those patients who develop a persistent spike focus after closed head injury is estimated to be 10 to 15 per cent.

Metabolic or degenerative diseases. These illnesses usually cause diffuse slow activity in the EEG, sometimes with slight focal prominence. Hepatic encephalopathy is manifested by bilaterally synchronous slow waves predominant over the anterior areas, often accompanied by random sharp activity forming "triphase waves." Jakob Creutzfeldt disease, during one stage in its course, may reveal generalized periodic high voltage sharp or spike activity. The EEG is a relatively poor guide to the activity or severity of metabolic cerebral disease, for clinical changes often precede changes in the EEG.

Drugs and toxic substances. These have a nonspecific effect upon the EEG, causing either diffuse slow activity or diffuse fast activity or, sometimes, both. The patient in deep coma with diffuse fast activity in the EEG raises the strong suspicion of barbiturate narcosis (Figure 14C). Other drugs which may cause fast activity in the EEG are methyl phenylethylhydantoin (Mesantoin), diphenylhydantoin (Dilantin), meprobamate, glutethimide (Doriden), chlordiazepoxide (Librium), diazepam (Valium), and, in high dosage, amphetamine. Primidone (Mysoline) may be associated with either fast or slow activity. The phenothiazine derivatives often cause fast activity at low dosage, but slow activity in higher dosage. Most other drugs or noxious agents are associated with diffuse slow activity. Dilantin and Mesantoin slow the α rhythm, as do morphine and meperidine (Demerol). In stuporous patients who have been taking anticonvulsant medication, the EEG helps to differentiate subclinical status epilepticus, manifested by almost continuous paroxysmal activity, from drug intoxication with resultant diffuse fast or slow activity.

Other extracerebral factors may change the EEG, particularly in children. Alterations in electrolytes and fluid balance (water intoxication), endocrine disturbances, burns, and trauma to the body are all associated with diffuse slow activity in the EEG. In children, mild fever, stress of surgery, or systemic illness, especially leukemia, often cause diffuse slow activity.

Epilepsy. The EEG is of greatest value in epilepsy (see

Section 10.4). The classical characteristics are paroxysmal abnormality or focal spike abnormality. The EEG is most often abnormal in petit mal; up to 90 per cent of such cases reveal an abnormal EEG. The EEG may be normal in from 30 to 50 per cent of other forms of epilepsy. The percentage of records that reveal abnormality in epileptic patients will depend to a great extent upon the EEG laboratory, for abnormalities will be found in a greater percentage of patients who have had tracings of long duration (or repeated number), and during drowsiness and light sleep. After the history, the EEG is the most important factor in the diagnosis of epilepsy. Petit mal (Figure 11) is characterized by bilaterally synchronous, symmetrical 3 per second spike and wave bursts. Grand mal (Figure 12) is manifested by paroxysmal slow or spike activities or, most commonly, a combination of the two. This activity will be bilaterally synchronous if the seizures are generalized or will have a focal component if the seizures arise in one of the cerebral hemispheres. Focal convulsive disorders will reveal focal spikes or sharp waves and often associated slow activity. The most common example is a spike focus over the anterior temporal lobe in temporal lobe or psychomotor epilepsy (Figure 9).

The EEGs certainly may be normal in the presence of organic brain disease. This is particularly true if the lesion is deep, small, or old. For example, the EEG is often normal early in the course of multiple sclerosis because the lesions are small, scattered, and subcortical. The EEG may be normal in epilepsy because the duration of the record was not long enough to "catch" intermittent paroxysmal activity. Finally, the EEG may be normal because of the attenuation of recordings from the scalp. A tremendous increase of abnormal electrical activity can be seen from electrodes placed directly on the cerebral cortex at the time of surgery, in contrast to simultaneous recordings from the scalp.

Activation techniques. Certain techniques may bring out abnormalities not previously evident or exaggerate abnormalities noted in the resting record.

Hyperventilation. A response to hyperventilation is abnormal if spikes are associated with paroxysmal series of slow activity (Figure 5, right side) or if a focal spike or focal slow wave pattern is evoked. Hyperventilation frequently evokes 3 per second spike and wave paroxysms of petit mal epilepsy. On the other hand, even an unusually prolonged series of high voltage slow activity during and after hyperventilation is of indeterminate significance.

Photic stimulation. The response to photic stimulation is considered abnormal if bilaterally synchronous or focal paroxysmal spike and slow wave activity is evoked, or if suppression of normal driving response occurs over one hemisphere. Brief paroxysmal series during photic stimulation may be of equivocal significance, but paroxysmal activity can be considered definitely abnormal if the response persists after the cessation of the photic stimuli (Figure 6B).

Metrazol activation. Metrazol activation, either with or without photic stimulation, is only of value in establishing a focal EEG abnormality, for the normal threshold of convulsibility may be unusually low and bilaterally synchronous paroxysmal activity may be evoked in normal as well as epileptic individuals. Metrazol activation is also of value in differentiating hysterical seizures from true epilepsy. The test can be used to precipitate a seizure and allow first hand observation under EEG control.

Intracarotid Amytal activation of the EEG. This technique is used in the study of patients prior to surgical resection of an epileptic focus. The test is valuable in establishing the side of cerebral dominance and in confirming the site of primary epileptogenic focus. Intracarotid Amytal injected in a patient who manifests bilateral seizure activity will cause obliteration

of that activity in both hemispheres if its primary site of origin is in the hemisphere ipsilateral to the injection, but only the epileptogenic activity on the side of injection will be obliterated if the primary focus is in the contralateral hemisphere.

Carotid compression. Carotid compression under EEG, electrocardiographic (ECG), and blood pressure controls may be helpful in establishing the site of major arterial stenosis or occlusion. Compression of a normal carotid artery in the presence of occlusion of the opposite carotid artery or disease of the vertebrobasilar arteries will usually evoke diffuse slow activity.

The EEG is useful in monitoring depth of anesthesia and could be used to greater advantage in cardiac or carotid surgery by noting changes in cerebral electrical activity while the patient is under general anesthesia.

Abnormal EEGs in "normal" people. What percentage of the normal population have abnormal EEGs? Most electroencephalographers agree on a figure of 10 to 15 per cent. The difference in statistics is due in large part to differences in interpretation of those EEGs which lie on the borderline of normal, i.e., diffuse slightly fast or diffuse slightly slow activity. Those so-called "normal" people who have abnormal EEGs, probably experienced, at some time in their lives, a subclinical disease or injury that caused persistent cerebral electrical changes (for example, birth trauma without obvious signs or encephalitis manifested by no more than headache and "a common cold").

Artifacts. It may appear to be a simple task to analyze the EEG with respect to its wave form, frequency, and voltage, relating these factors as they occur in rhythms over the two hemispheres. Unfortunately, because of the great amplification of electrical activity, artifacts are frequently present and form a major pitfall in the interpretation of the EEG. Examples of the latter are seen in Figures 15 and 16. Muscle contraction and movement cause a great variety of artifacts (Figure 15A) but are usually easily distinguished. Swallowing may cause a paroxysmal burst of spikes (Figure 15B). A defective electrode may cause focal spikes or focal slow activity (Figure 15C). ECG, when superimposed on the EEG, may sometimes simulate spike and wave patterns (Figure 16A). The almost imperceptible tremor of parkinsonism may cause paroxysmal spike and slow wave artifact (Figure 16B). Eye movement is a common source of artifact that need not be limited to the bifrontal areas (Figure 3A).

In summary, except in epilepsy, the EEG is usually not a definitive test, but then, few tests are. The EEG should be used as any other laboratory tool and judged only in association with all other factors in the clinical evaluation of the patient in order to establish as wide a base as possible for appropriate diagnosis and treatment.

The EEG in psychiatry. It is too much to ask that the relatively crude methods used in recording the sum effect of the electrical activity of millions of neurones can measure psychological phenomena that represent the highest integrative function of the brain. (We know, in fact, that the normal EEG patterns are best recorded when the cortex is least integrated, i.e., when the individual is resting comfortably with his eyes closed and his mind unstimulated. Activation of high cerebral function will tend to disrupt the well formed EEG pattern.)

EEG is of relatively little aid to the clinical psychiatrist, for specific EEG abnormalities do not

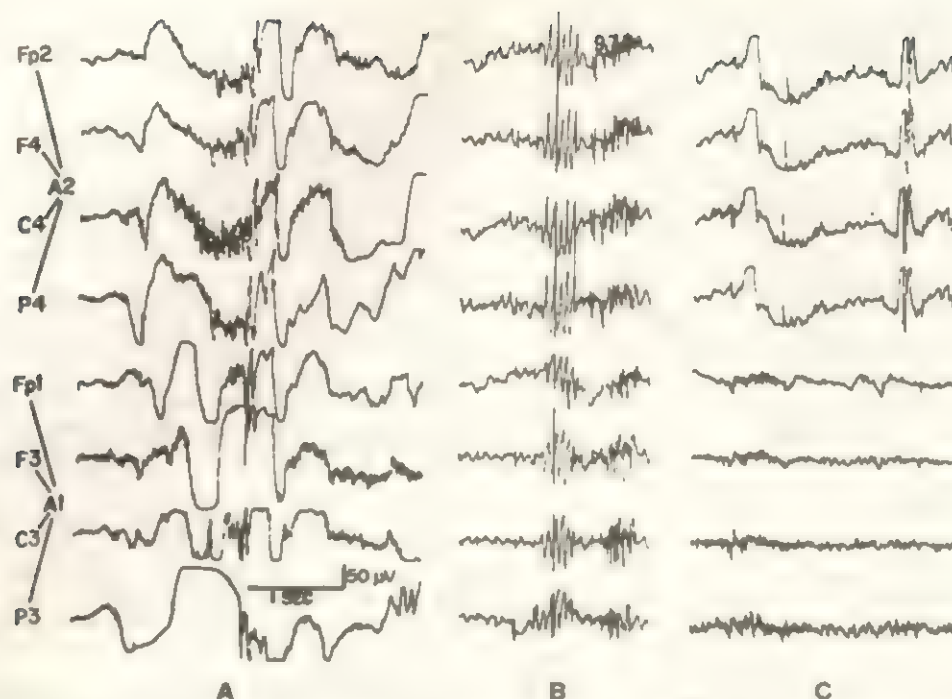


FIGURE 15. Artifacts. *A*, A combination of movement and muscle artifact manifested by high voltage irregular slow waves and very fast activity, respectively. *B*, swallowing artifact manifested by paroxysmal series of spikes followed by lower voltage series of very rapid activity. *C*, right ear electrode artifact manifested by a random irregular slow wave, a random spike, and an irregular spike and slow wave complex.

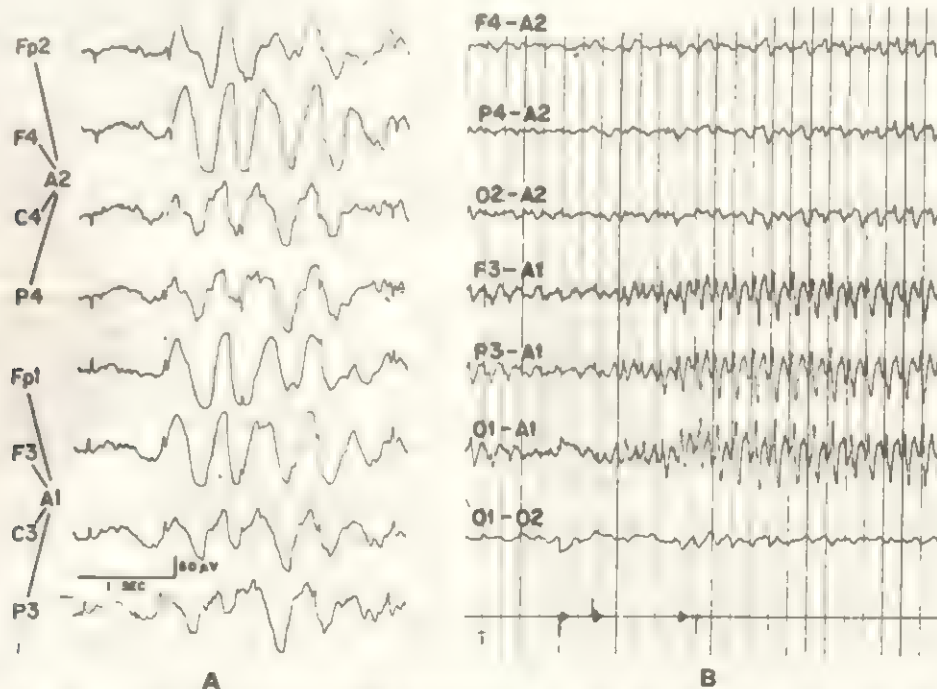


FIGURE 16. *A*, ECG spike artifact superimposed upon the normal high voltage slow activity evoked by hyperventilation in a child causes an irregular spike and slow wave pattern. *B*, A burst of spike and slow wave activity occurring at a rate of 5 to 6 per second, seen in a patient with parkinsonism and almost imperceptible tremor.

correlate with specific emotional illnesses. The EEG is abnormal in a larger percentage of patients with emotional illness than in the normal population, but a consistent type of abnormality is not present.

Intelligence. There is no correlation between the EEG and normal or above normal intelligence. In those people with intellectual deficits, EEG abnormalities are much higher than in the normal population. The most common EEG patterns in individuals with subnormal intelligence reveal a relatively small

amount of α rhythm and diffuse slow activity; fast or paroxysmal abnormalities may also be present.

Personality. Passive, dependent, submissive individuals often show relatively high amplitude α rhythm in a large percentage of the record. Aggressive, competitive individuals, on the other hand, often have EEGs of low amplitude poorly formed α rhythm (this is thought to be more often the case in females than males).

Behavior or personality disorders. Considerable difference of opinion exists with regard to the EEG characteristics of individuals with behavior disorders. The European schools stress EEG evidence of immaturity, whereas Americans, led by Gibbs, stress the association of EEGs with 14 and 6 per second spike patterns.

Behavioral disorders of childhood. Children with episodic visceral complaints often have accompanying psychological symptoms, and frequently their EEGs are abnormal. Intermittent headache or dizziness; intermittent abdominal pain, sometimes associated with generalized weakness; pallor; and excessive perspiration or temperature alteration may be manifestations of an autonomic seizure. The behavioral disturbances most likely to reveal EEG abnormalities are those of the aggressive types.

The EEG patterns associated with behavioral disorders or the episodic symptoms described above are not consistent, for virtually every type of EEG abnormality has been reported. Paroxysmal EEG abnormality is commonly associated with episodic visceral phenomena, and the latter may then be considered a manifestation of abdominal epilepsy or other autonomic convulsive disorder (Figure 10B). Fifty to 60 per cent of children with behavioral disorders reveal immature records manifested by diffuse slow activity, maximal over the occipital and temporal lobes.

The significance of the 14 and 6 per second positive spike pattern (Figure 10A) is still in doubt. This activity, because it occurs most often while recording from the temporal areas during drowsiness or light sleep, is seldom found in some EEG laboratories. When the 14 and 6 per second positive spike pattern was first reported in 1951, some doubted its existence as a specific entity. More recently, the pendulum has swung in the opposite direction, for this pattern is now known to occur in 50 per cent of normal adolescents. Fourteen and 6 per second positive spikes are one of the most common electroencephalographic correlates of behavioral disorders and episodic visceral phenomena during childhood, and many believe that this electrical activity represents a minor seizure phenomenon. Symptomatic improvement of patients treated with anticonvulsants has been cited in support of the epileptogenic mechanism, but well controlled studies have not been performed. Heredity plays some part in the 14 and 6 per second spike pattern of children, for abnormalities in the EEG are seen in a greater percentage of these children's parents than in the normal population.

Personality disorders in adults. Adults in this large category, particularly those with aggressive characteristics, often reveal prominent temporocentral θ activity and/or 3 to 5 per second posterior temporo-occipital slow activity over one or both hemispheres. Increase in slow wave activity occurs during hyperventilation. This group has a much higher percentage of 14 and 6 per second positive spikes than is seen in the normal population. When spikes or other abnormal activities are seen from the anterior temporal lobe in adults with personality disorders, it is very likely that many of these patients have psychomotor epilepsy or behavioral disturbances due to mechanisms operative in psychomotor epilepsy. The EEG of criminals is often normal, but, when abnormal, the patterns are similar to those described above.

Psychoneuroses. Anxiety causes a decrease in α rhythm and increase in low voltage fast activity (Figure 3B), especially over the central areas. Maturational defects in the EEG, such as increased percentage of bitemporal θ activity, may also be present.

Those individuals who manifest obsessional phenomena and

patients with psychosomatic complaints reveal EEG characteristics no different from those of the normal population.

Patients with hysteria often have immature records. Reports of the effects upon the EEG when affected parts of hysterical individuals (or of patients under hypnosis) are being stimulated are not consistent. Most often the cerebral electrical activity of these patients will appear to react exactly the same as that of normal individuals. There are isolated reports, however, that indicate a true physiological block of sensory pathways. Thus, evoked potentials recorded in the EEG (using a photoelectronic averaging technique) after painful stimulation of the normal extremity may not be present when the hysterically analgesic extremity is stimulated, until the patient is placed under light general anesthesia. (Similarly, when blindness is suggested to the patient under hypnosis, the α rhythm of the EEG may not be blocked on visual stimulation.)

Nonorganic psychoses

Affective psychoses. Individuals with manic depressive psychosis reveal a somewhat greater percentage of abnormal EEGs than in the general population, especially β abnormalities. The α frequency is often increased in those who are predominantly manic and decreased in those who are predominantly depressed. Reactive depression appears to be more often associated with temporal lobe abnormalities than would be expected on the basis of chance.

Schizophrenia. It is not surprising that the reports of EEG characteristics in this disorder are as variable as is the definition of this syndrome. Certainly a consistent pattern is not present. The majority of these patients have normal EEGs, but the percentage of abnormal EEGs in patients with schizophrenia is two or three times that of the normal population. Abnormality in the EEG is more likely to be present when there is a family history of psychosis or when the onset of the disease is early, the duration long, and the severity great. EEG abnormalities are most often seen in catatonies, least often in paranoids. In schizophrenics, α rhythm may not respond to visual or emotional stimuli. Beta activity and paroxysmal abnormalities are more frequent than in the normal population. Low voltage slow activity is often seen in catatonic stupor. Paroxysmal patterns are seen more often in catatonies than in other forms of schizophrenia. These paroxysmal activities are maximal over the posterior cerebrum, faster than 4 per second, and are of lower voltage than the patterns characteristic of epilepsy.

Gibbs reported that certain complexes, called B-type mittens (see above), correlate with psychosis. These activities may be very difficult or impossible to distinguish from other mitten forms or from other sharp and slow wave complexes. Gibbs found that 42 per cent of those patients who had psychosis with epilepsy showed a B mitten pattern in their EEG and 35 per cent of those individuals who had psychosis without epilepsy revealed this pattern. Of the latter, the majority were schizophrenic. According to Gibbs, when the B mitten is found in an EEG there is a 73 per cent presumption that the individual is psychotic.

Organic psychoses. The EEG abnormality corresponds to the nature of the underlying lesion in the organic psychoses.

Patients with senile dementia reveal a slowing of the α frequency and a decreased percentage of α rhythm. (These are normal manifestations of the aging process.) In addition, diffuse θ or, less often, diffuse δ activity may be present. The severity of dementia does not necessarily correlate with the severity of the EEG abnormality, for in some cases rather severe dementia may be present while the EEG remains within the range of normal. In Alzheimer's disease and other forms of dementia, on the other hand, the EEGs are almost always abnormal and reveal diffuse slow activity, often with focal components.

The EEG is helpful in establishing the diagnosis of psychosis secondary to drug or toxic encephalopathy (see Section 10.3) and psychosis with epilepsy (see Section 10.4).

Additional techniques of EEG study

The sedation threshold. This is the amount of sodium Amytal required to produce a maximum degree of fast activity in the EEG. Unfortunately, there is not a sharp end point, and the degree of variation is too great for most diagnostic purposes. The sedation threshold is highest in patients with anxiety states, but it is also high in obsessive-compulsive individuals, those with reactive depression, and chronic schizophrenics. The sedation threshold is lower than normal in organic psychoses. It has its greatest practical value in differentiating endogenous depression, which has an unusually low sedation threshold in spite of agitation, from reactive depression with its high threshold.

Photic Metrazol stimulation. This form of stimulation, at some stage, will evoke a paroxysmal response in every individual, but the threshold is often unusually low in schizophrenics as well as epileptics.

Depth electrode studies. Such studies have shed some light on the physiological substrate of emotion. Spike discharges and slow wave activity in the septal region, the hippocampus, and the amygdala have been recorded in patients with schizophrenia and other psychoses. Bilateral bursts of high voltage 2 to 5 per second slow activity have been noted from deep ventromedial frontal areas in psychotic patients, but most of these patients had been tested after electric shock therapy. High voltage fast spindles have been recorded from the hippocampus of patients during periods of strong emotion.

Psychotropic drug evaluation. Psychotropic agents alter the frequency, synchronization, and response to stimulation of the EEG, although usually only to slight degrees. Electronic frequency analysis reveals different patterns for different drugs. This technique has been advocated for comparative drug studies or for screening new compounds, but it is not yet practical.

Electroconvulsive therapy. The severity of the EEG abnormality after electroconvulsive therapy (ECT) is a highly individual factor. (After the first electric shock there is usually quick return of the EEG to normal, but slow activity usually persists after several treatments. The EEG returns to normal after days, weeks, or months, or it may never return to normal. Even with the latter circumstance, other clinical evidence of organic cerebral disease usually is not present. The number and frequency of shock treatments are important factors in the severity of EEG abnormality, but there are too many variables to correlate these features with the rapidity of disappearance of slow activity. A major factor is the underlying cerebrovascular status of the patient. The slow activity after electroconvulsive therapy is presumed to be due to the same mechanism as that following seizures of other origin, i.e., neuronal loss or dysfunction due to failure of the vascular supply to meet the increased metabolic demands of the electrically hyperactive discharging brain.)

There is some evidence that organic changes manifested in part by an abnormal EEG must occur for success of ECT; when slow activity in the EEG fails to persist or is relatively slight, the outcome of the therapy is often unfavorable. Delta slow wave activity may be revealed at an early stage in the course of therapy by intravenous barbiturate-induced sleep records 3 to 4 hours after ECT. This method has been calibrated and used in determining the effectiveness of such treatment.

Examination of the Spinal Fluid

Significant complications of a lumbar puncture are rare. Papilledema and other evidence of increased intracranial pressure, especially with a mass lesion in the posterior fossa, are the major contraindications for this procedure. Sudden change in intracranial pressure may occur at the time of a spinal tap in the

presence of increased intracranial pressure. This change may cause herniation of the hippocampal gyrus through the incisura of the tentorium of the cerebellum with resultant compression of the upper brain stem, or it may cause shift and associated compression of the medulla and tonsils of the cerebellum into the foramen magnum. These complications are grave and their possible occurrence must be weighed against the potential benefits of a lumbar puncture in the presence of increased intracranial pressure.

The spinal tap is performed by inserting a needle into the spinal canal below the spinal cord which ends at vertebral level L1 or L2. Usually the tap is made at the level of the iliac crest corresponding to the inter-space of L3-4 or L4-5.

The initial spinal fluid pressure must always be measured with the patient horizontal and relaxed. Pressure over 180 to 200 mm. is elevated. Causes of increased intracranial pressure have been discussed above. Manometries as tested by compression of the jugular veins should always be performed when a spinal lesion is suspected but must not be performed when there is suspicion of an intracranial lesion.

The color and clarity of cerebrospinal fluid is normally indistinguishable from water, with which it should be compared. Bloody spinal fluid may be due to a traumatic lumbar puncture. If this is so, the percentage of blood in the spinal fluid will decrease in successive collecting test tubes, the red blood cells will not be crenated, and the supernatant spinal fluid after centrifugation will be clear. Blood in the spinal fluid is usually due to a subarachnoid hemorrhage or, less commonly, to an intracerebral hemorrhage that has ruptured into the ventricles or out to the subarachnoid space. Cerebral trauma, especially a subdural hematoma, may be associated with blood in the spinal fluid. Xanthochromic spinal fluid is seen as the residual pigment of blood after a subarachnoid hemorrhage, or with a subdural hematoma, but also may be evident when the spinal fluid protein is unusually high. Severe jaundice may cause a yellow discoloration of the spinal fluid. Turbid cerebrospinal fluid may be due to meningitis, a slight amount of blood in the spinal fluid, or a highly elevated protein content.

Spinal fluid should routinely be examined for both red and white cells, serology, protein, and sugar. An elevated white blood cell count, i.e., over 6 lymphocytes per cubic millimeter, is indicative of inflammation or irritation of the meninges. If the cell count is elevated, the spinal fluid should be smeared and stained, as well as cultured, for infecting organisms. A low grade infection such as central nervous system syphilis or aseptic meningeal irritation, e.g., a brain tumor near the meninges, may be manifested by 5 to 50 white blood cells, especially lymphocytes, per cubic millimeter. Chronic meningitis causes an elevation of white blood cells, predominantly lymphocytes, in the range of 50 to 500 per cubic millimeter. An acute purulent meningitis is usually associated with a pleocytosis of 1,000 to 15,000 white blood cells per cubic millimeter, predominantly (90 per cent) polymorphonuclear leukocytes. Tumor or yeast cells may resemble white blood cells in the routine white cell count of the spinal fluid. If a search for exfoliative tumor cells is to be made, a large amount of spinal fluid must be centrifuged.

Protein elevation of the spinal fluid, i.e., over 50 mg. per 100 ml., may be seen in any organic neurological disease. If the spinal tap has been traumatic, the amount of protein added to the spinal fluid by the blood can be roughly calculated by subtracting 1 mg. per cent of protein for every 750 red blood cells per cubic millimeter. As a rule of thumb, an elevation of protein over 100 mg. per cent is much more indicative of cerebral neoplasm than of a cerebrovascular lesion. Fluid drawn below a spinal block usually contains protein elevated beyond 100 mg.

per cent, and the cerebrospinal fluid of meningitis may reveal similar findings.

The sugar content of spinal fluid is normally 50 to 65 mg. per cent, i.e., one half to two thirds, of the blood sugar drawn at the time of the spinal tap. Spinal fluid sugar below 40 mg. per cent is definitely abnormal and is found in meningitis of bacterial or fungal origin, but it may sometimes occur in non-infectious diseases, e.g., meningeal carcinomatosis and sarcoidosis.

Positive spinal fluid serology is indicative of active central nervous system syphilis if it is accompanied by an elevated white cell count and elevated protein in the cerebrospinal fluid. The colloidal gold test is performed only if central nervous system lues is suspected. As an aid in the diagnosis of multiple sclerosis, the latter test has been supplanted by the quantitative determination of the γ -globulin content of the spinal fluid. In multiple sclerosis the cerebrospinal fluid γ -globulin is usually elevated, i.e., beyond 12 to 15 per cent of the total protein. Evaluation of spinal fluid chlorides is of little value, although sometimes chlorides are low (below 120 milliequivalents per liter) in tuberculous meningitis.

Roentgenograms of the Skull

Routine roentgenograms of the skull should include a posterior-anterior view, lateral view, and Towne's view (anterior-posterior projection with the chin flexed on the chest). Other special views, stereoscopy, or laminagraphy may be necessary to visualize specific structures such as the internal acoustic meati, the optic foramina, or the base of the skull.

Normal landmarks. In the skull films one studies the appearance of those normal landmarks as the sella turcica, the petrous pyramids, and the calcified pineal gland. The shape and integrity of the skull are observed for evidence of developmental anomalies or fracture. Both abnormal and normal calcifications must be recognized as well as evidence of erosion or exostoses.

Calcifications. Normal or benign calcifications include those within the dura, especially the falx cerebri, the pineal body, the choroid plexus, the petroclinoid ligament, and the habenula. Abnormal calcification may be found in certain tumors. Calcification can be roentgenographically visualized in 50 to 60 per cent of oligodendrogliomas, 25 per cent of ependymomas, 15 to 20 per cent of meningiomas, and 70 per cent of craniopharyngiomas. Teratomas and, rarely, astrocytomas may also present calcifications. The most common vascular lesion is atherosclerosis, and calcification is often seen, especially in the siphon of the internal carotid artery. Calcifications may be visualized within aneurysms, chronic subdural or intracerebral hematomas, and underlying the angioma of Sturge-Weber's disease. Those infectious processes which may reveal multiple calcifications include toxoplasmosis, cytomegalic inclusion body encephalitis, and cysticercosis. Calcification is often noted within a tuberculoma or other chronic abscess. An uncommon disease in which calcifications may be seen is tuberous sclerosis. Sometimes the basal ganglia calcify either secondary to parathyroid disease or from an unknown cause.

Erosion. Increased intracranial pressure may be manifested in roentgenograms of the skull by erosion of the clinoid processes and dorsum sellae, increased convolutional markings, and, in children, separation of the sutures. Large channels due to increased vascular markings may lead to an area occupied by a meningioma. Enlarged foramina of cranial nerves are often indicative of associated tumor. The most common example is the enlarged internal acoustic meatus due to an acoustic neuroma. Metastases to the skull, most often from carcinoma of the breast, commonly cause erosion.

Exostoses. A localized area of exostosis is often seen overlying a meningioma. Hyperostosis frontalis interna is an insigni-

ficant finding, in spite of syndromes associated with it in the past.

Radioisotopic Encephalography (Brain Scan)

Abnormal tissue within the head, in contrast to normal brain tissue, tends to retain radioisotopic compounds. This effect is presumably due to the breakdown of the blood-brain barrier associated with organic brain disease. By means of scanning equipment, markedly improved in recent years, the γ energies emitted by the radioisotope retained in a lesion can be mapped on X-ray film (photoscan) as well as automatically mapped by dots on paper.

The scanning equipment, a directional γ ray detector, passes along a 0.5-cm. spaced line at a rate of 20 cm. per minute in a pattern of parallel sweeps until the entire plane of the head (anterior, posterior, or lateral) is covered. The radioisotope (e.g., 1 millicurie of chlormerodrin, labeled with mercury-197 (half-life 3 days)) is intravenously injected 2 to 4 hours prior to the scanning. The interval between injection and scanning allows the kidneys to clear the radioisotope from the blood and thus diminish the background radioactivity in the blood stream of the head. Because this background radioactivity is particularly prevalent over dense muscles and draining vascular structures, it often obscures lesions of the posterior fossa, sella turcica or sphenoid ridge. In cases of suspected posterior fossa lesion, a 24-hr. interval between injection of radioisotope and scanning is sometimes advisable to allow more complete clearing of the radioisotope from the blood. On the other hand, a short, 15- to 45-min., interval is used when searching for a suspected vascular malformation. The brain scan is most consistently positive in mass lesions (neoplasms, abscesses, hematomas) but is also positive in arteriovenous malformations and in most cases of cerebral infarction. The brain scan is as accurate in localizing a lesion as any test now available, for the radiographic abnormality is seen within the lesion rather than inferred by displacement of vessels or ventricles, as is often the case in angiography and pneumography. Brain scans, on the other hand, are frequently negative when the lesion is small, i.e., less than 3 cm. in diameter, or avascular (such as a cyst), or obscured by muscle mass or confluence of blood vessels. A major drawback of brain scanning is that one cannot definitely differentiate mass lesions from other abnormal tissue, such as an infarct. Another deficiency of the test is the need for the patient to remain quiet at least $\frac{1}{2}$ hr., the time required for scanning the head in one plane. The test is harmless in adults but, since the radioisotope is excreted by the kidneys, unknown long term renal effects might occur in children. Further improvement in scanning equipment and newer radioactive compounds may make this test even more valuable in the future than it is at the present.

Echoencephalography

The recorded echo of a very high frequency sound (ultrasound) is used to measure the location of intracerebral structures.

The "A" scan records the location of midline structures (falx cerebri, third ventricle, septum pellicidum) of the brain. Shift of midline structures has the same significance as shift of the pineal gland and most often indicates a mass lesion on the side opposite the direction of shift. Since the procedure is harmless and painless, it can be used as a screening procedure in cases of suspected intracranial mass lesion. It is particularly helpful in those patients who do not have localizing neurological signs, as may be the case in comatose individuals. The "B" scan roughly outlines the ventricles or an intracerebral mass



that has a density different from that of the cerebral parenchyma. The equipment and technique required for the "B" scan have not yet been perfected, but it is useful in establishing the diagnosis of hydrocephalus and may be of aid in localizing brain tumors.

Rheoencephalography

Rheoencephalography is a method of graphically recording alteration in electrical conductivity of brain tissue as affected by changes in the cerebral circulation.

Different tissues offer varying resistances to the passage of alternating current, and conductivity improves when the amount of blood in a given tissue volume increases, as during each arterial pulse wave. This procedure simultaneously records pulse waves in each cerebral hemisphere and, in the future, might prove to be a useful method of monitoring certain intracerebral vascular dynamics. The technique and equipment are not sufficiently refined to yield practical results at this time.

Pneumoencephalography and Ventriculography

Roentgenographic visualization of areas normally containing cerebrospinal fluid can be attained when air is substituted for cerebrospinal fluid.

Pneumoencephalography is accomplished by the injection of air, usually 30 to 75 cc., via the route of a lumbar puncture, performed with the patient seated. Air is allowed to rise into the head and fill the ventricles, the subarachnoid spaces of the basal cisterns, and the sulci over the convexity of the brain. Pneumoencephalography is, of course, contraindicated in patients with increased intracranial pressure. In the latter circumstance, ventriculography is performed by the direct instillation of air into a lateral ventricle through a burr hole in the posterior parietal area of the skull. Serious complications of pneumoencephalography are rare (less than 1 per cent). They are due to shift and herniation of the brain (see above) or to precipitation of cerebrovascular lesions.

Pneumoencephalography is well suited to the evaluation of congenital hydrocephalus, sometimes manifesting hugely dilated ventricles with only a small rim of cerebral cortex. Atrophic brain diseases are also best studied by means of pneumoencephalography. Focal atrophy, as in post-traumatic epilepsy, is seen as large air-filled sulci. Diffuse cerebral degeneration, e.g., Alzheimer's disease, is manifested by dilated ventricles and scattered areas of widened sulci. In tuberous sclerosis small multiple nodules along the walls of moderately dilated ventricles are seen. A mass, i.e., neoplasm, hematoma, abscess, or cyst, deforms or displaces the walls of the adjacent ventricles. The sulci of the cerebral hemisphere containing a mass are usually less well filled with air than those of the normal side. If the mass is near midline structures, obstruction to the outflow of cerebrospinal fluid results in ventricular dilation.

Cerebral Angiography

After the introduction of radio-opaque solutions (meglumine iothalamate (Conray) or diatrizoate sodium (Hypaque)) into arteries supplying the brain, arteries and veins can be seen in serial roentgenograms.

The opaque solutions are injected percutaneously into the common carotid artery in order to visualize vessels of the ipsilateral cerebral hemisphere, as supplied by the internal carotid, anterior cerebral, and middle cerebral arteries; and into the vertebral artery to visualize the blood supply of the brain stem, cerebellum, and posterior cerebrum via the vertebral, basilar, and posterior cerebral arteries. Right brachial arteriography allows visualization of both the right carotid

arterial tree and the right vertebrobasilar circulation. Left brachial arteriography opacifies the left vertebral and basilar arteries. Aortic arch arteriography via catheterization of a femoral or axillary artery permits visualization of all arteries leading to the brain, but when a large number of vessels are simultaneously opacified there is less detail in the roentgenograms. Complications of arteriography occur in 2 to 4 per cent of patients and are manifested primarily by ischemia or infarction of the brain with convulsions, focal signs, or (very rarely) death. These events are caused by inadvertent embolic phenomena (air or calcific plaques), manual or hemorrhagic occlusion of the punctured artery, prolonged carotid sinus effect, or idiosyncratic or allergic reaction of the nervous tissue to the injected contrast material; hemorrhage from the punctured artery may also occur. As a rule angiography is performed when a focal lesion is suspected (except when the focal lesion is thought to be atrophic), or when an aneurysm or vascular malformation is sought. Inability to determine clinically the presence or site of a focal lesion would lead to pneumoencephalography either before or instead of angiography. Neoplasms may be angiographically demonstrated by the displacement of adjacent blood vessels or the presence of a "tumor stain." The latter is seen as retained contrast material in a zone of new or abnormal vessels within the tumor. Glioblastomas and meningiomas usually have characteristic tumor stains. While a hematoma displaces vessels in a manner exactly like that of a neoplasm, the mass of hematoma appears avascular. A subdural or epidural hematoma displaces the cortical vessels from the inner table of the skull and is best seen in the posteroanterior views. Occlusion or stenosis of major arteries can be angiographically demonstrated. Prior to carotid endarterectomy, both right and left carotid and vertebral arteries must be visualized. This can best be accomplished by a single injection of contrast material into the aortic arch.

Myelography

The configuration of the spinal subarachnoid space can be visualized in roentgenograms after 6 to 12 cc. of radio-opaque liquid (iophandylate (Pantopaque)) are injected via a lumbar puncture.

The radio-opaque solution, heavier than spinal fluid, is maneuvered through the spinal canal by tilting the patient on the X-ray table under fluoroscopic control. Mass lesions (neoplasms and herniated intervertebral discs) are precisely located by their indentation of the radio-opaque column. Less common causes of complete or partial block of the subarachnoid space as visualized myelographically include arachnoiditis, spinal abscesses, and diseased vertebrae. Vascular malformations of the cord may also be recognized by a typical configuration within the Pantopaque column. The spinal needle used for injection of the contrast material is maintained in place throughout the procedure, so that at the completion of the test the Pantopaque may be removed. Complications of myelography are extremely rare and consist of arachnoiditis.

Electrodiagnosis

There are several procedures most helpful in confirming the diagnosis of lower motor neuron disease or myopathy.

Testing the responses of muscle to stimulation at motor points by direct galvanic current or by faradic tetanizing current was the chief electrodiagnostic method until the adaptation of the cathode ray oscilloscope. A sluggish response to galvanic stimulation or a decreased or absent response to faradic stimulation is indicative of denervation.

Nerve conduction velocity. This is determined with the use of two electrodes placed over the skin of the nerve and muscle to be tested. The time, as a measure of distance on the cathode

ray oscilloscope, required for the impulse to travel between the stimulating proximal electrode and the distal recording electrode is tabulated. The speed of conduction between the known distance of the two electrodes is then calculated. Normal conduction velocities range from 40 to 50 m. per second for the ulnar, median, and peroneal nerves. The conduction time through a simple, monosynaptic reflex arc (similar to that of the knee jerk) can be measured and recorded as the H reflex. Motor diseases of the central nervous system influence the reactivity of the lower motor neurone and may be evaluated by changes in the H reflex.

The electromyogram (EMG). The EMG is a record of electrical activity transmitted from muscle by a needle electrode to a cathode ray oscilloscope and a loudspeaker for purposes of visual and auditory evaluations. A normal muscle is electrically silent at rest. During contraction, normal action potentials are manifested by fast, moderate voltage, well modulated bursts of activity. Ten to 20 days after nerve injury, evidence of denervation can be found. A partially denervated muscle produces complex polyphasic arrhythmic, high voltage potentials during contraction. With total denervation, spikes of low voltage fast random potentials (fibrillations) are noted at rest; these sound like the drops of rain on a tin roof. Resting denervated muscle may also give rise to spontaneous brief motor unit contractions (fasciculations), seen as high voltage complex potentials. Tests of a patient with muscular atrophy due to disease of the anterior horn cells in the spinal cord reveal fibrillation potentials with normal nerve conduction velocity. These studies in an individual with lower motor neuron disease of more peripheral origin show delayed conduction velocity as well as fibrillation potentials. In muscular dystrophy, electrical activity during muscle contraction is faster and of lower voltage than normal action potentials. The EMG of a patient with myositis may reveal activities indistinguishable from fibrillations, but, in addition, dystrophic electrical patterns are seen. The contraction of myotonic muscle or stimulation of this muscle by needle insertion is manifested by prolonged electrical activity that slowly fades away (decreases in amplitude); this activity sounds like a dive bomber. In myasthenic patients, abnormal fatigability of muscles activated by repetitive electrical stimuli is seen by the rapidly progressive decrease in amplitude of electrical activity. Hysterical weakness is suspected when irregular contractions of varying strengths are poorly sustained.

Cystometric Examination

In the cystometric examination, intravesicular pressures, transmitted to a manometer attached to a catheter, are recorded after specific amounts of saline have been introduced into the urinary bladder. The patient's sensations of fullness and desire to void are also noted.

Normally, a powerful voiding contraction occurs at a volume of 400 to 500 cc. A spastic (reflex) bladder, as may occur with a lesion of the pyramidal tracts in the spinal cord, produces a relatively high pressure with a small volume. An atonic bladder, associated with lower motor neuron disease or a lesion of sensory pathways, reveals relatively low pressure at a large capacity. A complete, usually traumatic, lesion of the conus medullaris or adjacent structures often results in autonomous bladder activity with muscle tone partially preserved. The demented, incontinent patient usually has normal cystometric responses, whereas urinary retention of psychological origin often presents evidence of an atonic bladder.

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10.2 ANATOMY AND PHYSIOLOGY OF THE CENTRAL NERVOUS SYSTEM

SEYMOUR SOLOMON, M.D.

Localization of Function and Signs of Focal Disease

Many areas of the brain are clinically "silent"; i.e., recognizable symptoms or signs need not result from a lesion of these parts. The following sites are associated with specific functions and, when diseased, specific signs occur. The physiology of these areas, as related to psychological phenomena, is only briefly noted, for this topic has been discussed in detail elsewhere in this text.

The Cerebral Cortex

A discussion of the functions of the cerebral cortex has been presented in another section (Section 2.9). A chart of cerebral functions and a drawing of the cytoarchitectural map of the cortex after Brodmann appear following Section 2.9. It must be emphasized that the specific areas described are neither anatomically nor physiologically sharply demarcated.

Frontal lobe. The frontal lobe is anterior to the central sulcus, or Rolandic fissure.

Motor area. This area is in the most posterior portion of the frontal lobe, and occupies the precentral convolution. The motor area contains the greatest number of Betz pyramidal cells and gives rise to corticobulbar and corticospinal pathways. Impulses from this area initiate volitional movement on the opposite side of the body. The lower extremity is represented over the medial portion of the contralateral cortex, and the remainder of the body is represented over the adjoining convexity. Those parts requiring greater complexity of function, such as the fingers, are represented over a disproportionately wide area. Loss of function in this area results in contralateral weakness or paralysis. In monkeys, apes and perhaps humans, the paresis or palsy is first flaccid and later spastic.

Premotor area. Anterior to the motor area, the premotor area controls motor function of the opposite parts of the body paralleling the functions of the motor area. The contralateral weakness or paralysis associated with a lesion in this area is spastic in primates.

Frontal motor eye field. This area is anterior to the premotor area and is the center of volitional control of conjugate eye movement. A destructive lesion in this field is associated with initial but transient deviation of the eyes to the side of the lesion and palsy of conjugate gaze to the opposite side, whereas an irritative lesion causes conjugate gaze toward the opposite side.

Motor speech area (Broca's area). This area is located over the inferior aspects of the motor and premotor areas in the dominant hemisphere. It is the center for expressive speech. A lesion in this area is often associated with expressive aphasia, but aphasic phenomena are even less well localized in the cortex than other signs (see Section 10.1).

Less well defined areas within the frontal lobe. A transitional area between the motor and premotor zones is believed to be inhibitory in its action, and lesions affecting this area are primarily responsible for contralateral spasticity.

In or about the middle frontal convolution is the origin of fibers giving rise to the corticopontocerebellar tract. This area permits smooth voluntary and automatic skeletal muscle movement. Loss of function is manifested by contralateral ataxia and other "cerebellar" signs (see Section 10.1).

There are intimate but poorly defined connections between the frontal lobe and basal ganglia. With cerebellar centers, these connections elaborate voluntary and automatic movement. Cortical lesions do not usually cause basal ganglion symptoms because the cortical connections are too diffuse.

Frontal association areas or the prefrontal lobe. These zones are anterior to the motor and premotor areas. In this most anterior portion of the frontal lobe, neurons are interconnected with sensory areas of the cortex. In addition, connections, predominantly afferent, are made with the thalamus, and predominantly efferent impulses are sent to the hypothalamus. The prefrontal lobe governs higher intellectual functions (judgment, reasoning, abstract thinking) and restrains emotional impulses. Associations take place which allow appropriate complex responses to the environment; here is the highest level of motor integration. It is in this area that psychomotor activity is initiated. Lesions in this area may result in the mental and emotional symptoms described below.

Parietal lobe. The parietal lobe is posterior to the Rolandic fissure.

Primary sensory area. This area includes the postcentral gyrus and immediately adjacent areas. It receives and identifies somatic sensory stimuli, particularly touch and position sensations, relayed from the nucleus ventralis posterolateralis and posteromedialis of the lateral nuclei of the thalamus. The pattern of cortical representation very roughly corresponds to that of the motor cortex. A lesion in this area is associated with contralateral somatic sensory impairment but not complete analgesia or anesthesia.

Sensory association area. This area is located posterior to the primary sensory area. It synthesizes and elaborates somatic sensory impulses and permits stereognosis.

Other parietal areas. The area superior and posterior to the primary sensory and association areas has to do with discrimination of fine grades of somatic sensation, rather than simple appreciation. This area is also associated with stereognosis. In addition other complex perceptual functions are carried out.

Lesions of this area, as well as the sensory association area, frequently result in only slight contralateral sensory impairment or astereognosis. Inattention to stimuli (extinction of the contralateral stimulus during bilateral simultaneous stimulation) is often noted with these lesions. Sometimes trophic changes occur in the contralateral extremities, particularly the upper extremity.

The area inferior and posterior to the primary sensory and association areas contains the angular and supramarginal gyri. In this zone there occurs integration of visual and auditory stimuli with somatic sensations. A lesion in this area of the dominant hemisphere may be associated with aphasic phenomena, especially receptive dysphasia, dysgraphia, or dyslexia.

Defect in body scheme may occur. Gerstmann's syndrome (agraphia, acalculia, finger agnosia, right-left disorientation) may also be seen with lesions here, but this syndrome, as with aphasic symptoms, cannot be localized with consistency. See below for agnostic, apraxic, and aphasic phenomena as related to other mental symptoms. (A deep parietal lobe lesion may affect the optic radiations and cause contralateral homonymous inferior quadrantic or hemianopic visual field defects.)

Occipital lobe. The occipital lobe is the posterior tip of the cerebrum.

Primary visual receptive area. This area (Brodman's area 17) is located along the lips of the calcarine fissure on the medial aspect of the occipital lobe and extends to adjacent areas around the lateral surface. This zone receives impulses relayed by the lateral geniculate body from the ipsilateral half of each retina. There is virtually point-by-point representation of retinal segments in the calcarine cortex. A lesion in this area causes contralateral homonymous hemianopsia with macular sparing.

Parareceptive area. The parareceptive area (Brodman's area 18) is immediately adjacent to the above. In this area visual impulses are interpreted so that they may be recognized and identified. Perhaps memory engrams are stored here.

Preoccipital area. The preoccipital area (Brodman's area 19) is immediately adjacent to the parareceptive area. Area 19 connects the visual receptive and parareceptive areas with other parts of the cortex. Its function is complex and has to do with perception, recall, visual association, and orientation.

Areas 18 and 19 are also centers for optically induced reflexes, such as fixation, via corticofugal fibers to the midbrain, medial longitudinal fasciculus, and nuclei of the ocular nerves. Lesions of the parareceptive and preoccipital areas are associated with disturbed spatial orientation, impaired visual discrimination, visual agnosia, illusions, or hallucinations. Cortical blindness occurs with lesions of both occipital lobes (see below).

Temporal lobe. The temporal lobe is below and behind the lateral, Sylvian, fissure.

Auditory receptive area. This area is in the transverse temporal gyrus (Heschl's convolution) located on the posterior aspect of the superior temporal convolution. The auditory association area receives auditory impulses relayed by the medial geniculate body.

Auditory association area. This area is adjacent to the auditory receptive area but is poorly defined. It is in this zone that memory patterns for symbolic sounds are stored; here auditory impulses are differentiated and interpreted as words. This area may also receive vestibular impulses. A lesion of this area in the dominant hemisphere is associated with receptive aphasia (Wernicke's aphasia) and often dyslexia and dysgraphia as well.

Gustatory and olfactory areas. These areas are probably located deep in the Sylvian fissure and in the medial portions of the temporal lobe. They should be considered as part of the limbic system.

Unilateral lesions of the temporal lobe never cause auditory, gustatory, or olfactory impairment because these sensations have an extensive bilateral cerebral representation. (Subcortical lesions of the temporal lobe may affect optic radiations and cause contralateral homonymous superior quadrantanopsia.)

The functions of the temporal lobe are varied and complex. Although the physiology of memory is poorly understood, it is more closely associated with the temporal lobe than with any other area of the brain, and stimulation of the temporal lobe may evoke past memories. This lobe is probably associated with sexual function and other visceral phenomena (see below). The temporal lobe, as a major part of the limbic system, is intimately associated with psychological phenomena. Irritative lesions of the temporal lobes may cause psychomotor epilepsy or other mental and emotional symptoms (see below).

Subcortical Nuclear Structures (Figure 1)

Thalamus. The thalamus is the principal relay center for sensory pathways. These nuclei receive many different afferent

impulses and relay them to the cerebral cortex as well as to lower centers for further integration. The anterior nuclei of the thalamus are an important part of the limbic system and are linked closely with the cingulate gyrus. The medial nuclei are associated primarily with the prefrontal area of the brain. The lateral group of nuclei are further subdivided into an anterior and posterior portion. (The pulvinar may be considered the most distal aspect of the latter.) The anterior nuclei of this lateral group are concerned with connections between the motor cortex, basal ganglia, and cerebellum. The posterior nuclei of the lateral group (the nuclei ventralis posterolateralis and ventralis posteromedialis) receive sensory impulses from the body and face to be relayed to the parietal cortex. Visual and auditory impulses received by the pulvinar are relayed to visual and auditory association areas of the cortex. A lesion of the thalamus is associated with peculiar contralateral sensory phenomena, the thalamic syndrome (see Section 10.4).

Hypothalamus. The hypothalamus is the center controlling visceral functions. It governs the peripheral autonomic nervous system and, via its influence on the pituitary, regulates the endocrine glands. Thus it is responsible for maintaining normal homeostasis. Vital functions are controlled in this area: temperature stability; cardiovascular and respiratory activity; sleep cycle; metabolism of fat, carbohydrates, and protein; water and electrolyte balance; sphincter and sexual activity. The posterior and lateral nuclei of the hypothalamus are primarily sympathoadrenal in their function. The anterior and medial nuclei are mainly associated with parasympathetic activity.

The hypothalamus regulates neural and humoral mechanisms of emotional activity (see below) and may be regarded as an effector organ of emotional expression. The cerebral cortical representation of autonomic functions is poorly defined, but areas in the prefrontal lobe are known to be connected to the hypothalamus. These cortical autonomic centers probably act as inhibitory influences upon the more rudimentary visceral responses arising in the hypothalamus. As might be expected, a large variety of clinical syndromes are associated with lesions of the hypothalamus. Disease of the supraoptic nucleus causes diabetes insipidus. A lesion of the anterior nuclei, including the tuber cinereum, may be associated with prepubertal adiposity and genital dystrophy (Froelich's syndrome), or postpubertal amenorrhea and impotence. On the other hand, less well defined hypothalamic lesions may result in precocious puberty, and widespread disease of these nuclei is associated with emaciation. Lesions in the ventromedial nuclei of humans cause bulimia, and in lower animals the resultant voracious appetite is associated with savagery. Hyperthermia may follow a lesion of the anterior or ventromedial hypothalamic nuclei. Less commonly, hypothermia is associated with disease of the posterior nuclei. Disorders of sleep, especially hypersomnia, are seen with lesions of the posterior nuclei and adjacent structures of the upper brain stem. Convulsive disorders manifesting visceral phenomena may be due to dysfunction of the hypothalamus, and more common generalized seizures may arise in the hypothalamic portion of the centrencephalic system.

Basal ganglia. The basal ganglia consists primarily of the caudate, putamen, and globus pallidus; functionally related groups of neurones are the subthalamic nucleus, red nucleus, and substantia nigra. These structures are an essential part of efferent pathways and modify impulses from the motor cortex and interrelated cerebellum-thalamic relays. This complicated system elaborates and integrates complex voluntary motor activity to allow smooth actions. In addition, the basal ganglia take over motor skills that have become automatic. Lesions of the basal ganglia cause involuntary movements; alterations in muscle tone; and loss of associated, automatic, and expressive movements. See Section 10.1 for dyskinesias associated with disease of the basal ganglia.

Subcortical Fiber Bundles

Corpus callosum. The corpus callosum is the major commissural system of the brain connecting and facilitating inte-

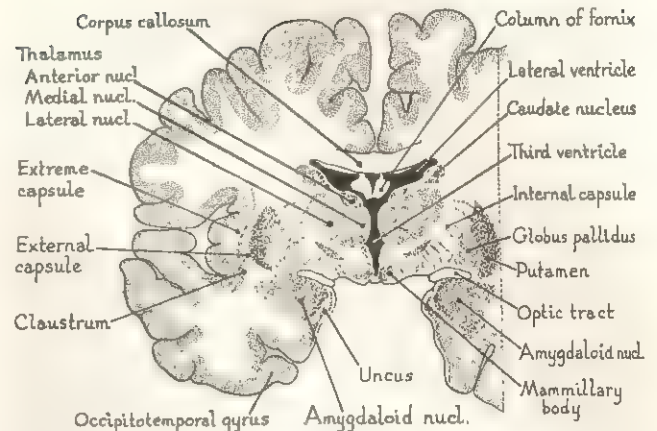


Figure 1. Frontal section of brain, passing through mammillary bodies. (From Truex, R. C., and Carpenter, M. B. *Strong and Elwyn's Human Neuroanatomy*, ed. 5, p. 435. Williams & Wilkins, Baltimore, 1964.)

gration of functions of the two cerebral hemispheres. On the other hand, surgical section or congenital absence of the corpus callosum need not be associated with symptoms or signs.

Internal capsule. This is the major afferent and efferent pathway connecting the spinal cord and brain stem to the cerebral hemispheres. It also contains association fibers of the cerebellum, thalamus, and basal ganglia. Thus, a small lesion in this tightly packed area causes profound contralateral defects of motor, somatic sensory, and visual modalities.

Cerebellum

The afferent aspects of the cerebellum are primarily concerned with proprioceptive and vestibular impulses. Its efferent functions play an essential role in activity under control of the motor cortex. The cerebellum integrates and coordinates motor impulses, both voluntary and involuntary. Equilibrium is attained by cerebellar functions that maintain orientation of the individual in space and regulate muscle tone and posture. A lesion of the cerebellum results in ipsilateral incoordination of the trunk and extremities. See Section 10.1 for other signs associated with cerebellar disease.

Brain Stem

The brain stem consists of the medulla, pons, and midbrain. Efferent and afferent impulses pass through and are relayed in the brain stem. The cranial nerve nuclei are located in this vital area. Unilateral lesions of the brain stem are characterized by a combination of ipsilateral cranial nerve signs with contralateral long tract motor or sensory signs (see Section 10.3).

Reticular formation. This is a poorly demarcated group of neurones within the tegmentum of the brain stem. This complex network receives impulses from all parts of the peripheral and central nervous system and sends impulses to the spinal cord, thalamus, basal ganglia, and cerebral cortex. The reticular formation exerts both inhibitory and facilitatory influences upon the peripheral motor system. In the opposite direction its effect is that of maintaining the arousal or vigilant state and, by its influence on the threshold of the various stimuli, it has a large role in establishing the level of attention. It also takes part in regulating visceral, vascular, and endocrine activities. Lesions of the reticular formation may affect motor tone, state of consciousness, and any or all vital functions. Dysfunction of the reticular formation is probably associated with many psychological alterations, but these have yet to be documented.

Midbrain diencephalic area. The midbrain diencephalic area (the centrencephalic system) includes the ascending reticular formation, thalamus, hypothalamus, and adjacent structures.

It is thought to be the primary integrating system. Here the sensorimotor impulses of the occipital-parietal-central areas of the cortex are integrated with functions of the temporal (and probably frontal) cortex, producing those intellectual mechanisms essential to perception and memory.

Spinal Cord

The spinal cord is made up of long axones, carrying efferent and afferent impulses, surrounding a core of nerve cells. On cross section, the core of neurones appears as a grey "H" within the white matter, formed by myelin sheaths of the axones. The cell bodies of sensory neurones are located in the dorsal root ganglia. Nerve fibers carrying proprioception, vibration, and touch sensations ascend in the ipsilateral posterior column of the cord to nuclei in the brain stem. These sensory impulses are then relayed to the opposite side of the brain stem and up to the thalamus. Fibers carrying superficial pain and temperature terminate near the posterior horn of the grey "H" soon after entering the cord. These sensations are then relayed to the opposite lateral aspect of the cord and ascend to the thalamus in the lateral spinothalamic tract. Some fibers carrying touch sensation follow a similar course and form the ventral spinothalamic tract. The pyramidal, corticospinal tracts descend from the brain, decussate at the caudal end of the medulla, and take up the major portion of the lateral columns of the cord terminating at the anterior horn cells of the grey "H." Axons of these lower motor neurones then leave the cord, via the ventral roots, to innervate muscles. Short, intercalated neurones abound in the central grey matter and are integral parts of reflex arcs.

Disease of the posterior column causes ipsilateral loss of proprioception and vibration below the level of disease. A lesion of the lateral column results in ipsilateral upper motor neurone (spastic) paralysis and contralateral loss of pain and temperature sensitivity below the level of the lesion (Brown-Sequard syndrome). Disease affecting the anterior horn of the grey matter causes ipsilateral lower motor neurone (flaccid) palsy within the distribution of the diseased segment.

Mental and Emotional Syndromes Related to Site of Organic Disease

Mental and emotional symptoms have certain characteristics dependent upon the site of organic involvement. It must be stressed that all of the syndromes described below are both physiologically and anatomically interrelated.

Frontal lobe syndrome. The frontal lobe syndrome is associated with lesions of the prefrontal and basilar cortex of the brain, and the clinical features are most striking when the disease is bilateral. This condition is characterized by psychomotor retardation and, especially, altered behavior. The patient becomes disorderly, social graces and moral standards are impaired, and his conduct is frequently inappropriate. There is loss of initiative with no thought for the future. Self-consciousness is lost and he may be boastful, facetious, or jocular (*witzelsucht*). On the other hand, some patients are unusually irritable, distractible, and hostile. Affect is usually flattened, but either euphoria or depression may be prominent. Apathy is more common than hyperactivity. Orientation for time and place is often disturbed, and the patient cannot easily adjust to change. Attention and ability to learn are impaired. Perception and memory may be defective. There is associated defect in abstract thinking, and the patient has great difficulty in synthesizing and organizing his thoughts and activities. The resultant poor intellectual performance is not necessarily related to memory impairment, and the over-all I.Q. need not be subnormal.

Disease of the limbic system. This portion of the central nervous system includes the cingulate gyrus and particularly those portions of the temporal lobe containing the amygdala, the hippocampus, and the uncus. These areas are interconnected

by a continuous chain of neurones with the posterior orbital cortex of the frontal lobe, the septal region, the diencephalon, mammillary bodies, and thalamus. Lesions in the limbic system in lower animals are associated with change in behavior, either rage or tameness. The Klüver-Bucy syndrome occurs in monkeys after bilateral temporal lobectomy. These animals demonstrate apparent loss of memory, visual agnosia, oral tendencies, hypersexuality, and tameness. Bilateral temporal lobe lesions in humans may be associated with symptoms similar to the above, but considerably modified. More commonly, bilateral lobe lesions in man are associated with a Korsakoff-like syndrome. Irritative lesions of the temporal lobe may cause mental and emotional symptoms manifested by illusions or hallucinations; affective symptoms; disturbances of thought, memory, or awareness of self; or alterations of consciousness or behavior. These phenomena may occur with or without associated psychomotor seizures (see Section 10.4). Lesions in the septal area cause reduction in or absence of emotional expression, and it is inferred that this area is associated with feelings of pleasure.

Diencephalic disease. The diencephalon is composed of the ascending reticular formation of the brain stem, thalamus, hypothalamus, and adjacent structures. Lesions of the diencephalon, even more clearly than those of other structures, produce their effects by release of facilitating or inhibiting mechanisms necessary for "balanced" human behavior. Disease of this area is often associated with emotional lability or spontaneous laughing or crying. In lower animals, lesions of the anterior diencephalon are associated with sham rage (i.e., sympathetic motor activity of rage probably without appropriate change of affect). Extreme excitement, savageness, and increased feeding drive are also evoked with experimental lesions of the anterior diencephalon. In humans a mania-like syndrome may be seen with disease in this area. Lesions of the posterior diencephalon in animals are associated with unusual tameness, sometimes to the degree of severe apathy. In man, disease in this area is associated with hypersomnia and akinetic mutism (see Section 10.4). Conscious sensory perception is affected in disease of the ascending reticular formation that interrupts the sensory inflow to the cerebral cortex.

Parietal lobe disease. Parietal lobe lesions may be associated with agnostic, apraxic, or aphasic phenomena; and differentiation of patients with these signs from those demented may be extremely difficult or impossible. The following features help distinguish generalized cerebral disease causing dementia from focal disease resulting in aphasic, agnostic, or apraxic symptoms. The patients with dementia more often show inappropriate or antisocial behavior; drowsiness or evidence of impaired consciousness; urinary or fecal incontinence; emotional lability or irritability; disorientation in all spheres; impaired fund of information, particularly for recent events; inability to deal with new concepts; and bilateral signs such as grasp reflexes. On the other hand, the demented patient need not have apraxia or language impairment.

The clinical manifestations of lesions of the parietal lobe may be difficult to differentiate from hysteria, and it is more common for signs of a parietal lobe lesion to be erroneously considered hysterical than vice versa. Thus, the patient with a parietal lobe lesion may appear apathetic and indifferent. There may be variability of performance, especially at the hands of different examiners. Bizarre symptoms such as distortion of body image or other spatial disorders may initially suggest the diagnosis of hysteria.

Occipital lobe disease. Occipital lobe lesions may cause visual illusions and hallucinations. Metamorphopsia, or distortion of images, may be simple, e.g., the illusion of objects appearing to be larger than they really are (megalopsia); or may be complex, e.g., the illusion of objects taking on strange affective qualities. Visual hallucinations may occur within one visual field (either in a hemianopic field or the normal field), or they may be generalized. Suggestion may influence the type of formed hallucination, for example, the hallucination of seeing Santa Claus at Christmas time. The intellectual and emotional

background of the individual is an important factor in the type of hallucination experienced. Visual hallucinations are not limited to lesions of the occipital lobe but rarely occur with lesions of the frontal lobe or retina and, of course, are as common in disease of the temporal lobe as with lesions of the occipital lobe. (It was thought that formed hallucinations were of temporal lobe origin and unformed or crude hallucinations were of occipital lobe origin. This differentiation is certainly not reliable and cannot be used as a localizing sign.) Just as hallucinations may suggest psychosis, other occipital lobe phenomena may simulate hysteria. Thus, patients with cortical blindness are usually indifferent to their illness. Such patients often deny blindness and confabulate. Visual agnosias and contralaterally reduced fields of vision of organic origin may be interpreted as hysteria. Visual disorientation may be difficult to differentiate from disorientation of more diffuse organic disease.

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11.3 CLINICAL NEUROLOGY AND NEUROPATHOLOGY

SEYMOUR SOLOMON, M.D.

Histopathology

Cells of the nervous system react in certain general patterns to many different types of injury or stress. Neuroglia or interstitial cells follow one pattern; neurones, those cells which conduct impulses, react in another.

Neuroglia. Astrocytes are the predominant interstitial cells of the central nervous system. Oligodendroglia have long been thought to be responsible for myelin formation, and recent electron microscopic studies confirm that conclusion. Microglia may also be considered interstitial cells although their function is phagocytosis. Only the nuclei of interstitial cells are seen with Nissl stains, e.g., thionin, or with hematoxylin and eosin stains; the remainder of the cells' structures must be impregnated with gold or silver for visualization.

Injuries to the nervous system may result in degeneration of the interstitial cells as manifested by swelling of the cell bodies, fragmentation of the cell processes, and shrinking with hyperpigmentation

(pyknosis) of the nuclei. If injury is less severe, reactive gliosis occurs; i.e., the glial cells (predominantly the astrocytes) proliferate to replace destroyed tissue. The astrocyte divides by amitosis, and, in the early phase of reactive gliosis, cell bodies are numerous. Eventually, a gliotic scar is formed by a dense network of astrocytic fibers. Phagocytosis occurs after brain injury; microglia proliferate, as in an inflammatory reaction, and move toward the affected area while changing their shape and increasing in size to globular structures devoid of cell process. After ingesting degenerated tissue, these fat-laden granule cells migrate to blood vessels and discharge their products into the perivascular spaces. Corpora amylacea (amyloid bodies) are round, often laminated, amorphous bodies that stain with hematoxylin and are the cellular debris found especially around old areas of degeneration. Demyelination is manifested by swelling of the myelin sheath, then fragmentation of the myelin into lipid globules. The axis cylinder within the sheath may remain relatively intact.

Neurones. Injury to the neurone alters the cell body and its axone (axis cylinder) with its myelin sheath. Changes within the cell body may affect the Nissl substance (masses within the cytoplasm staining blue with methylene blue), neurofibrils (delicate fibers seen by silver impregnation), and Golgi apparatus (granular material scattered through the cell seen with osmic acid or silver stains), as well as pigments within the cell. The Nissl substance undergoes fragmentation and dissolution (chromatolysis). The neurofibrils swell and disintegrate. (Alzheimer's neurofibrillary changes in senile and presenile psychoses refer to the fusion of neurofibrils and their formation into tangled masses). The Golgi apparatus is dissipated with disease. After injury to the cell body, the axis cylinder (seen with silver stains) will first swell and then fragment. The surrounding myelin sheath (seen best with hematoxylin and iron stains) will degenerate when loss of the axis cylinder occurs, but, as noted above, the reverse need not apply. Acute injury to the neurone is manifested by swelling of the cytoplasm; chromatolysis of the Nissl substance; swelling and disintegration of the neurofibrils; swelling, hyperpigmentation, and fragmentation of the nucleus; and detachment and fragmentation of cell processes. The loss of the staining properties of the cell eventually leaves a "ghost cell." Chronic injury to the nerve cell is characterized by shrinkage of the cytoplasm, coalescence of the Nissl substance, shrinkage and increased tortuosity of cell processes, shrinkage and pyknosis of the nucleus, and eventual destruction of the nucleus, with death of the cell. The degenerated nerve cell then undergoes phagocytosis, i.e., neuronophagia.

Pathology seen in functional psychoses. Doubt exists with regard to the specificity of pathological changes in patients who come to autopsy with the clinical diagnosis of schizophrenia or other "nonorganic" psychosis. Some believe that fatty neuronal disease is a characteristic feature of these psy-



FIGURE 1. Glioblastoma multiforme. The massive tumor extends through the corpus callosum from one frontal lobe to the other. (From Zimmerman, H. M., Netsky, M. G., and Davidoff, L. M. *Atlas of Tumors of the Nervous System*, p. 34. Lea and Febiger, Philadelphia, 1956.)

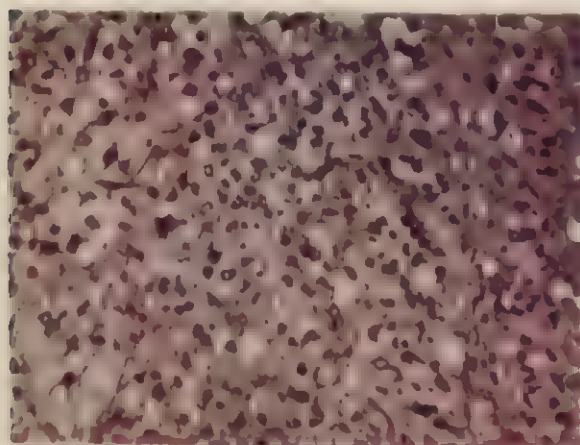


FIGURE 3. Astrocytoma. The cells, predominantly fibrillary astrocytes, form a loose meshwork. Hematoxylin and eosin, 185 X. (From Zimmerman, H. M., Netsky, M. G., and Davidoff, L. M. *Atlas of Tumors of the Nervous System*, p. 30. Lea and Febiger, Philadelphia, 1956.)

chromes. The persistence of damaged cells rather than their complete destruction is claimed to be one of the underlying mechanisms for the schizophrenic syndrome. The damaged neurons have been found predominantly in the cortex of the prefrontal lobe, anterior cingulate gyrus, striatum (especially globus pallidus), and the anterior and medial nuclei of the thalamus. Since schizophrenia may be a group of different syndromes, these pathological features may be present in some patients and not in others.

Neoplasms of the Brain

The classical clinical manifestations of brain tumor, i.e., headache and papilledema, can no longer be regarded as adequate criteria for diagnosis. These features often occur late in the course of the disease, if at all. The chief manifestation of brain tumor is the pro-

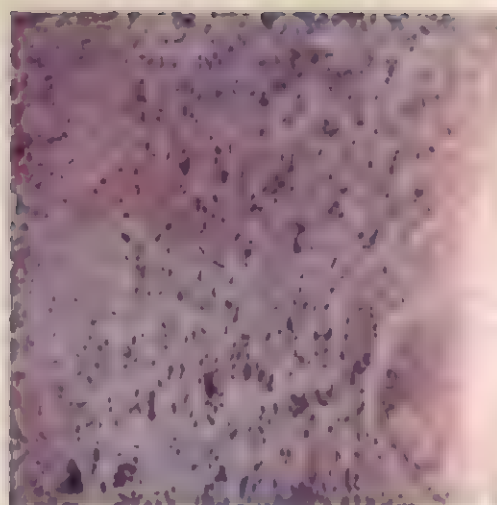


FIGURE 2. Glioblastoma multiforme. The cells vary in size and shape; several multinucleated giant cells are seen. The palisading of cells adjacent to an area of necrosis is noted on the left. Hematoxylin and eosin, 100 X. (From Blackwood, W., Dooley, T. C., and Sommersville, J. C. *Atlas of Neuropathology*, ed. 2, p. 177. Williams & Wilkins, Baltimore, 1954.)

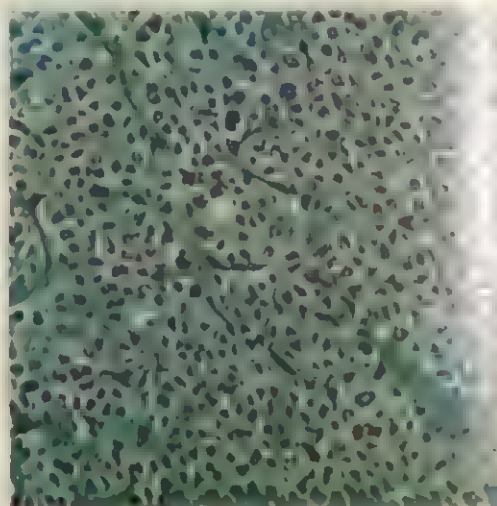


FIGURE 4. Oligodendroglioma. The prominent nuclei are surrounded by unstained foamy cytoplasm. Masson's trichrome stain, 200 X. (From Blackwood, W., Dooley, T. C., and Sommersville, J. C. *Atlas of Neuropathology*, ed. 2, p. 187. Williams & Wilkins, Baltimore, 1954.)

gressive nature of the patient's neurological symptoms or signs, whether they be generalized or focal. Generalized symptoms may include an organic mental syndrome, personality changes, convulsive seizures, headache, lethargy, or other symptoms of increased intracranial pressure. An organic mental syndrome and personality changes are particularly prevalent in frontal brain tumors but may be seen with neoplasms in any area of the brain. Tumor must be a primary consideration when convulsions originate during adult life, for such seizures are due to a cerebral neoplasm.²⁰

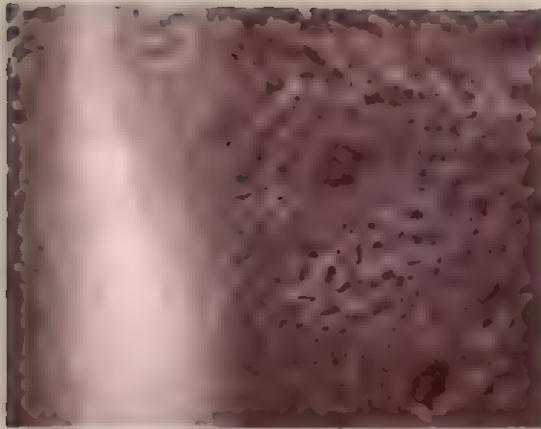


Fig. 1. Low-power photomicrograph of a section of the brain tissue showing a dense cellular area with many small, dark-staining nuclei.

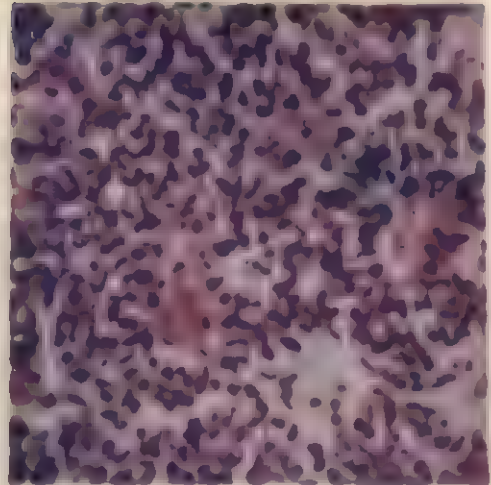


Fig. 2. High-power photomicrograph of a section of the brain tissue showing a dense cellular area with many small, dark-staining nuclei.



Fig. 3. Low-power photomicrograph of a section of the brain tissue showing a dense cellular area with many small, dark-staining nuclei.

and increased by coughing or straining during the day. The patient was treated with a course of antibiotics and a course of corticosteroids. The patient was discharged on the 10th day of admission.

The patient was followed up for 6 months. The patient was discharged on the 10th day of admission. The patient was followed up for 6 months. The patient was discharged on the 10th day of admission. The patient was followed up for 6 months. The patient was discharged on the 10th day of admission.

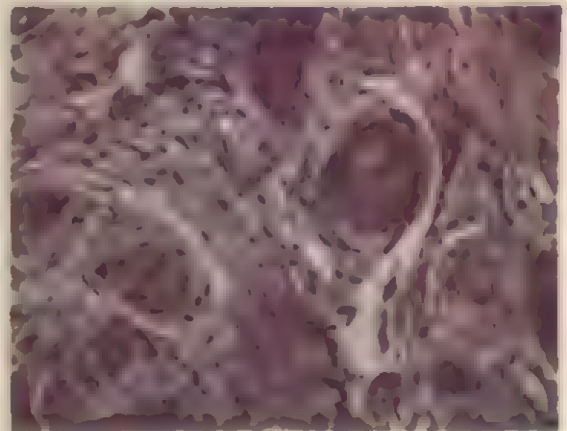


Fig. 4. High-power photomicrograph of a section of the brain tissue showing a dense cellular area with many small, dark-staining nuclei.

The patient was followed up for 6 months. The patient was discharged on the 10th day of admission. The patient was followed up for 6 months. The patient was discharged on the 10th day of admission. The patient was followed up for 6 months. The patient was discharged on the 10th day of admission.

hemiparesis, hemisensory impairment, or homonymous hemianopsia. A cerebellar tumor, on the other hand, will manifest progressive symptoms and signs of ataxia of the trunk or the extremities on the same side as the lesion.

Intracranial neoplasms will be discussed with regard to incidence, age of onset, sexual predominance (if significant), site of origin, clinical characteristics (if the site of origin is other than the cerebral hemisphere or cerebellum), degree of malignancy, clinical course (if different than that expected on the basis of degree of malignancy), probability of complete surgical excision, response to radiotherapy, and gross and microscopic appearance.

The following is an outline of the incidence of intracranial neoplasms, listed in order of decreasing frequency.

- A. Gliomas: 45% of all intracranial neoplasms
- B. Metastatic tumors: 15%
- C. Meningiomas: 15%
- D. Hypophysial tumors and tumors of embryonic rests: 10%
- E. Tumors of nerves (acoustic neuromas): 8%
- F. Vascular tumors: 2%

Gliomas. Most primary brain tumors arise from glial (interstitial) cells. Few tumors under this classification are of other neuroectodermal origin. In the following classification only the most common neoplasms are listed.

- A. Tumors of glial origin
 1. Glioblastoma multiforme
 2. Astrocytic
 - a) Astrocytoma
 - b) Astroblastoma
 - c) Spongioblastoma polare
 3. Oligodendroglioma
 4. Ependymal
 - a) Ependymoma
 - b) Papilloma of choroid plexus
 - c) Colloid cyst
- B. Tumors of the pineal gland
 1. Pinealoma
- C. Tumors of neuronal or retinal origin
 1. Medulloblastoma
 2. Retinoblastoma

Glioblastoma multiforme. This tumor accounts for 55 per cent of all gliomas. It is a tumor of adult life arising within a cerebral hemisphere. This neoplasm is the most malignant of all primary brain tumors and duration of life is rarely more than 1 year after onset. Response to radiotherapy or surgery is poor. The gross appearance (Figure 1), is that of a soft, hemorrhagic, necrotic, infiltrating mass which often spreads from one hemisphere to the other across the corpus callosum. Under the microscope (Figure 2), both the cells and their nuclei show great variation in size and shape with giant amoeboid cells and numerous mitoses. The cells may form a pseudopalisade pattern around areas of necrosis. Endothelial proliferation is evident; necrosis and hemorrhage are marked.

Tumors of astrocytic origin

Astrocytoma. This tumor makes up 20 per cent of all gliomas. In adults the tumor occurs within a cerebral hemisphere; in children it is found within the cerebellum. The tumor is benign, can be extensively excised, and responds moderately well to radiotherapy. It appears as a rubbery, infiltrating, poorly defined mass, with a tendency to pseudocyst formation. The latter is particularly true in the cerebellum where the tumor may present as a mural nodule in the pseudocyst. Microscopically, the tumor appears either as a mass of glial fibrillae (Figure 3), or as prominent large protoplasmic astrocytes. Sometimes degenerative changes in the astrocytes form amoeboid or gemistocyte cells. Vascular proliferation is noted from both endothelial and adventitial cells. Calcification is evident.

Astroblastoma. The astroblastoma is an uncommon tumor of early adult life occurring within a cerebral hemisphere. It grows more rapidly than an astrocytoma, cannot be completely excised, and responds only slightly to radiotherapy. It is firm, sometimes hemorrhagic, and may appear fairly well circumscribed. On microscopy the tumor is seen to have a loose texture with cells arranged around blood vessels in a pseudorosette formation. Long processes extending from the cell bodies to the blood vessel wall are seen with gold stains.

Spongioblastoma polare. This is a rare tumor, beginning in childhood or adolescence, with origin in the area of the third or fourth ventricle or midbrain. There may be early signs of increased intracranial pressure due to blockage of ventricles, as well as signs implicating the midbrain. Rate of growth is slow to moderate, but the course of disease may be relatively rapid due to the tumor's location. The site of origin precludes surgery, and response to radiotherapy is minimal. The tumor appears as a firm mass, only fairly well demarcated. Microscopic examination reveals spindle-shaped cells often arranged in parallel, irregular bands with elongated nuclei and long processes extending from one or both poles of the cells.

Oligodendroglioma. The oligodendroglioma accounts for 5 per cent of all gliomas and usually begins in adult life within a cerebral hemisphere. The tumor is benign, can be completely removed, and has slight to moderate response to radiotherapy. It appears as a solid, well demarcated mass, sometimes containing cysts, hemorrhages, and, usually, areas of calcification. The calcification can often be seen in roentgenograms of the skull. Microscopically (Figure 4), one sees densely packed cells in uniform distribution. The scanty cytoplasm of the cell forms a halo-like zone around the conspicuous dark nucleus. Calcium deposits are prominent.

Tumors of ependymal origin

Ependymoma. The ependymoma constitutes 6 per cent of glial tumors and is predominantly a tumor of childhood and adolescence but often occurs in adults as well. It arises from the lining of the ventricles, particularly the fourth ventricle. The tumor is benign but usually causes increased intracranial pressure due to blockage of the ventricular system, and its course may, therefore, be subacute. It can be only partially excised, but there is moderate response to radiotherapy. The tumor appears as an infiltrating mass. Under the microscope (Figure 5), there is a dense mass of cells with large oval nuclei. Many cells form perivascular rosettes or papillary tufts.

Papilloma of the choroid plexus. This type of tumor makes up approximately 2 per cent of glial tumors. It is predominantly a tumor of children, especially males. The tumor arises within the ventricles, most often the fourth ventricle, and causes increased intracranial pressure with hydrocephalus. The tumor is benign, can be completely removed by surgery, and responds moderately well to radiotherapy. It appears as a relatively small nodule within the ventricle. Microscopically, one sees columnar or cuboidal cells covering papillae with vascular cores.

Colloid cyst. The colloid cyst accounts for approximately

2 per cent of glial tumors and usually occurs in early adult life. It arises from the rostral portion of the roof of the third ventricle, is often mobile, and may cause intermittent increased intracranial pressure due to occlusion of the foramen of Munro. The tumor is benign and can be completely excised, but it does not respond to radiotherapy. It appears as a smooth cyst, and microscopically the cyst wall is lined by a single layer of columnar or cuboidal cells.

Pinealoma. This is a rare tumor of the pineal gland usually occurring during the first 2 decades of life almost always in males. By compressing the quadrigeminal plate, it causes paralysis of upward gaze (Paranaud's syndrome); compression of the underlying aqueduct of Sylvius results in symmetrical hydrocephalus. Precocious puberty, sometimes seen with this tumor, may be due to its compression of the hypothalamus rather than to secretion of an occult hormone. The tumor is histologically benign, but the course is affected by its vital location. It cannot be surgically removed but there is often excellent response to radiotherapy. The tumor appears as a smooth encapsulated mass although sometimes it is invasive. On microscopy one sees many lymphoid cells and clusters of large cells with prominent nuclei containing one or two nucleoli, all within a stroma of connective tissue.

Medulloblastoma. This tumor accounts for 6 per cent of all "glial" tumors (it is truly of neuronal rather than glial origin). It occurs in childhood, more frequently in boys than girls. The tumor usually arises in the midline of the cerebellum and causes increased intracranial pressure by expanding from the roof of the fourth ventricle and blocking cerebrospinal fluid outflow. The neoplasm is highly malignant, and cells may exfoliate and disseminate through the cerebrospinal fluid, becoming implanted in other parts of the cerebrospinal axis. It can be extensively excised, and there is usually an excellent histological response to radiotherapy. Unfortunately, recurrence is rapid, and the course is usually 6 to 9 months in duration. The tumor does not appear as a friable invasive mass. Under the microscope (Figure 6), it is very cellular with small pear-shaped cells containing prominent dark staining nuclei frequently in mitoses. Some cells may be grouped into pseudorosettes.

Metastatic tumors. These make up approximately 5 per cent of all intracranial neoplasms. The lesions usually occur in adults and arise from carcinoma of the lungs or breast, much less commonly from malignancies of kidneys and other organs. Death usually occurs within the 1st year, but often radiotherapy prolongs useful life. Metastases (Figure 7) appear as firm, well demarcated masses. Microscopically, the tumors often resemble the primary lesion, but sometimes they are markedly altered and anaplastic.

Meningiomas. Meningiomas account for 15 per cent of all intracranial tumors and usually occur in adults. These neoplasms arise from the meninges of the sagittal sinus, the sphenoid ridge, or over the convexity of the cerebrum, and less commonly from any other site covered by meninges. The clinical characteristics depend, of course, on the specific site of origin. Meningiomas often cause hyperostosis of the adjacent bone which may be seen or palpated on examination or visualized in roentgenograms of the skull. The tumor is benign and grows slowly, although, rarely, meningiomas may become malignant. If accessible, it can be completely removed, but response to radiotherapy is slight. The tumor appears as a firm, gritty, encapsulated mass, extending from the inner surface of the dura and compressing underlying tissue. Under the micro-

scope one or a combination of the following features may be seen. (1) Fibroblastic elongated cells form reticulin and collagen. (2) Meningothelial large cells with vesicular nuclei are sometimes arranged in whorls (Figure 8), the centers of which may be replaced by calcium to form psammoma bodies. (3) Mesenchymal bipolar or multipolar cells have long processes intertwined into a loose network. (4) Angioblastic, endothelial cells line vascular spaces.

Tumors of the pituitary. Tumors arising from the pituitary or from embryonic rests adjacent to the pituitary constitute approximately 10 per cent of intracranial neoplasms.

Chromophobe adenoma. The chromophobe adenoma is the most common tumor of this group. It occurs in adult life from non-endocrine-producing cells of the pituitary. The tumor's expansion from the pituitary fossa causes compression of the optic chiasm and resultant bitemporal hemianopsia. Compression of endocrine-secreting cells of the pituitary results in hypopituitarism. The tumor is benign, and response to radiotherapy is usually good to excellent. If radiotherapy fails, complete resection is possible. The tumor appears as a soft, circumscribed mass. Under the microscope alveolar clusters of cells are seen with poorly staining cytoplasm but deeply staining nuclei.

Eosinophilic adenoma. This tumor occurs much more commonly in adults than in children and results in acromegaly or gigantism, respectively. It is benign and responds very well to radiotherapy; surgery is rarely necessary. The tumor consists of a small circumscribed mass within the pituitary fossa. Microscopically, one sees groups of cells in alveolar patterns. The cytoplasm surrounding a vesicular nucleus is filled with eosinophilic granules.

Basophilic adenoma. A basophilic adenoma of the pituitary is a very rare tumor. Clinical manifestations of Cushing syndrome (see Section 10.4) are almost always due to hyperplasia of the adrenal cortex rather than to this tumor of the pituitary. The tumor is benign and appears as a small, sometimes microscopic, nodule made up of cells with basophilic granules in the cytoplasm.

Craniopharyngiomas. These tumors occur one half or one third as commonly as chromophobe adenomas and are somewhat more frequent in childhood and adolescence than during adult life. The tumors arise above the pituitary fossa and usually compress the optic chiasm, causing bitemporal hemianopsia. Symptoms of hypothalamic disease and hypopituitarism often occur. Calcification frequently present within the tumor may be seen in roentgenograms of the skull. The tumor is benign, and complete removal by surgery is rare, but some response to radiotherapy may occur. It appears as an irregular grapelike mass of encapsulated cysts that contain thick oil-like fluid. On microscopic examination (Figure 9), the cysts are lined by stratified squamous epithelium, forming papillary masses. Other forms of epithelial tissue may be seen. Calcification is frequently present.

Other tumors arising from embryonic rests in the midline at the base of the brain include teratomas, dermoid cysts, epidermoids, chordomas, and lipomas.

Tumors of cranial nerves

Acoustic neuroma or Schwannoma. Arising from the sheath of the acoustic nerve, the acoustic neuroma or Schwannoma is the most common tumor of nerves.

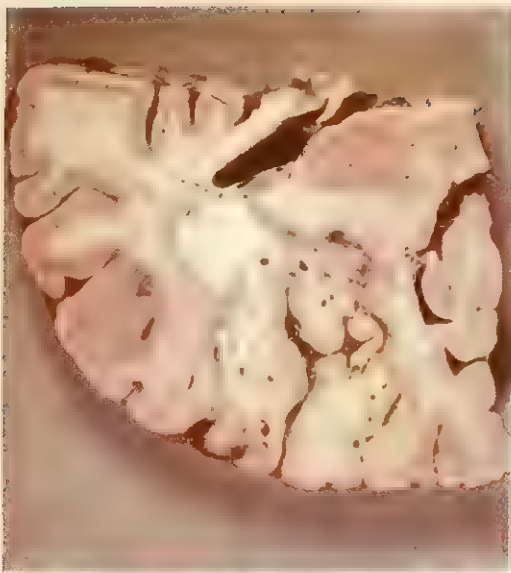


FIGURE 11. Cerebral infarction due to occlusion of the major inferior branches of the middle cerebral artery. The infarct is of 3 weeks duration and no longer swollen. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 17. Williams & Wilkins, Baltimore, 1964.)

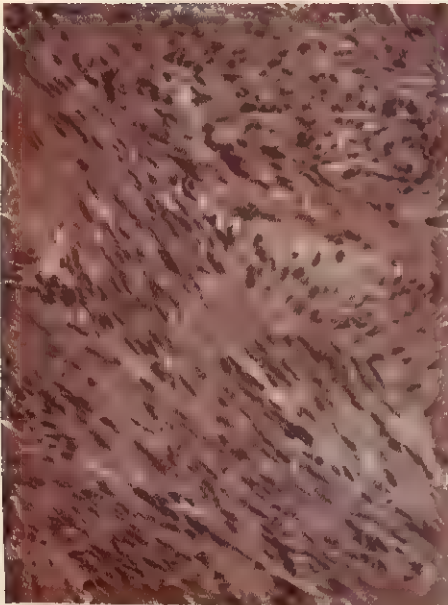


FIGURE 10. Acoustic neuroma. Spindle-shaped fibroblasts are arranged in interlacing palisades. Hematoxylin and eosin, 185 X. (From Zimmerman, H. M., Netsky, M. G., and Davidoff, L. M. *Atlas of the Nervous System*, p. 66. Lea and Febiger, Philadelphia, 1956.)

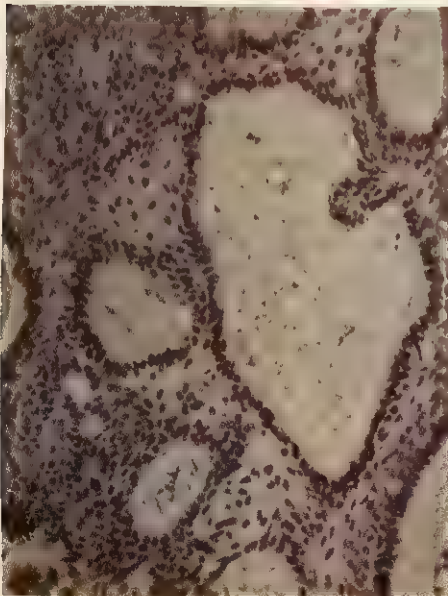


FIGURE 9. Craniopharyngioma. A layer of columnar cells lines several cysts. Hematoxylin and eosin, 150 X. (From Zimmerman, H. M., Netsky, M. G., and Davidoff, L. M. *Atlas of the Nervous System*, p. 88. Lea and Febiger, Philadelphia, 1956.)

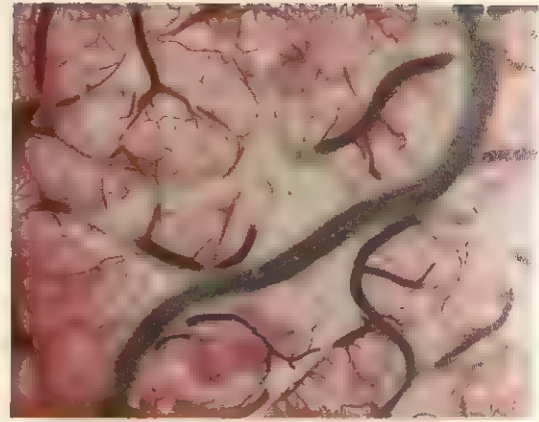


FIGURE 12. Cerebral infarction approximately 1 day old. Into the edematous and disintegrating brain tissue leukocytes have emigrated from dilated blood vessels. Hematoxylin and eosin, 220 X. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 19. Williams & Wilkins, Baltimore, 1964.)

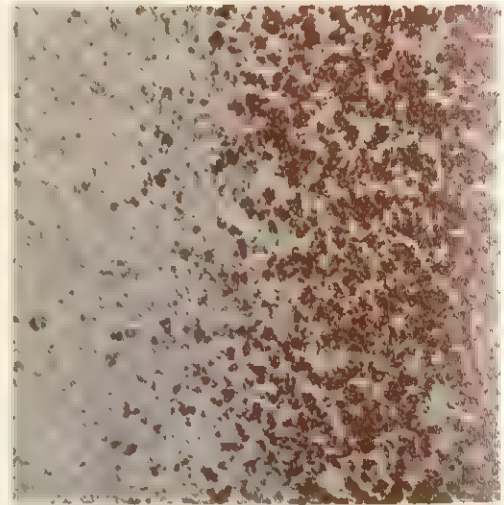


FIGURE 13. Cerebellar infarction approximately 1 day old. Into the edematous and disintegrating brain tissue leukocytes have emigrated from dilated blood vessels. Hematoxylin and eosin, 220 X. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 38. Williams & Wilkins, Baltimore, 1964.)

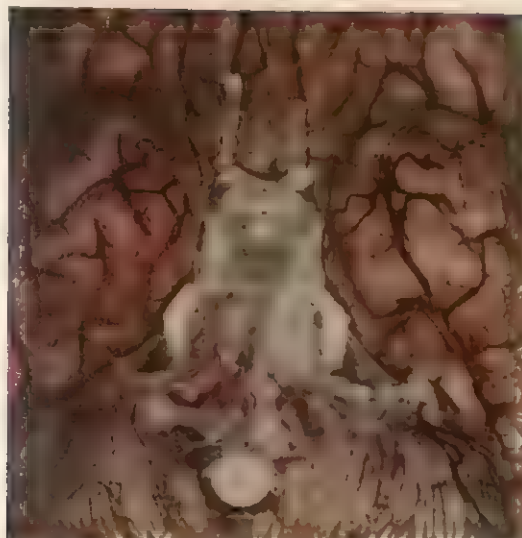


FIGURE 15. Chronic (tuberculous) meningitis. A thick greyish-white plate is predominant over the base of the brain. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 53. Williams & Wilkins, Baltimore, 1964.)

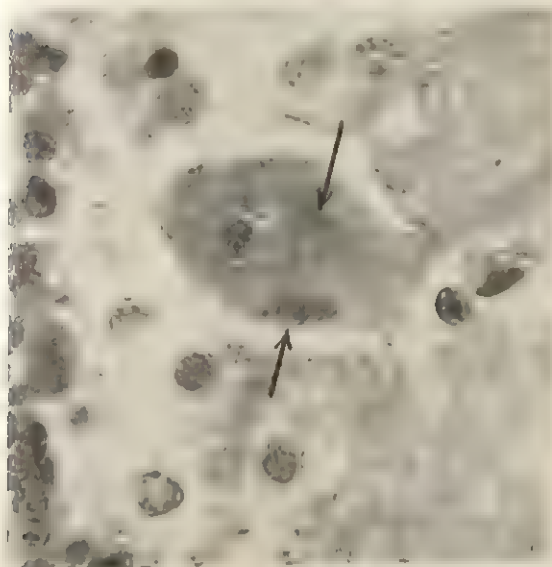


FIGURE 16. Rabies. In a Purkinje cell of the cerebellum are rounded intracytoplasmic inclusions, Negri bodies (arrows). Hematoxylin and eosin, 1,000 X. (Courtesy of Dr. T. Poon and Dr. A. Hirano.)

This tumor accounts for 8 per cent of all intracranial tumors. It occurs in adults, females more often than males. The tumor is located in the cerebellopontine angle, and symptoms result from involvement of the acoustic nerve and compression of adjacent trigeminal and facial nerves and cerebellum. The tumor is benign and can often be completely excised, but it does not respond to radiotherapy. The neuroma appears as an irregular, encapsulated, firm mass surrounding the

acoustic nerve. Microscopically (Figure 10), elongated fibroblastic cells with dark nuclei are seen in palisading interlacing rows associated with a great deal of collagenous tissue.

Optic nerve glioma. The optic nerve glioma is a rare tumor of the 1st decade of life arising from glial elements of the optic nerve. There is associated blindness and sometimes exophthalmus. Although the tumor is histologically benign, it infiltrates the optic chiasm and adjacent tissue, eventually causing death. In the early stage, however, it can be completely excised, and

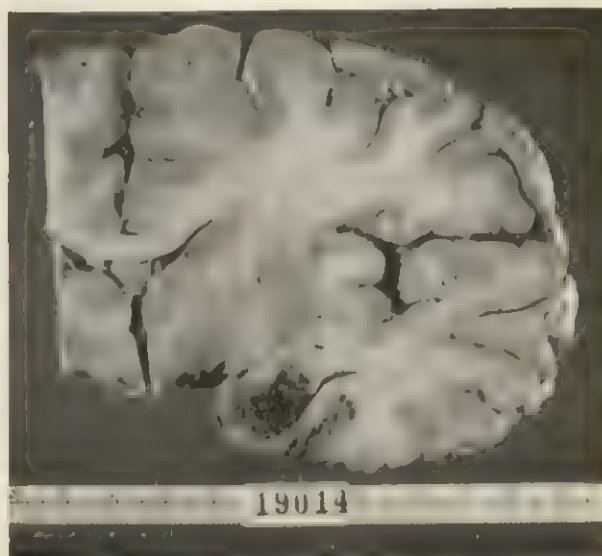


FIGURE 17. Encephalitis: in this case due to herpes simplex virus. Edematous brain tissue has compressed the ventricles. Hemorrhages and necrosis are evident in the temporal lobe. (Courtesy of Dr. H. M. Zimmerman.)

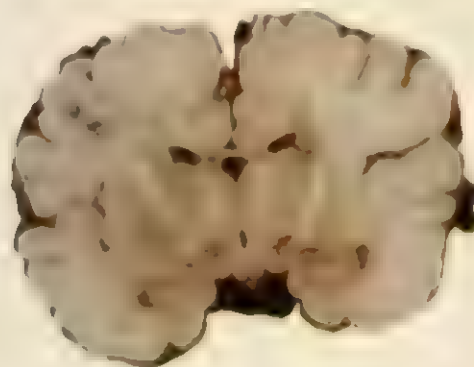


FIGURE 18. Kernicterus. Bile pigment is predominant in the deep nuclear structures, especially the subthalamic nucleus and Ammon's horn. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 97. Williams & Wilkins, Baltimore, 1964.)

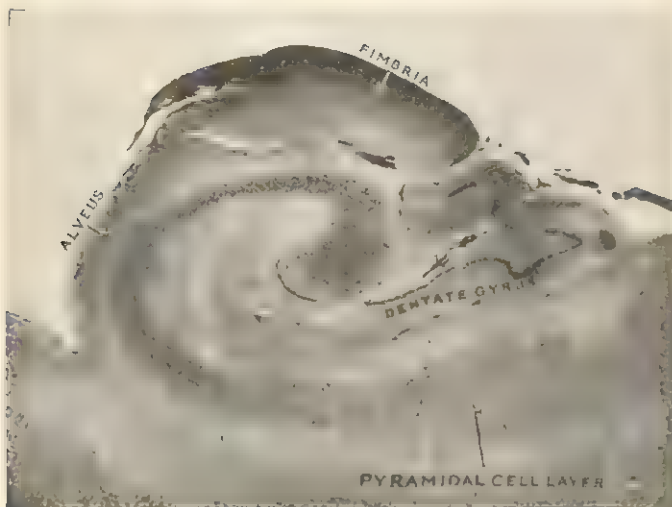


FIGURE 19. Normal Ammon's horn, i.e., the portion of the hippocampus that projects into the temporal horn of the lateral ventricle. A layer of large pyramidal cells curves into the nerve cell layer of the dentate gyrus. Thionin. 9 \times . (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 25. Williams & Wilkins, Baltimore, 1964.)

there is good response to radiotherapy. The tumor appears as a bulblike swelling around the nerve. Under the microscope astrocytes and spongioblasts are the predominant cells.

Vascular tumors

Hemangioblastomas. Tumors of vascular origin are mainly hemangioblastomas. They account for only 1 or 2 per cent of all intracranial tumors and may be seen in adults as well as children, occurring more commonly in males than females. The most frequent site is the cerebellum. When this cerebellar tumor is associated with cystic disease of the kidneys, pancreas, or other organs and with angiomatosis of the retina, the clinical picture is called Hippel-Lindau disease. The benign tumor can be totally removed, and it also responds well to radiotherapy. It appears as a small red nodule within a cyst, and, on microscopy, small immature blood vessels or large endothelial cells are seen within a very prominent reticular network.

Vascular Diseases of the Central Nervous System

Vascular lesions are the major cause of organic brain disease, yet the number of different diseases under this classification is relatively small. The lesions and their associated signs may be focal or scattered. Abrupt onset is most characteristic of sudden occlusion or rupture of an artery. Vasospasm as a cause of transient cerebral ischemia is a controversial concept that has been falling into disrepute and should be rarely considered. Occult cardiovascular factors associated with cerebrovascular disease are probably the most common causes of transient cerebral phenomena. Atherosclerosis and associated thrombosis of major arteries, i.e., the carotid, vertebral, and basilar vessels or their main branches, are frequently associated with transient ischemic attacks although more often infarction with neurological deficit occurs. With atherosclerosis of many small cerebral vessels onset of generalized symptoms is insidious and progression is slow.

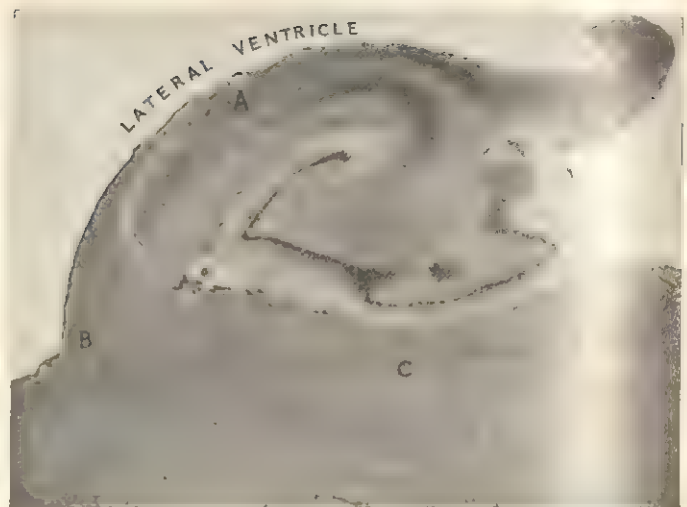


FIGURE 20. Ammon's horn affected by anoxia. There is loss of the pyramidal cell layer from A to C. That section between A and B (Sommer's sector) is particularly vulnerable to anoxia. Thionin. 10 \times . (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 25. Williams & Wilkins, Baltimore, 1964.)

Stenosis or occlusion of arteries

Atherosclerosis. Atherosclerosis is the most common vascular disease. On examination of the affected vessel one sees irregular yellow plaques projecting into the lumen with stenosis or occlusion often due to superimposed thrombosis. In the early stages, fat-containing cells are deposited in the intima of the vessel, and there is associated buildup of connective tissue. Later, degeneration with hyalinization and calcification occur.

Hematological causes of thrombosis (see below) include sickle cell anemia, thrombotic thrombocytopenia, and polycythemia vera. Arteritis is characterized by the infiltration of all arterial layers by mononuclear cells causing fibroblastic proliferation and subsequent stenosis or occlusion. These changes may be seen in syphilis and toxic encephalitis, or as the result of infected emboli. Temporal arteritis and collagen diseases (see below) cause similar vascular occlusions.

Cerebral infarction

Thrombotic infarction. Most cerebrovascular diseases are due to thrombotic infarction. Embolic infarction and cerebral hemorrhage are much less common. The symptoms and signs of cerebral artery thrombosis may occur briefly (transient ischemic attack) or suddenly (within minutes or hours), or, rarely, they may slowly progress. Progression for more than 48 hours requires primary consideration of cerebral neoplasm. Thrombotic infarctions usually occur within the arterial tree of an atherosclerotic carotid or middle cerebral artery, less commonly within the vertebrobasilar arterial system. Stenosis or occlusion of the internal carotid artery is a very common cause of cerebral infarction. The atherosclerotic lesion upon which thrombosis occurs is usually located just beyond the bifurcation of the common carotid artery.

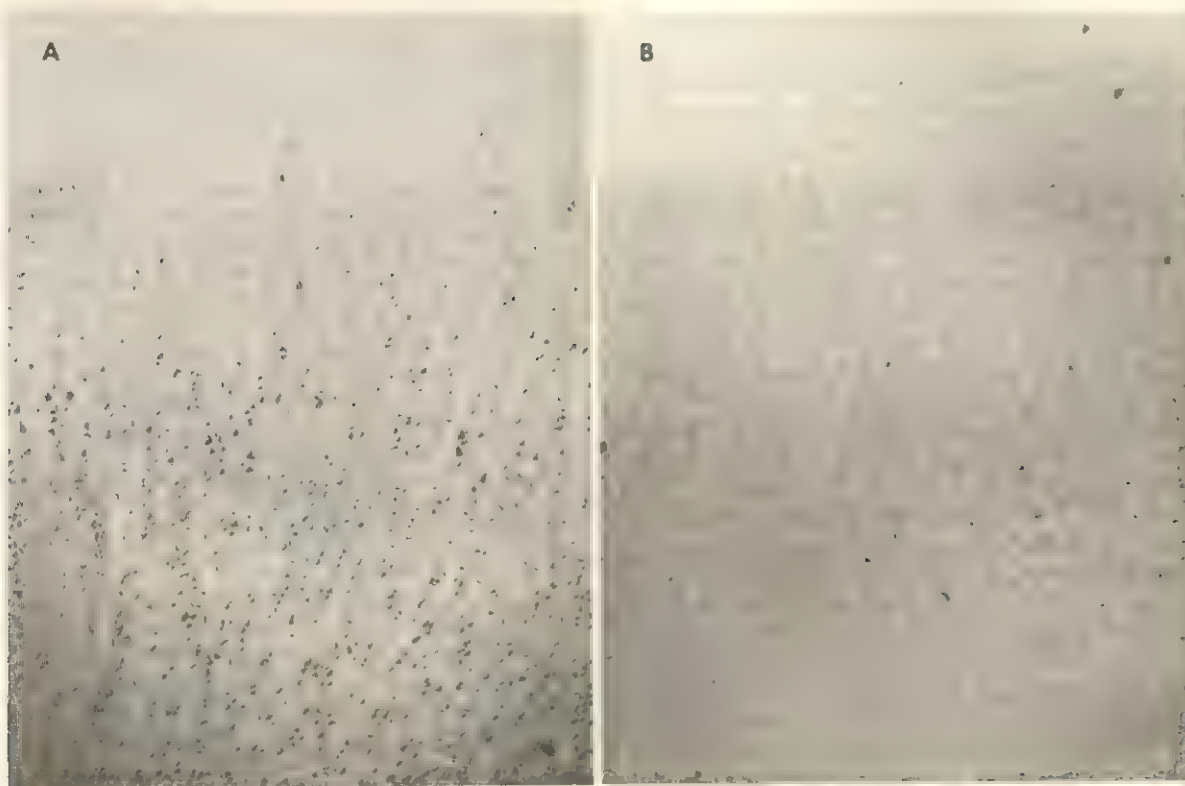


FIGURE 21. A, a portion of normal cerebral cortex. Nissl stain. 52 \times . B, cerebral cortex affected by anoxia. The cortex has shrunken in depth. Loss of neurons accounts for the decreased quantity of cell bodies, especially in the third layer of the cortex. Nissl stain. 60 \times . (Courtesy of Dr. H. M. Zimmerman, Montefiore Hospital and Medical Center, New York, New York.)

The classical syndrome of internal carotid occlusion is that of blindness of the ipsilateral eye (supplied by the ophthalmic branch of the internal carotid artery) and contralateral hemiparesis, hemisensory impairment, and homonymous hemianopsia. Usually only fragments of the complete syndrome are seen. Occlusion of the main trunk of the middle cerebral artery causes the contralateral signs above. Occlusion of the anterior cerebral artery is associated with contralateral paresis of the lower extremity, and occlusion of the posterior cerebral artery results in contralateral homonymous hemianopsia. Sudden occlusion of the basilar artery is incompatible with life. More commonly, stenosis within the vertebral or basilar arteries causes ischemia or infarction of the brain stem with a variety of ipsilateral cranial nerve signs coupled with contralateral motor and/or sensory signs. The most common infarct of the brain stem is within the distribution of the posterior inferior cerebellar artery and is usually due to thrombosis of the adjoining vertebral artery. The resultant lateral medullary syndrome is characterized by vertigo and nystagmus with ipsilateral ataxia and facial analgesia, and by contralateral analgesia of the trunk and extremities. Ipsilateral Horner's syndrome and paresis of the soft palate, pharynx, and larynx are usually present; ipsilateral involvement of the sixth, seventh, or eighth cranial nerves sometimes occurs.

Embolic infarction. Embolic infarcts are sudden in onset and often multiple. Emboli usually arise from mural thrombi of the heart, disseminated during a bout of cardiac arrhythmia, or from valvular vegetations of subacute bacterial endocarditis. Fat emboli result from crushing injuries to the bone or other manipulation of fatty tissue; characteristically, a time lapse of 3 to 6 days occurs between the initial injury and the onset of cerebral symptoms. Air embolism may occur in excessively rapid decompression or during surgical operations that allow air into the arterial system, e.g., surgical abortion.

Treatment. The treatment of cerebral infarction is still unsatisfactory. Thromboendarterectomy of the carotid artery has not yet proven to yield better results than medical measures. It may be indicated in a young individual with a single arterial lesion that has caused ischemia but not major infarction. Anticoagulant therapy has been similarly disappointing but may be indicated in nonhypertensive individuals with transient ischemic attacks, especially within the distribution of the vertebrobasilar arteries, and it is indicated in aseptic embolic disease of cardiac origin. A potent cerebrovascular dilator is not yet available, but papaverine, carbonic anhydrase inhibitors (e.g., acetazolamide (Diamox)), and intermittent administration of 5 per cent CO_2 and oxygen may be beneficial. Hypothermia has not been of proven value. The administration of low molecular weight dextran to decrease sludging within vessels adjacent to the infarct has not met with success. Hyperbaric oxygen chambers have been used with benefit but are not yet practical.

Pathogenesis. The development of infarction is attributable to reduced blood supply to a local area. Complete arterial occlusion need not be present, for anoxia of varying duration and severity may cause

irreparable damage. The rate of reduction in blood flow is an important factor in the development of infarction, as slow reduction allows collateral circulation to develop within the ischemic zone and may prevent the damage that almost invariably occurs with sudden major occlusive disease. Neurones are much more susceptible to ischemic damage than astrocytes, and there is considerable difference in vulnerability of nerve cells. Neurones of the cerebral cortex, particularly Ammon's horn, and Purkinje cells of the cerebellar cortex are most vulnerable to ischemia (Figures 19 to 22). An infarct (Figures 11 and 12) appears as a pale, often wedge-shaped zone of softening, first swollen, then shrunken. Embolic infarcts are frequently multiple and more often hemorrhagic than infarcts of thrombotic origin. The microscopic reactions of neurones and glial cells to these and other injuries have been described above.

Cerebral hemorrhage. Petechial hemorrhages are seen as small, scattered lesions and may be associated with severe infections or toxic reactions. Larger cerebral hemorrhages are due to rupture of an artery, in patients with atherosclerosis and hypertension, or to rupture of an aneurysm. Much less common causes of hemorrhage include blood dyscrasias and vascular malformations. A large cerebral hemorrhage is manifested by the sudden onset of loss of consciousness and focal neurological signs; it is often catastrophic. Blood is usually found in the spinal fluid. Surgical evacuation of the hematoma may be indicated if it acts as an expanding mass.

Aneurysm. Ruptured aneurysms in or near the circle of Willis are the most common cause of subarachnoid hemorrhage. The hemorrhage is manifested by the sudden onset of headache and usually loss or alteration of consciousness; nuchal rigidity is found on examination. If blood from the ruptured aneurysm breaks into the parenchyma, focal neurological signs occur (Figure 23). Aneurysms may also cause signs by their pressure on adjacent structures, i.e., the oculomotor nerve.

Congenital aneurysms are due to defects in the media of the arterial wall, especially at the bifurcation of vessels. Mycotic aneurysms are secondary to infection often spread from subacute bacterial endocarditis. Atherosclerosis or trauma may weaken an arterial wall and cause an aneurysm. A carotid cavernous sinus fistula is due to rupture of the carotid artery within the cavernous sinus and causes pulsating exophthalmos, ophthalmophagia, and bruit. Dissecting aneurysm of the aorta may occlude or extend into the carotid artery.

Most neurosurgeons advocate ligation of the neck of the aneurysm, if accessible, or ligation of the common carotid artery supplying the aneurysm, but there is no statistical proof to indicate that surgical therapy produces better results than simple bedrest and supportive measures.

Other congenital vascular lesions

Arteriovenous malformation. An arteriovenous (A-V) malformation consists of a tangle of abnormal arteries and veins within the cerebrum. After aneurysms, this lesion is the most common intracranial vascular anomaly. Seizures may occur and a bruit is frequently heard, but most often the first clinical

manifestation is bleeding, with resulting neurological defect. The intracerebral or subarachnoid hemorrhage caused by an A-V malformation is usually less serious than the hemorrhage associated with a ruptured aneurysm.

Sturge-Weber's disease. This disease is manifested by a facial wine-colored nevus, contralateral neurological signs, epilepsy, and glaucoma. Roentgenograms of the skull reveal curvilinear calcifications that have developed in atrophic cortex underlying a large tortuous angiomatous malformation, most commonly over the occipital area. Angioma of the choroid of the eye is often present.

Familial telangiectasis. Familial telangiectasis (Rendu-Weber-Osler disease) is a condition manifested by multiple telangiectases of skin and mucous membranes. Similar involvement of the brain frequently results in small hemorrhages.

Ataxia telangiectasia. As the name implies, this condition adds cerebellar signs to congenital, often familial, oculocutaneous telangiectases. Recurrent sinopulmonary infections occur, and choreoathetosis and oculomotor apraxia may be associated features. Immunological deficiency is an underlying factor. Degenerative changes are found in the cerebellum and other areas of the central nervous system (CNS).

Venous occlusion. Primary aseptic thrombosis of dural sinuses is sometimes seen in children who suffer from malnutrition or who have serious systemic illness. Thromboses of dural sinuses are more commonly secondary to pyogenic infections (see below). These lesions are manifested by increased intracranial pressure and congestion in the area of the head or face normally drained by the affected sinus and its contributory veins. Venous thrombosis, especially of cortical veins, may be a postpartum complication; convulsive seizures and focal signs are due to congested cerebral tissue.

The collagen diseases. This is a group of diseases affecting predominantly connective tissue. Degeneration of connective tissue is associated with inflammatory cell infiltration and fibroblastic proliferation. These illnesses are discussed under diseases of the vascular system because most CNS symptoms and signs of collagen diseases are due to multiple small vessel occlusions. The resultant zones of ischemia gradually coalesce to form infarctions. All organ systems may be affected, and virtually any symptom or sign referable to the central or peripheral nervous systems may occur.

In systemic lupus erythematosus, central nervous involvement may occur early in the course. Convulsive seizures and "toxic" psychosis are common.

Peripheral neuropathy develops in 30 to 50 per cent of patients with polyarteritis nodosa, but central nervous system involvement is much less common.

Giant cell arteritis (temporal arteritis) occurs in patients over the age of 55 and is manifested by headache in the area of swollen, hard, and tender temporal arteries of the scalp. The disease often involves other arteries, and inflammation of the retinal arteries results in blindness of one or both eyes in approximately 25 per cent of patients.

Arteritis of the aorta and its major branches (pulseless disease or Takayasu's disease) is most common in young women, and neurological symptoms are due to ischemia of the brain stem or cerebrum.

Thrombotic thrombocytopenic purpura, not uncommonly causes multiple infarcts or hemorrhages in the cerebrum as well as in other organs. Other collagen diseases include derma-

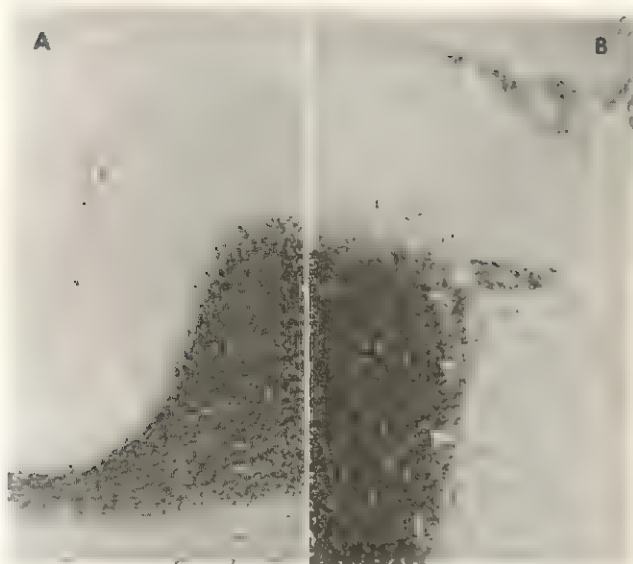


FIGURE 22. A, a section of normal adult cerebellar cortex. Note the layer of Purkinje cells between the outer molecular layer and the inner granular layer of cells. Nissl stain. 68 \times . B, cerebellar cortex affected by anoxia. Loss of Purkinje cells leaves empty spaces in their place. Nissl stain. 55 \times . (Courtesy of Dr. H. M. Zimmerman.)

tomyositis, scleroderma, and rheumatoid arthritis, but these diseases do not usually affect the central nervous system. Rheumatic fever is considered by some to be a collagen disease (see Sydenham's chorea, below). Most collagen diseases respond to steroid therapy.

Disease of the hematopoietic system

Sickle cell anemia is a hereditary disease of Negroes. The neurological features are due to cerebral thrombosis or hemorrhage. Roentgenograms of the skull reveal a ground glass appearance of the bone with spicules projecting through the outer table.

Hemophilia is a hereditary disease of abnormal blood coagulation affecting males but transmitted by the female. The neurological complications are associated with intracranial bleeding.

Polycythemia vera is characterized by an excess of red blood cells as well as other cellular elements of the blood with associated increased blood viscosity. It usually begins after the age of 50 and affects men more often than women. Headaches and other nonspecific neurological symptoms are common. More serious features are associated with thrombosis of cerebral vessels, either arteries or veins. Venous congestion may cause increased intracranial pressure. Cerebellar hemangioblastoma is sometimes associated with this disease.

Macroglobulinemia, Waldenström's disease, is considered a neoplasia of the reticuloendothelial system and usually occurs in middle or late adult life, affecting males more commonly than females. Its course is relatively chronic. Hemorrhagic diatheses occur in two thirds of these patients. Cerebral involvement may be acute and focal due to hemorrhage, or multifocal or diffuse due to lymphocyte and plasma cell infiltration. Peripheral nerve lesions may also occur.

Leukemia often causes cerebral disease because of hemorrhage or leukemic infiltration. Other lymphomas, Hodgkin's disease, lymphosarcoma, and reticulosarcoma involve the central nervous system approximately 25 per cent of the time. Progressive multifocal leukoencephalopathy (see below) may be associated with leukemia or lymphoma.

Subacute combined system disease of pernicious anemia, thrombocytopenic purpura, and kernicterus (see below) may also be considered under diseases of the hematopoietic system.

Trauma to the Central Nervous System

In most cases these diseases can be diagnosed on the basis of history, but unrecognized trauma may be associated with convulsive seizures, alcoholic intoxication, or other illnesses. Neurological signs of cerebral trauma may be focal or diffuse and, with the exception of dural hemorrhages, usually show evidence of gradual improvement. Recovery is not always complete, and focal signs as well as mental and personality changes may be permanent sequelae. Post-traumatic epilepsy and other neurological lesions occur more commonly after open head injuries than after closed head injuries (see Section 10.4).

Degrees of cerebral trauma

Cerebral concussion. This is a clinical term denoting unconsciousness with rapid recovery and lack of residual cerebral signs. Repeated cerebral concussions, on the other hand, may eventually lead to irreversible brain damage, as seen, for example, in the "punch drunk" boxer. Those few cases that have come to autopsy, as well as experimental studies, have revealed petechial hemorrhages and associated edema.

Cerebral contusion. In a patient with cerebral contusion, residual signs of cerebral injury are noted after recovery of consciousness but these signs usually show extensive improvement or complete clearing. The inferior aspects of the frontal (Figure 24) and temporal lobes are particularly subject to contusion. The injured areas of the brain appear discolored because of confluence of small hemorrhages and associated maceration of the parenchyma.

Cerebral laceration. The patient with cerebral laceration has severe and often permanent signs of cerebral damage after prolonged unconsciousness. The

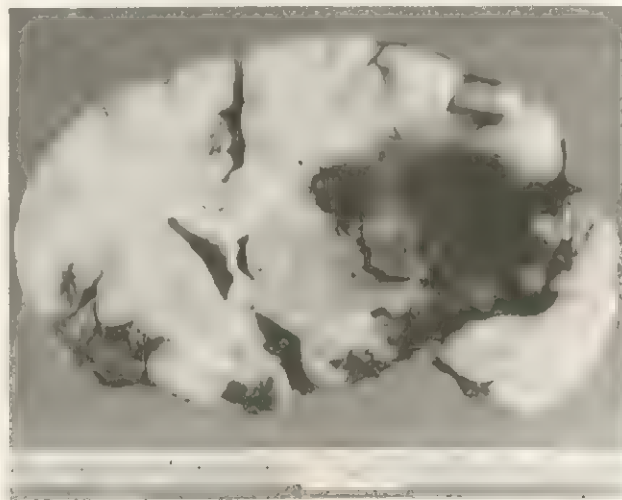


FIGURE 23. A ruptured aneurysm and associated massive cerebral hemorrhage. (Courtesy of Dr. H. M. Zimmerman.)

lesion is often associated with a depressed skull fracture, and bony fragments may cause gross tears of the brain tissue.

Intracerebral hemorrhage, usually superficial, is frequently associated with severe head injury, i.e., contusion or laceration of the brain. The symptoms may simulate that of a subdural hematoma, and surgical therapy may be warranted.

Cerebral injury need not underlie the site of trauma, but may be *contrecoup*, i.e., opposite the point of trauma, due to shift of the brain against the confines of the skull. This occurs particularly when trauma is directed to the frontal or occipital portions of the head.

Postconcussion syndrome. The syndrome includes many symptoms, most often headache, dizziness, fatigue, irritability, and other personality changes. It is most difficult to evaluate because there usually are no accompanying objective neurological signs. This syndrome is in the "no man's land" between occult neuropathophysiological mechanisms and "pure" emotional phenomena.

Birth trauma. Trauma at the time of birth may result in cerebral palsy (see below). Cerebral edema associated with the birth process sometimes causes herniation of the uncus of the temporal lobe through the tentorium of the cerebellum. The subsequent ischemia of this portion of the temporal lobe may result in a small glial scar that later becomes epileptogenic and produces psychomotor (temporal lobe) seizures.

Dural hemorrhages. Dural hemorrhages may be cured by prompt diagnosis (verifying the clinical suspicion by angiography) and surgical evacuation.

Epidural hemorrhage. An epidural hemorrhage is usually acute because of arterial bleeding, most commonly from rupture of the middle meningeal artery in its course through a fractured temporal bone. After an initial loss of consciousness caused by trauma, the patient awakens for a short time. He then lapses into stupor and coma.

Subdural hematoma. A subdural hematoma is usually subacute or chronic (Figure 25) and due to bleeding from sheared veins in the subdural space as a result of trauma. It must be emphasized that a history of trauma need not be present and, particularly in infants or the elderly, this diagnosis must be suspected when a deteriorating neurological course is evident. Headache and other generalized symptoms of increased intracranial pressure are common. Focal signs need not be present or may be falsely localizing (e.g., shift of the cerebral peduncle against the tentorium of the cerebellum may cause hemiparesis ipsilateral to the intracranial mass). Subdural hematomas are located predominantly over the frontal and parietal areas of the brain. In the early stages, liquid blood or black clot is present, but soon organization occurs. New capillaries and fibroblasts grow from the dura and enclose the hematoma with a false membrane that grows increasingly dense. The new vessels within this membrane may exude serum or may rupture and cause additional bleeding, thus enlarging the total size of

the mass. When fully encapsulated, the hematoma appears as brown fluid; eventually the fluid turns yellow though still containing blood elements.

Subarachnoid hemorrhage and arteriovenous fistulas may result from trauma. Their manifestations have been noted above.

Other forms of trauma

Electric shock. Electric shock occurs by accidental contact with lines of moderate voltage and high amperage. Coma and almost any variety of central and peripheral nervous system signs may be noted. Electric convulsive therapy rarely causes permanent organic mental disease and very rarely death (see Section 10.1). The brain reveals small hemorrhages, perivascular edema, and zones of necrosis, as well as scattered neuronal degeneration.

Heat. Heat exhaustion is related to loss of water and chlorides. It is manifested by generalized weakness, headache, muscular cramps, nausea and vomiting; sometimes, loss of consciousness occurs. Heat stroke is a serious disease with a high mortality rate. Weakness, dizziness, stupor, sometimes delirium or convulsions, and eventually coma occur. High fever is associated with cessation of sweating. The fever must be quickly reduced to save the patient's life. Both the brain and meninges are edematous, petechial hemorrhages are present, and degeneration of nerve cells is seen.

Cold. Severe cold may be associated with peripheral neuritis, but disease of the brain does not occur. On the contrary, hypothermia lowers cerebral metabolism and oxygen consumption, facts which may be therapeutically applicable.

Radiation. Neurological symptoms and signs referable to an area of former radiotherapy are most often correctly attributed to recurrent malignancy. Occasionally, however, the clinical features are caused by radiation injury. The effects of such injury begin approximately 1 year after radiation and are progressive. The necrosis and demyelination of the central nervous system caused by radiation are associated with neuronal loss, destruction of oligodendroglia, and fibrous thickening, with resultant occlusion, of small blood vessels.

Burns. Burns may cause lethargy, disorientation, and seizures, as well as a variety of other mental and focal neurological signs. These phenomena appear to be due to alteration of cerebral blood flow, but toxic factors probably also play a large role. Cerebral edema and petechial hemorrhages are the chief pathological features.

Degenerative Diseases of the Central Nervous System (Including Deficiency States)

The degenerative diseases of the central nervous system still form a large "wastebasket" for illnesses of unknown etiology. One by one the pathophysiological mechanisms of these diseases are being understood. Thus, subacute combined degeneration is now known to be related to vitamin B₁₂ deficiency, and hepatolenticular degeneration has been found to be associated with defective copper metabolism. In many diseases a definite hereditary pattern has been discerned. Autoimmune reactions are currently thought to be an important mechanism in multiple sclerosis, but this and other demyelinating diseases have been particularly baffling. Metabolic and toxic etiologies probably will be found for many so-called degenerative diseases. Occult infectious processes with a mechanism akin to that of postencephalitic parkinsonism may be the underlying basis of some illnesses. The degenerative diseases remain the most frustrating in the search for an under-

lying cause and the most futile to treat. These diseases usually begin insidiously and progress slowly, but there is tremendous variability in their course.

Diffuse demyelinating diseases. In this group of diseases, the lesions may occur in small scattered plaques or may involve large areas. In any one case, all stages in the process of demyelination may be seen, from early breakdown of myelin sheaths and removal of debris by fat-laden phagocytic microglia (Figure 13), to glial proliferation and resultant scar. Sometimes further degeneration causes cavity formation within the glial scar. The degeneration of axis cylinders is usually dependent upon the severity of demyelination.

Multiple sclerosis. This is the most common demyelinating disease. The illness occurs between the ages of 20 and 40 years. Neurological signs may be referable to any part of the central nervous system. The most common features of multiple sclerosis are unilateral blindness due to retrobulbar neuritis; nystagmus and diplopia secondary to isolated paresis of extraocular muscles associated with brain stem lesions; hemiparesis of pyramidal tract origin; cerebellar

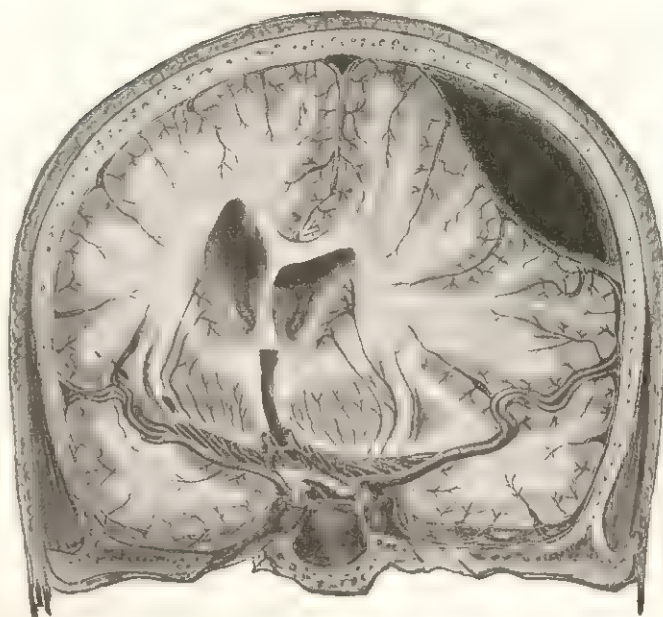


FIGURE 25. Chronic subdural hematoma. The mass displaces the brain toward the opposite side. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 167. Williams & Wilkins, Baltimore, 1964.)

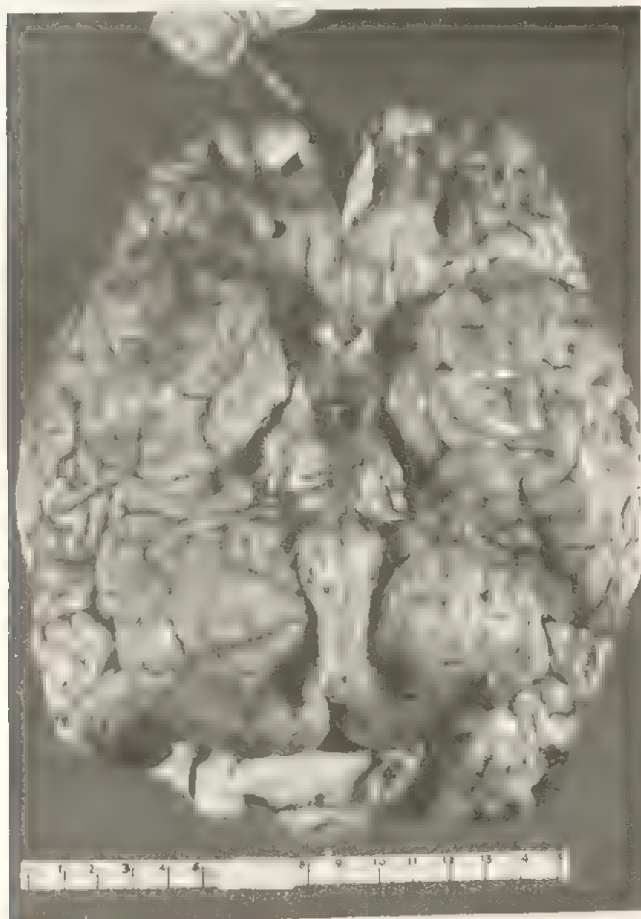


FIGURE 24. Severe contusion of the frontal poles has resulted in their atrophy and distortion. (Courtesy of Dr. H. M. Zimmerman.)

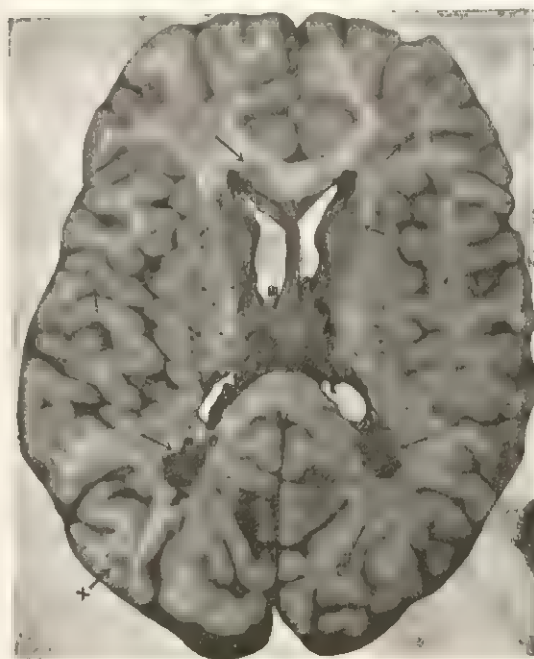


FIGURE 26. Multiple sclerosis. The arrows indicate "plaques" of demyelination. Note their predominance in the ventricular area and near the cortex. X indicates the section of a deep gyrus, not an abnormal plaque. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 81. Williams & Wilkins, Baltimore, 1964.)

(intention) ataxia and scanning (staccato) speech; and spastic paraparesis with loss of sexual potency and impaired sphincter control due to spinal cord lesions. The symptoms often outnumber signs and, at the onset, the disease may be mistaken for neurosis. Euphoria, often present in these patients, may be also misinterpreted as *la belle indifférence* of hysteria. The course is characterized by exacerbations and remissions of unpredictable severity, duration, and frequency. The only laboratory aid in the diagnosis is an elevated γ -globulin content of the spinal fluid found in about 65 per cent of cases. Gross examination of the brain (Figure 26) reveals scattered grey, sharply demarcated plaques of demyelination variable in size and shape, most numerous in the areas of the ventricles. In recent areas of demyelination, microscopic examination shows destruction of myelin, swollen axis cylinders, and many fat-laden phagocytic cells. Old areas of demyelination (Figure 27) reveal complete myelin loss with fragmentation of axis cylinders and the formation of a dense glial scar. Often there is remarkable preservation of nerve cells within the demyelinated plaques.

Neuromyelitis optica (Devic's disease). This disease is probably a variant of multiple sclerosis in which lesions are fortuitously limited to the spinal cord and optic nerves.

Schilder's disease. This is a demyelinating disease with usual onset between the ages of 1 and 3 years, but it may begin in older children, adolescents, or young adults. The illness is characterized by bilateral cerebral signs; cortical blindness is one of the most common findings. The course is steadily progressive but may be either acute or chronic. On gross examination, bilaterally symmetrical destruction of the white matter is seen, usually beginning in the occipital lobes. Under the microscope, the demyelination characteristically terminates a few millimeters below the cerebral cortex, sparing the arcuate, "U," fibers that bridge the cerebral sulci.

Other diffuse demyelinating diseases

Encephalitis periaxialis concentrica (Balo's disease). This is a rare condition that may occur at any age and causes death after 1 to 2 years. Both focal and generalized signs of cerebral disease occur. It is distinguished by the concentric rings of demyelination of the cerebral white matter.

Subcortical encephalopathy (Binswanger's disease). This is another rare illness that ends in death after 1 or 2 years. It begins in late adult life and is characterized by progressive focal signs as well as dementia and seizures. Patchy demyelination is seen that spares the grey matter and may be due to atherosclerosis of small deep cerebral vessels.

Acute encephalopathies. Acute encephalopathies associated with exanthemata or vaccinations (see below) may be demyelinating rather than inflammatory diseases.

Leukodystrophies. Leukodystrophies (see below) are a group of diseases characterized by progressive demyelination, usually of a familial character, with onset in infancy.

Degenerative diseases affecting predominantly the cerebral cortex

Senile dementia. Senile dementia is manifested by chronic progressive mental deterioration (see Section 10.4) beginning after the age of 60 or 65 years. Focal neurological signs may occur but not gross defects. (In

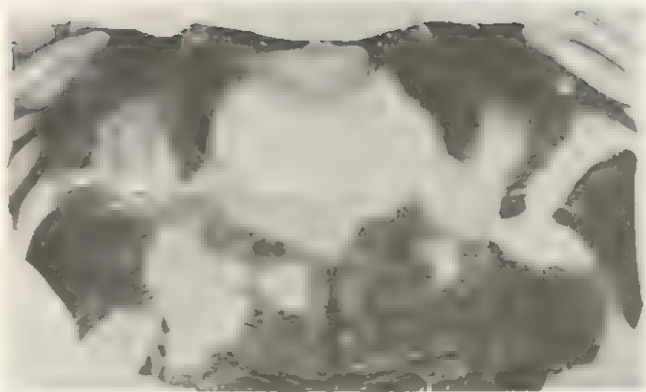


FIGURE 27. Multiple sclerosis. Irregular, seemingly punched out zones of demyelination are evident in this section through the level of the fourth ventricle. Myelin stain. 2.6 \times . (Courtesy of Dr. H. M. Zimmerman.)

any case of progressive dementia, brain tumor in the frontal lobe, or other "silent" area, must always be considered.) There is not very good correlation between the severity of the pathological findings and the degree of clinical involvement. On gross inspection, the meninges may be thickened and opaque. The underlying brain, particularly the frontal lobes, exhibits generalized or scattered atrophy manifested by narrow convolutions and wide sulci. Ventricular enlargement is seen in the cut section, and small cavities within the parenchyma may be noted. Microscopic examination reveals Alzheimer's neurofibrillary changes (see above). Other neuronal degeneration leaves ghost cells and alters the lamination of the cortex. Senile plaques, characterized by large extracellular silver-staining masses with radiating fibrils, are prominent in the cerebral cortex and the basal ganglia, maximal in the areas of major cell damage. Corpora amylacea (see above) are found predominantly in the white matter, particularly under the ependyma and near old cavities.

Alzheimer's disease. This disease is classified as a presenile dementia, but there is considerable doubt as to the clinical and pathological distinction between Alzheimer's disease and senile dementia. The chief clinical difference is the younger age of onset. The main pathological difference is the greater prominence of senile plaques, neuronal degeneration, and neurofibrillary changes in Alzheimer's disease (Figure 28).

Pick's disease. Pick's disease is another form of presenile dementia, i.e., beginning before the age of 60. It is clinically similar to Alzheimer's disease but occurs more commonly in females than males. On inspection of the brain (Figure 29), there is marked localized, asymmetrical atrophy of all or part of the frontal lobe, temporal lobe, or, less commonly, parietal lobe. Under the microscope, severe neuronal loss is seen with destruction of normal cortical layers. Characteristic, but not invariable, are Pick cells, i.e., neurones with large argentophilic inclusions in the cytoplasm that may displace the nucleus. Severe demyelination and glial proliferation are associated microscopic features.

Degenerative diseases affecting predominantly the cerebral cortex and the basal ganglia

Huntington's chorea. This disease begins between 30 and 50 years of age, when dementia and chorea appear, although not always concurrently. The disease is inherited as a simple dominant, thus affecting half of every generation. A progressive course lasts approximately 15 years. On gross inspection of the brain there is atrophy of the basal ganglia and sometimes of the brain as a whole. Under the microscope, neuronal loss affects predominantly the small cells of the caudate and putamen nuclei, as well as the cerebral cortex, especially the frontal lobe. Associated glial proliferation is evident.

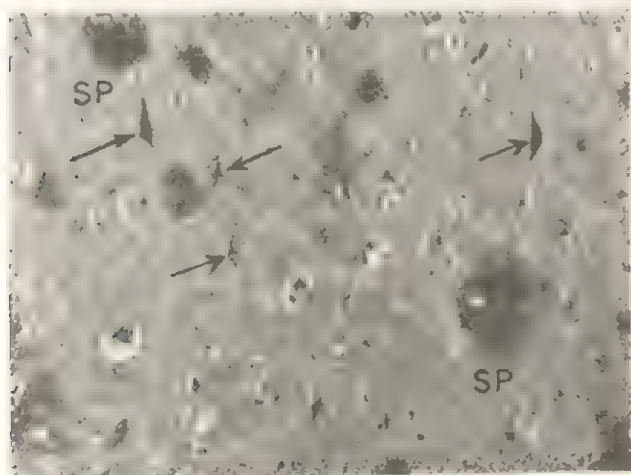


FIGURE 28. Alzheimer's presenile dementia. Senile argyrophilic plaques (SP) and Alzheimer's neurofibrillary degenerations (arrows) are seen in this section of the cerebral cortex. Modification of Bielschowsky's silver stain. 250 X. (Courtesy of Dr. H. M. Zimmerman.)

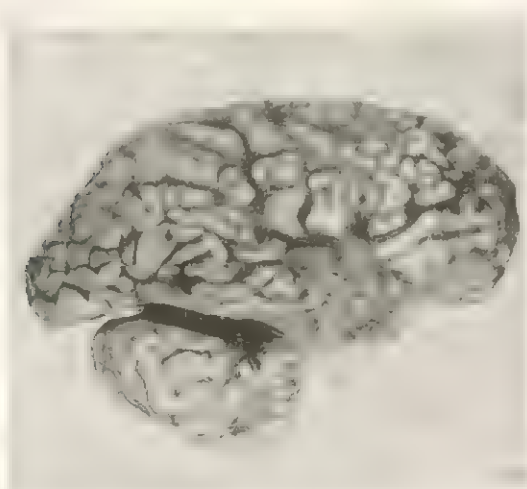


FIGURE 29. Pick's lobar atrophy. There is prominent shrinkage of the temporal lobe with generalized atrophy of the middle and anterior aspects of the hemisphere. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 113. Williams & Wilkins, Baltimore, 1964.)

Wilson's disease or hepatolenticular degeneration. This is a familial disease of adolescence and more often has a chronic rather than an acute course. It is characterized by dementia and a combination of cerebellar and parkinsonian signs. Kayser-Fleischer rings (grey-brown-green in color) are noted along the outer zone of the corneas. Portal cirrhosis of the liver is invariably present. In this disease of defective copper metabolism excessive copper deposits in tissues cause the clinical and pathological features. The findings of high copper output in the urine, along with amino aciduria, and low ceruloplasmin (the copper-carrying plasma protein) confirm the clinical diagnosis. Although the basic metabolic defect is unaffected, treatments with dimercaprol (BAL) to hasten copper excretion and penicillamine to decrease copper absorption are beneficial in prolonging life beyond the average 5 to 10 years. On gross inspection of the brain, there is wasting of the lenticular nuclei, especially the putamen, as well as other basal ganglia. Under the microscope, neuronal loss is predominant in the putamen, other basal ganglia, the frontal cortex, and the dentate nucleus of the cerebellum. Large phagocytic cells containing hemosiderin (Opalski cells) are characteristic of Wilson's disease. Proliferation of astrocytes with large nuclei and demyelination of the subcortical white matter are usually seen.

Jacob Creutzfeldt's disease. This is a rare illness that begins between the ages of 40 and 50 years. It is manifested by dementia and motor signs of pyramidal, extrapyramidal, and lower motor neurone disease causing spasticity, tremors, and atrophy, respectively. Death occurs within 3 months to 3 years. Pathologically the disease is characterized by diffuse degeneration of neurones in the cortex, basal ganglia, and other nuclear groups of the central nervous system, including the anterior horn cells of the spinal cord.

Parkinson-dementia complex. This is a peculiar disease characterized by a combination of senile dementia and parkinsonism found in 7 per cent of the native population of Guam. Most of the pathological features of parkinsonism (see below) and senile dementia are found, but argyrophilic plaques and Lewy bodies are usually absent.

Degenerative diseases affecting predominantly the basal ganglia

Parkinsonism. In the past, parkinsonism followed encephalitis much more often than it does at the present time. Most recent cases beginning in adult life are idiopathic. (It is no longer thought that arteriosclerosis plays a primary role in parkinsonism.) In addition, the syndrome of parkinsonism may be a manifestation of phenothiazine, CO, or Mn toxicity. Parkinsonism has a slow course and is characterized by rigidity, resting tremor, and slowness of movement. These features may occur together or separately. Akathisia rarely occurs. Oculogyric crisis, i.e., fixation of the eyes in one position for minutes or hours, is a manifestation of post-encephalitic parkinsonism. The symptoms of parkinsonism, particularly tremor, are intimately associated with the patient's emotional state, as evidenced by their increase with minimal psychological stress. The therapeutic administration of atropine-like compounds benefits rigidity more than tremor. Exercise is at least as important as medication in diminishing rigidity and maintaining mobility. Mobility may also be augmented by amphetamines. Surgical methods of destroying the lateral thalamus or globus pallidus often eliminate the contralateral tremor or rigidity, respectively. (Such surgery may also benefit other dys-

kinesias.) Loss of pigment and atrophy of the substantia nigra is seen on gross examination of the brain (Figure 30) as well as under the microscope. Neuronal disease with hyalin intracytoplasmic inclusions (Lewy bodies) and associated gliosis are most prominent in the substantia nigra. There is lesser involvement of the globus pallidus, other basal ganglia, and the cerebral cortex.

Dystonia musculorum deformans. This condition begins before or soon after puberty, is predominant in Jews, and is sometimes familial. The course is usually slowly progressive, but in some cases deterioration stops or remissions occur. The disease is characterized by slow writhing movements of the trunk, shoulders, and pelvic girdle. The few pathological studies of this condition have revealed neuronal loss in the caudate and putamen nuclei and sometimes in the pons and dentate nucleus of the cerebellum as well. Torticollis may be a *forme fruste* of dystonia musculorum deformans.

Senile chorea. Senile chorea is a slowly developing dyskinesia unassociated with dementia or other neurological signs. Grimacing and athetoid tongue movements are often prominent.

Other dyskinesias have been discussed elsewhere and are summarized in the section on examination (see Section 10.1).

Degenerative diseases affecting the cerebello-spinal system. Heredodegenerative spinocerebellar ataxias are the predominant group under this classification. These slowly progressive diseases form a spectrum with maximum involvement ranging from the cerebellum to the spinal cord or the peripheral nerves. In addition to disease of these sites, defects may include optic atrophy or retinitis pigmentosa; atrophy of cerebral cortex; degeneration of the red nucleus, the cochlear nucleus, or other brain stem nuclei. Thus signs of blindness, seizures, dementia, deafness, and pupillary and extraocular muscle palsies may accompany heredodegenerative spinocerebellar diseases.

Diseases predominantly cerebellar

Cerebellar degeneration or cerebello-olivary degeneration of Holmes. This condition is often familial and usually occurs in males in their 6th or 7th decade. The disease is manifested by cerebellar ataxia and dysarthria. There is gross atrophy of the cerebellum. Under the microscope, loss of Purkinje cells with preservation of basket cells is noted. Some reduction of the granular cell layer of the cerebellar cortex is also seen.

Olivopontocerebellar atrophy of Menzel. This disease is often familial and begins in the 2nd and 3rd decades. It is characterized by cerebellar ataxia, and parkinsonian features may occur later in the course. The pathological manifestations are neuronal degeneration of the olives and dentate nuclei, with lesser involvement of the Purkinje cells of the cerebellar cortex. Demyelination of fibers interconnecting the olives, pons, and the cerebellum causes gross atrophy of these parts. Involvement of the spinal cord is not uncommon.

Diseases predominantly spinal

Friedreich's ataxia. This is a familial disease of late childhood. Its clinical manifestations are ataxia of all extremities associated with position sense loss, areflexia, and bilateral Ba-

binski signs. There is microscopic evidence of degeneration of the dorsal nuclei of the spinal cord with demyelination of the posterior and lateral columns, the latter affecting both spinocerebellar and pyramidal tracts. Some involvement of the posterior nerve roots is also evident. Cerebellar cortical degeneration often occurs, and there are many other variations of this disease.

Hereditary spastic paraplegia. This condition is characterized by spastic weakness, then paralysis, affecting predominantly the lower extremities. Microscopic study reveals demyelination in the lateral columns of the spinal cord.

Amyotrophic lateral sclerosis. This is the only disease in this group not commonly hereditary, except among the natives of Guam and the other Mariana Islands where the disease is strikingly familial and occurs in 10 per cent of the population. The illness begins in middle or late life and, in contrast to the chronic courses of other diseases discussed above, amyotrophic lateral sclerosis ends in death after 2 to 4 years. Spastic and/or flaccid progressive weakness with atrophy and fasciculations, affect the extremities and bulbar musculature. Under the microscope, degeneration of the anterior horn cells is evident, as well as the motor cells of the medulla and the Betz cells in the cerebral motor cortex. Demyelination of the pyramidal tracts is a concomitant feature. Less acute variants of this disease are progressive spinal muscle atrophy with major involvement of the anterior horn cells, and primary lateral sclerosis with maximum involvement of the pyramidal tracts.

Disease predominantly of the peripheral nerves

Charcot-Marie-Tooth disease or peroneal muscular atrophy. This is a hereditary, slowly progressive disease beginning in the first 3 decades of life. It is manifested by weakness and atrophy of the lower legs and lower third of the thighs with distal sensory impairment. Similar, but less marked features affect the upper extremities. The pathological characteristics are myelin and axonal degeneration of the peripheral nerves. Neuronal degeneration in the spinal cord is either secondary to the peripheral nerve disease or, some believe, a primary defect. Charcot-Marie-Tooth disease is often associated with Friedreich's ataxia, just as Friedreich's ataxia may blend into the cerebellar degenerations.

Diseases associated with nutritional factors

Vitamin deficiency. Vitamins, especially of the B complex group, are essential for nerve metabolism.

B complex. Thiamine deficiency may result in beriberi and causes peripheral neuropathy. CNS disease is rare, but, in severe forms, mental symptoms and cerebral edema have been noted. Thiamine deficiency is a major factor in the cause of Wernicke's syndrome (see below).

Niacin deficiency (pellagra) often manifests symptoms of toxic psychosis, dementia, or convulsive seizures early in its course. Motor signs implicating the peripheral nerves, pyramidal tracts, cerebellum, or extrapyramidal system occur later, if at all. Pellagra is associated with neuronal loss of the cortex, as well as other areas of the CNS. In addition, there may be posterior and lateral column demyelination of the spinal cord.

Pyridoxine deficiency may cause convulsions in infants, but its pathological characteristics in adults are obscure.

Vitamin B₁₂ deficiency causes pernicious anemia. It is a disease of middle or late adult life. The neurological syndrome of subacute combined degeneration may develop within a few weeks or months, sometimes before clinical evidence of the hematological disorder. Achlorhydria is always present, and the Schilling test is diagnostic. The neurological signs implicating the spinal cord are spastic weakness and/or ataxia due to de-

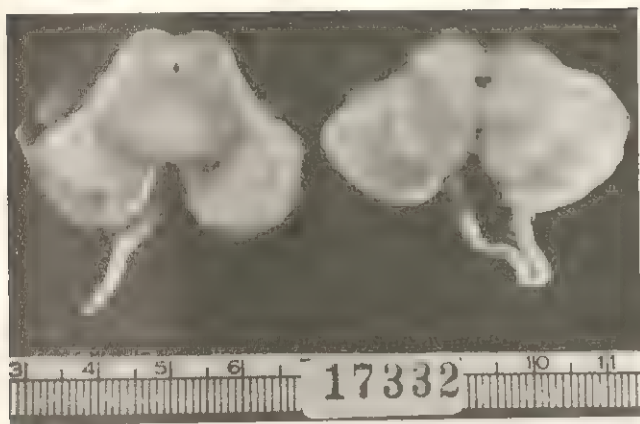


FIGURE 30. Parkinsonism. The substantia nigra is well pigmented in the normal section of the midbrain (*left*). Neuronal loss in the substantia nigra is manifested by depigmentation of this area in the section (*right*) from a patient with parkinsonism. (Courtesy of Dr. H. M. Zimmerman.)

myelination of the lateral and posterior columns of the cord. Peripheral neuropathy is common. Cerebral involvement is manifested by neurotic symptoms or dementia and is associated with neuronal degeneration, perivascular demyelination, and petechial hemorrhages.

Vitamin A. Vitamin A deficiency in infants may cause mental retardation and hydrocephalus with papilledema.

Vitamin C. Vitamin C deficiency (scurvy), when severe, is sometimes associated with intracranial bleeding.

Vitamin D. Vitamin D deficiency (rickets), may result in tetany or convulsions late in its course.

Alcoholism. Nutritional deficiencies are often associated with alcoholism, which causes a variety of encephalopathies through a combination of vitamin deficiencies, especially of the B complex group, and other nutritional defects. The toxic effects of alcohol are the least important factor in Wernicke's and Korsakoff's syndromes.

Wernicke's syndrome. This condition is characterized by oculomotor palsies, pupillary alterations, and nystagmus with ataxia and tremor. An organic mental syndrome or toxic psychosis is usually an associated factor. Consciousness may be depressed, and convulsions sometimes occur. Thiamine deficiency is the predominant cause, and prompt intravenous administration of this vitamin may be life-saving. On microscopic examination, petechial hemorrhages are found in the midbrain and diencephalon, with neuronal loss in these areas as well as in the cerebral cortex.

Korsakoff's syndrome. This syndrome is manifested by confusion, disorientation, and amnesia (especially retrograde) with confabulation. Delirium tremens frequently precedes the psychosis. Polyneuropathy usually is present, and Wernicke's syndrome is often superimposed. Treatment with thiamine and glucose is less beneficial than in Wernicke's syndrome. Both neuronal disease and demyelination are found in the

brain, but the pathogenesis of this disorder is uncertain.

In other diseases associated with alcoholism, toxic factors appear to predominate over nutritional deficiencies. These diseases, acute and chronic alcoholic intoxication, delirium tremens, and primary degeneration of the corpus callosum, are considered toxic encephalopathies (see below).

Central pontine myelinolysis. This disease occurs primarily in adults and is characterized by rapidly progressive flaccid areflexic quadriparesis. In addition, there may be progressive weakness of the facial and tongue musculature as well as emotional lability and other pseudobulbar phenomena. Death occurs within weeks. Most often a history of chronic alcoholism is noted, but other causes of nutritional deprivation are also associated with this disease. Pathological examination reveals a focus of demyelination in the center of the basilar portion of the middle and upper pons with preservation of nerve cells, axis cylinders, and vascular structures.

Protein deficiency. Seen commonly in areas of chronic famine, protein deficiency causes a complex disease of young children called Kwashiorkor. It is manifested by mental retardation and behavioral disturbances, retarded growth with muscle wasting, and sometimes tremors. The skin is pigmented and cracked; diarrhea and edema are common. If an adequate diet is not administered, death occurs. The neuropathological features are minimal, but cerebral edema and congestion are often noted.

Degenerative diseases associated with systemic malignancy

Progressive multifocal leukoencephalopathy. This disease usually occurs in late adult life and causes death within 2 to 6 months. It is characterized by lethargy, progressive dementia, and multifocal signs of central nervous system disease. This illness is usually associated with a malignant lymphoma which, it is postulated, impairs immunological mechanisms enough to allow virus infiltration. Under the microscope, one sees perivascular demyelination disseminated throughout the cerebrum, multiple small zones becoming confluent. Monster-sized astrocytes and oligodendroglia with large nuclei, sometimes containing inclusion bodies, are seen in the areas of demyelination.

Subacute cortical cerebellar degeneration. This condition is most common in adults and is manifested by progressive cerebellar signs and dementia. Death occurs within a few months. The disease is associated with carcinoma, most often of the bronchus, less often of the ovary or other organs. Frequently the neurological symptoms antedate evidence of the primary malignancy. Microscopic examination reveals loss of Purkinje cells of the cerebellar cortex, and there may be additional neuronal degeneration of the olives and subthalamic nuclei. Sometimes demyelination of the long tracts of the spinal cord occurs.

Inflammatory and Toxic Diseases of the Brain

These two etiological categories are grouped together because it may be both clinically and pathologically difficult to differentiate toxic from infectious inflammation of the brain. Intracranial infection may occur from infected paranasal sinuses, ears, or mastoids via emissary veins or from organisms in the blood stream.

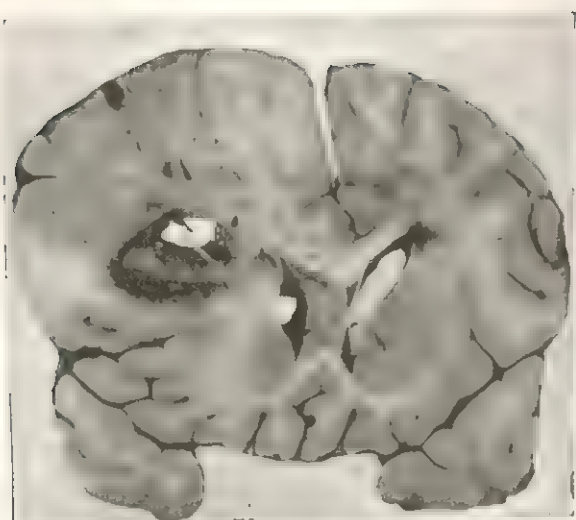


FIGURE 31. Cerebral abscesses. Surrounding edema has displaced midline structures. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 51. Williams & Wilkins, Baltimore, 1964.)

Cerebral infection is, nevertheless, relatively infrequent because of the blood-brain barrier. The latter consists of the arachnoid, which forms the adventitia of the blood vessels, and the contiguous glial membrane composed of the sucker-like feet of astrocytes. This barrier is much more than an anatomic structure; it is primarily a neurochemical homeostatic mechanism. Focal breakdown in the blood-brain barrier may lead to spread of infection from blood to brain with abscess formation. Meningitis usually causes a more generalized disturbance of the blood-brain barrier and allows infection to spread to superficial areas of the brain.

Suppurative infections

Brain abscess. Sources of infection in the development of a brain abscess are the blood stream, carrying organisms from a distant site such as the lung; infected paranasal sinuses, mastoids, or ears; and fractures of the skull either through infected sinuses or penetrating injuries. The symptoms and signs of a brain abscess are similar to those of a neoplasm of the brain. Fever is often conspicuous by its absence, and inflammatory cells need not be present in the spinal fluid. The brain abscess may seal off and resolve; it may rupture to the surface or into a ventricle, causing meningitis; or it may result in sinus thrombosis. Antibiotics may be curative, but often surgical evacuation is necessary, particularly when the abscess acts as an expanding mass. The acute brain abscess appears as a pus-filled cavity surrounded by soft necrotic brain tissue and, beyond that, localized edema (Figure 31). More chronic abscesses are walled off by thick, firm, fibrous tissue. On microscopy, necrosis and inflammatory cells are obvious. The abscess is bordered by a wall of collagenous tissue built of fibroblasts (rather than glial cells) and new capillaries.

Dural abscess. Abscesses related to the dura usually produce signs of increased intracranial pressure, as well as focal cerebral signs. The patient shows clinical evidence of infection, but the spinal fluid reaction is that of an aseptic meningitis. These diseases require intensive antibiotic therapy and surgical evacuation.

Subdural abscess. A subdural abscess is most often secondary

to middle ear or paranasal sinus infections but may be related to dural sinus thrombophlebitis. Subdural empyema appears as a purulent exudate over the surface of the brain. Under the microscope, polymorphonuclear inflammatory cells make up a fibrous exudate.

Extradural abscess. An extradural abscess is usually secondary to frontal sinusitis or mastoiditis. It is more localized than a subdural abscess. Its gross and microscopic appearance is similar to the latter.

Sinus thrombosis. Sinus thrombosis is most often caused by extension of infection, particularly from the ears or paranasal sinuses, to the venous sinuses. Cavernous sinus thrombosis usually arises from infection of the face, nose, eye, or sphenoid or ethmoid paranasal sinuses. Transverse sinus thrombosis is commonly secondary to middle ear infection or mastoiditis. Superior longitudinal sinus thrombosis most often occurs from frontal sinusitis or is of marantic origin, i.e., secondary to debilitating disease in the very young or very old. Edema and congestion in the areas of the head and face drained by veins filling these sinuses are accompanied by fever and increased intracranial pressure. Antibiotic therapy is vital, but the role of anticoagulants is still in doubt. All forms of sinus thrombosis cause extensive venous congestion of the adjacent brain with scattered hemorrhages and softening of the parenchyma.

Meningitis. It is best to consider the meningitides under two large classifications; purulent or acute meningitis and nonpurulent or chronic meningitis.

Purulent or acute meningitis. Purulent meningitis is manifested by the sudden onset of headache and stiff neck, usually with nausea and vomiting, high fever, and often alteration in the state of consciousness. The spinal fluid is turbid; contains 1,000 to 15,000 white blood cells per cubic millimeter, predominantly polymorphonuclear leukocytes; and has elevated protein and low sugar. The gross appearance of purulent meningitis (Figure 14) is characterized by hyperemia of the meninges, and, first, the development of a fibrinous exudate and, later, a purulent exudate, within the subarachnoid space. The exudate follows cerebral sulci or vessels, or both, along the base and over the convexity of the brain. There may be associated blockage of absorptive surfaces of the meninges and/or obstruction of the foramina of the fourth ventricle with resultant hydrocephalus. If recovery occurs, the purulent exudate may organize into a thick, gray membrane. On microscopic examination, one sees numerous polymorphonuclear leukocytes and large mononuclear cells within the exudate. Engorgement of pial vessels is evident with associated extravasation of red cells. In the brain, perivascular infiltration of inflammatory cells is predominantly within the Virchow-Robin spaces. (These spaces surround the arteries and veins, but not capillaries, and may be considered an invagination of the subarachnoid space along the vessel walls.) The exudate may follow the blood vessels into the cortex, causing small microabscesses. With healing, organization occurs and fibroblasts with new capillaries form thick fibrous tissue.

The most common organisms causing acute purulent meningitis are the following. The Meningococcus (a gram-negative diplococcus) accounts for 40 per cent of all cases of purulent meningitis. Seventy-five per cent of the cases occur before the age of 10 years. Associated infection of the adrenal glands is

rare but accounts for the Waterhouse-Friderichsen syndrome with adrenal hemorrhage, shock, and death. The *Pneumococcus* (a gram-positive diplococcus) makes up 10 per cent of all cases of purulent meningitis and is associated with the highest mortality rate. Fifty per cent of these cases occur within the 1st year of life or after the 50th year of life. The *Hemophilus influenzae* (a gram-negative bacillus) accounts for 6 per cent of purulent meningitides and is primarily a disease of childhood, 90 per cent occurring before the age of 5 years. A large percentage of children recovering from this disease develop subdural effusions. The *Streptococcus* (a gram-positive coccus) is almost always secondary to a primary focus and makes up approximately 8 per cent of purulent meningitides. Other organisms causing purulent meningitis include the *Staphylococcus* (gram-positive), usually associated with a localized abscess; *Escherichia coli* (gram-negative), usually found in disease of the newborn or young children; and *Pseudomonas aeruginosa* (gram-negative), rarely a contaminant of a spinal tap.

Often the organism is not seen on initial staining of the spinal fluid, and sometimes the organism cannot be cultured. If the patient is under 6 years of age there is more than a 90 per cent chance that the organism is *Meningococcus* or *Hemophilus influenzae*, and treatment should consist of tetracycline or chloramphenicol, 50 mg. per kilogram per day in 4 doses. In older patients over 90 per cent of meningitides are due to *Meningococcus* or *Pneumococcus* and they should be treated with 1 million units of penicillin every two hours. It sometimes may be desirable to use both penicillin and, 3 to 4 hours later, chloramphenicol.

Chronic meningitis. The chronic meningitides are manifested by the gradual development of headache, stiff neck, malaise, and fever. Cranial nerve involvement is often present because of exudate at the base of the brain. The spinal fluid usually contains 50 to 500 white blood cells per cubic millimeter, predominantly mononuclear leukocytes, elevated protein, and low sugar.

Tuberculous meningitis. Tuberculous meningitis is by far the most common form of chronic meningitis. The gross appearance of this disease (Figure 15) is characterized by a pale glistening weblike exudate at the base of the brain. Sometimes miliary tubercles (grey-white nodules) may be seen in the cerebral sulci and fissures. Under the microscope, fibroblasts, lymphocytes, epithelioid cells, and giant cells are present in and around zones of necrosis. Large granulomas, tuberculomas, may act as slowly growing brain tumors. Treatment of tuberculous meningitis consists of streptomycin, 1 to 2 mg. per day; isonicotinic acid hydrazide, 20 mg. per kilogram per day; and *p*-amino salicylic acid, 12 gm. per day.

Torula meningitis, due to *Cryptococcus neoformans*, produces an exudate similar to that of tuberculosis at the base of the brain. The microscopic appearance is again that of an exudate of lymphocytes, fibroblasts, and, in addition, plasma cells and foreign body giant cells. The latter contain torula organisms which appear as small bodies surrounded by a thick, clear capsule. Granulomatous nodules of torula in the cerebrum may act as solid or cystic masses. Torula meningitis and other fungal meningitides, once invariably fatal, often respond to amphotericin B, administered by both the intravenous and intrathecal routes.

Other forms of chronic meningitis are distinctly less common. They are associated with syphilis (see below), actinomycosis, cysticercosis, trichinosis, and leprosy. Virus meningitides are usually benign. Lymphocytic choriomeningitis, and the meningitides of mumps, Coxsackie, and ECHO viruses are the most common. Sarcoidosis and carcinoma may invade the meninges and present a picture similar to that of a chronic infectious meningitis.

Sarcoidosis. Sarcoidosis is a systemic disease of uncertain

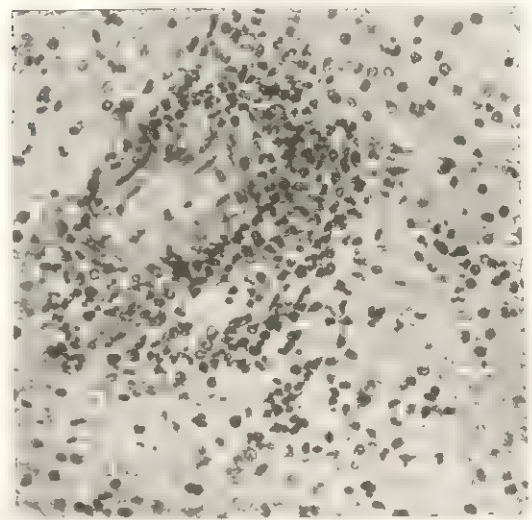


FIGURE 32. Encephalitis. Polymorphonuclear and mononuclear leukocytes infiltrate and surround a blood vessel within an area of disintegrating white matter. Hematoxylin and eosin. 250 X. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 77. Williams & Wilkins, Baltimore, 1964.)

origin characterized by granulomata composed of large epithelioid cells, unassociated with necrosis. The most common neurological involvement is paralysis of the facial nerve in association with uveitis and parotitis (uveoparotid fever). Optic neuritis and peripheral neuritis may occur. Granulomatous meningeal infiltration can cause an aseptic meningitis, but with low levels of spinal fluid sugar. Involvement of the base of the brain is associated with diabetes insipidus, and diffuse infiltration may cause any variety of diffuse or focal cerebral signs. Steroid therapy is very beneficial.

Encephalitis. Because the central nervous system reacts in a limited manner to irritating stimuli, either infectious or toxic, the nonsuppurative encephalitides have many pathological characteristics in common. The gross appearance (Figure 17) is that of slight to moderate meningeal congestion, and the underlying edematous, hyperemic brain tissue often reveals small hemorrhages. On microscopic examination (Figure 32), an inflammatory cellular infiltrate is seen within the tissue and perivascular spaces. Arteritis and petechial hemorrhages are present. There is demyelination and neuronal degeneration of varying degrees with microglial hypertrophy and proliferation. Inclusion bodies with neurones or glial cells suggest a virus origin.

Infectious encephalitis

Neurotropic viruses. Neurotropic viruses cause encephalitis that may be manifested by no more than headache and fever. The more severe, typical cases present additional features of somnolence, confusion, and, sometimes, delirium. Ocular signs and other focal signs may occur. Stiffness of the neck is common. Systemic involvement is manifested by malaise and upper respiratory tract or gastrointestinal symptoms. The spinal fluid may reveal leukocytosis of 25 to 250 cells per cubic millimeter, mostly lymphocytes. Some neuro-

tropic viruses invade and injure the basal ganglia more than other areas of the brain. Von Economo encephalitis in the 1920's was such a disease, and post-encephalitic parkinsonism frequently resulted.

In addition to the pathological characteristics described above, certain histological changes strongly suggest the specific virus of origin. Poliomyelitis is associated with anterior horn cell degeneration. In rabies encephalitis, Negri bodies (Figure 16) (oval, acidophilic inclusion bodies) are seen in the cytoplasm of neurones, particularly in Ammon's horn and in Purkinje cells. Japanese B encephalitis causes unusually marked destruction of the Purkinje cells of the cerebellum. Herpes simplex encephalitis is associated with intranuclear inclusion bodies and is predominantly focal. Other infections caused by neurotropic viruses include the equine encephalitides, St. Louis encephalitis, and herpes zoster encephalitis.

Viscerotropic organisms. Most other organisms causing encephalitis are viscerotropic and involve the nervous system as part of a generalized systemic infection. The following diseases are most common.

- i. Viral: Coxsackie, ECHO, herpes simplex, mumps, psittacosis
- ii. Bacterial: typhoid, paratyphoid, tetanus, botulism, diphtheria
- iii. Rickettsial: typhus, rocky mountain spotted fever
- iv. Spirochetal: syphilis, Weil's disease
- v. Protozoal: malaria, toxoplasmosis
- vi. Fungal: torulosis, coccidiosis, moniliasis
- vii. Caused by helminths: trichinosis, cysticercosis, schistosomiasis

The clinical picture of encephalitis associated with viscerotropic organisms is similar to that seen in encephalitis due to neurotropic viruses, with certain exceptions. The most common exceptions are syphilis, toxoplasmosis, and tetanus (see below).

Neurosyphilis. Neurosyphilis may be divided into those cases which affect predominantly the vascular and interstitial tissue of the CNS and those in which maximal disease is in the parenchyma, but these conditions are not mutually exclusive.

Parenchymal neurosyphilis is characterized by two major diseases, tabes dorsalis and general paresis. Both diseases occur many years after the primary infection. In both, miotic pupils unreactive to light (Argyll-Robertson pupils) are found, although less often in paresis than in tabes. The cerebrospinal fluid (CSF) reveals elevated protein and increased numbers of lymphocytes, as well as positive serology and abnormal colloidal gold curves, although in "burnt out" tabes the CSF is often normal.

General paresis occurs in 2 to 3 per cent of all patients with syphilis. Symptoms of progressive dementia with agitated, expansive, and/or depressive qualities occur 5 to 20 years after the primary infection. Slurred speech and minor tremors are common. On gross inspection old meningitis is manifested by thick opaque meninges, particularly over the convexity of the brain. The underlying brain is small, and wide sulci are further evidence of atrophy, predominantly in the frontal lobes. The microscopic appearance of general paresis is primarily that of neuronal degeneration within the frontoparietal cortex. There is associated long tract,

as well as patchy, demyelination. Subpial and subependymal glial proliferation is noted. Hypertrophied microglia are seen as elongated rod cells often filled with iron granules that stain brilliantly with Prussian blue. Small round cell perivascular infiltration and endothelial proliferation are also present.

Tabes dorsalis is chiefly characterized by demyelination of the posterior columns of spinal cord. The resultant position sense loss causes ataxia and associated loss of deep pain sensation may lead to the development of painless traumatic arthropathies (Charcot joints). Sometimes degeneration of the optic nerves causes blindness, and oculomotor nerve paresis is common. Pains are a prominent symptom. Lightning-like pains, usually in the extremities, and girdle pains or paresthesias are probably due to posterior nerve root disease. Crises of severe pain may arise from viscera.

In luetic arteritis, parenchymal involvement is secondary to thrombosis and infarction. Luetic meningitis presents the features of a chronic meningitis with thickening of the meninges at the base of the brain. Mononuclear cell infiltration is evident in arteritis and meningitis due to syphilis. A luetic granuloma (gumma) acting as a brain tumor is virtually extinct.

The therapy of choice for neurosyphilis is penicillin. A total dose of 6 million units is administered in divided dosage over a period of several days.

Toxoplasmosis. Toxoplasma often infects infants in utero and is manifested by hydrocephalus, convulsions, chorioretinitis, and intracranial calcifications. On microscopy, miliary granulomas of large epithelial cells and chronic inflammatory cells are seen. Intracellular as well as extracellular parasites appear as small acidophilic masses.

Presumably viral encephalitis. Other encephalitides are of indeterminate but presumably viral origin because inclusion bodies are found in brain tissue. They have an unusually poor prognosis.

Subacute inclusion body encephalitis usually begins in childhood or adolescence and ends in death after weeks or months. The electroencephalograms of these patients often reveal periodic slow waves and spikes (see Section 10.1).

Cytomegalic inclusion body disease begins in the fetus, is manifested in the newborn, and usually results in death after a few months. Inclusion bodies may be found in the cells of urinary sediment as well as the brain.

Acute necrotizing encephalitis sometimes follows a febrile illness and causes progressive focal signs often like those of a temporal lobe brain tumor. Death occurs within days or weeks. Intranuclear inclusion bodies are usually found in nerve and glial cells.

Progressive multifocal leukoencephalopathy (see above) may also present inclusion bodies in diseased cells of the brain.

Other encephalitides of presumably viral origin are associated with infectious mononucleosis, encephalomyocarditis, epidemic neuromyasthenia (Icelandic disease), and cat scratch disease. These diseases are usually benign.

Reaction to vaccination, etc. Some encephalitides are a reaction of the brain to vaccination, exanthemata (e.g., measles, chicken pox), rheumatic fever, or other systemic inflammations.

Acute disseminated encephalomyelitis affects grey matter predominantly. It occurs either during an infectious disease or a few days to 3 weeks after an infectious illness or vaccination. Recovery may occur.

Acute hemorrhagic leukoencephalitis, as the name implies, affects white matter predominantly. This disease often follows a febrile illness and ends in death after a few days. These two

illnesses may be acute allergic demyelinating diseases with secondary reactive inflammation.

Sydenham's chorea occurs in young adolescents or young primiparas (chorea gravidarum), but most frequently in children between 5 and 13 years of age. It is more common in females than in males. The onset may be manifested by no more than irritability or unusual restlessness. Choreiform movements of the extremities increase in prominence, and similar movements affect the face and tongue. Hypotonic weakness is common. Sometimes emotional symptoms increase to psychotic delirium. Bed rest in a quiet environment with judicious use of sedatives is the treatment of choice. The relationship to rheumatic fever is well known, and prophylactic penicillin is warranted. The pathogenesis of Sydenham's chorea is still in doubt, for vascular and degenerative mechanisms have been implicated as well as inflammatory disease.

Other inflammatory syndromes. These syndromes may affect the brain but are of unknown etiology.

Behcet's syndrome is manifested by recurrent uveitis and ulcers of mucous membranes. Meningoencephalitis occurs, and sometimes there is involvement of the brain stem or spinal cord.

Vogt-Koyanagi-Harada's syndrome is characterized by uveitis, deafness, and depigmentation of the skin and hair. Neurological manifestations are predominantly those of meningitis or encephalitis.

Reiter's syndrome is characterized by urethritis, conjunctivitis, and arthritis. Rarely, meningoencephalitis, cranial neuropathy, or other peripheral nerve involvement may occur.

Toxic encephalitis. The toxic encephalitides present evidence of generalized cerebral dysfunction.

In adults, symptoms of headache and dizziness are accompanied by lethargy, confusion, delirium, and other evidence of toxic psychosis. Convulsive seizures may occur, but focal signs are usually minimal. Fever may or may not be present. Systemic signs are dependent upon the offending agent. Acute toxic encephalopathy in children is manifested by the sudden onset of fever, nausea, vomiting, stupor, delirium, or convulsions. The child may be flaccid but more often manifests increased muscle tone with meningismus. The deep reflexes are hyperactive, and bilateral Babinski signs may be present. Pupils are often dilated, and papilledema may occur. Sometimes the spinal fluid is under elevated pressure, and often protein is increased although the cell count is normal or only slightly elevated. The severity of the disease and its sequelae are variable. In adults, and particularly in children, multiple factors may contribute to the acute toxic encephalopathy. The effect of the toxin itself, the high fever and its associated dehydration, the changes in serum electrolytes and other alterations in blood chemistry, the anoxia secondary to a convulsion or to respiratory deficits must all be considered. In the case of infection, e.g., pneumonia in a child, the neurological features are often obscured by the systemic effects of the disease.

The histological changes in toxic encephalopathies are similar to those described under encephalitis (see above). Although in some cases visible changes in the central nervous system may be minimal, neuronal damage is often more prominent in toxic encephalitis than in viral encephalitis. In addition, toxins may affect arteries to a greater extent than viruses. The resultant proliferation and swelling of endothelial cells (proliferative endarteritis) or degeneration of endothelium causes thrombosis or hemorrhage.

Endogenous toxins. Endogenous toxins are most commonly associated with uremia, diabetic acidosis, hepatic encephalopathy, eclampsia, and, less often, porphyria.

Convulsions and coma in parturient and postpartum women may be due to toxic or vascular factors. The comatose states associated with diabetes and uremia may be clinically distinguished by the odor of the patient's breath (acetone and urea, respectively). Kussmaul respirations may occur in both diabetic and uremic coma. With the latter, other types of respiratory abnormalities are common (e.g., Cheyne-Stokes respirations), and muscle twitching or convulsions may occur. Determination of the blood sugar and urea nitrogen will establish the diagnoses.

Hepatic coma or hepatic encephalopathy. This disorder is characterized by insidious impairment of mental processes, leading to stupor and coma. Sometimes delirium and other evidence of toxic psychosis occur. Asterixis is characteristic of impending hepatic coma. Liver function tests are abnormal, and blood ammonia is elevated, but the level of the latter does not necessarily coincide with the severity of the encephalopathy. The electroencephalogram often shows diffuse slow activity with bilaterally synchronous triphasic waves (see Section 10.1). Nonabsorbable broad spectrum antibiotics are administered by mouth in order to reduce bowel flora and thus decrease production of nitrogenous metabolites.

Porphyria. Porphyria is an inherited disorder of porphyrin metabolism. The most common form affects young and middle-aged adults, more often females than males. The disease is characterized by episodic bouts of abdominal pain, other visceral symptoms, and peripheral neuropathy; however, mental and emotional symptoms, as well as convulsive seizures, are not uncommon. Exacerbations may be precipitated by ingestion of alcohol or barbiturates. Porphobilinogen is found in the urine.

Encephalopathy caused by endogenous toxins is characterized by histological changes previously described, but certain features may predominate. In eclampsia, proliferative endarteritis and petechial hemorrhages are prominent. In uremia and hepatic encephalopathy, perivascular and diffuse demyelination is marked. Demyelination of peripheral nerves is the chief pathological feature of porphyria; changes in the CNS are those of neuronal disease.

Exogenous toxins. The exogenous toxins consist of those elaborated by bacteria (causing tetanus, diphtheria, and botulism); alcohol; drugs, particularly sedatives and tranquilizers; heavy metals; and organic poisons.

Tetanus. Tetanus is caused by the toxin of the *Clostridium tetani* (a gram-positive bacillus) acting on myoneural junctions and, in the central nervous system, on motor synapses. Symptoms usually occur 5 to 15 days after the patient has suffered a contaminated wound. There is first stiffness of jaw and neck muscles with tonic spasm (trismus), retraction of the corners of the mouth (risus sardonicus), and dysphagia. Rigidity gradually develops with severe and painful extensor spasms, especially of the trunk musculature. Spasms can be precipitated by minimal stimuli, and convulsions may occur. Consciousness is usually preserved. The spinal fluid is normal. Recovery is likely if the incubation period has been long and the patient has survived the 1st week of illness. Treatment of tetanus consists of isolation in a quiet room with appropriate sedatives and anticonvulsant medication. If the skin test sensitivity is negative, tetanus antitoxin should be given intramuscularly until clinical manifestations begin to subside. Penicillin is also recommended. Muscle relaxants (for example, mephenesin), administered intravenously, may be of value. Tracheostomy is sometimes necessary. Tetanus should be differentiated from tetany (see Section 10.4). The pathological features of tetanus are minimal, with some evidence of neuronal damage and petechial hemorrhages.

Habituating and addicting drugs. Morphine and heroin cause stupor; cocaine and dextroamphetamine produce excitement and

delirium; marijuana and lysergic acid diethylamide (LSD) evoke hallucinations (see Section 10.4). In the remarkably few pathological studies that have been carried out in cases of morphine poisoning, the changes are similar to those described under the anoxic poisons (see below). Most common of all toxins, of course, is ethyl alcohol, although methyl alcohol is much more toxic. Methyl alcohol, particularly, affects the ganglion cells of the retina and optic nerve fibers with resultant blindness.

Ethyl alcohol intoxication. Delirium tremens occurs in chronic alcoholics either associated with intercurrent infection or injury, or 8 to 24 hours after sudden withdrawal from alcohol. Fever, tachycardia, and diaphoresis are prominent. Delirium is severe, and visual hallucinations are vivid. Restlessness, sleeplessness, coarse tremors, and sometimes convulsions may cause exhaustion and death. The brain of a patient who has died of delirium tremens or (rarely) of acute alcoholic intoxication appears edematous and hyperemic with diffuse petechial hemorrhages.

Chronic alcoholic intoxication is manifested by slowly progressive dementia and ataxia with restlessness and tremulousness. Convulsions frequently occur. Peripheral neuropathy is common, optic atrophy less so. Gross atrophy of the brain is evident, and cortical neuronal loss in the cerebrum and cerebellum is seen under the microscope.

Marchiafava-Bignami disease is clinically indistinguishable from chronic alcoholic intoxication except that the former progresses to death within 4 to 6 years. It is most often associated with intoxication by Italian wines. The disease is characterized by demyelination of the medial portion of the corpus callosum. (See above for other diseases associated with alcoholism, e.g., Wernicke's encephalopathy.)

Anoxic toxins. Anoxic toxins prevent oxygen from reaching or being used by nerve cells. The chief offenders are anesthetics and hypnotics, carbon monoxide, cyanide, and war gases (hypoglycemia might also be included).

Barbiturate intoxication is manifested by the gradual development of coma, occasionally preceded by delirium. Depressed respiration is a prominent sign. The duration of coma has greater prognostic significance than its depth. Diffuse, fast activity in the electroencephalogram may be an important clue in establishing the diagnosis; determination of barbiturate levels in gastric contents, blood, or urine is definitive. Support of vital functions, particularly respirations, is the cornerstone of treatment; stimulants are of questionable value. In severe cases, peritoneal dialysis may be life-saving. The chief pathological feature of barbiturate and other anoxic poisoning is neuronal degeneration, particularly in those areas of the central nervous system most vulnerable to ischemia (see above).

Other drugs. Other drugs frequently encountered in toxic dosages are psychotropic agents, the hydantoins, and atropine and its related compounds. The hydantoins in toxic dosages cause ataxia by their effect on the Purkinje cells of the cerebellum. Atropine and its congeners produce central anticholinergic activity with mental symptoms of amnesia, hallucinations,

illusions of unreality, or delirium; and motor signs of weakness, ataxia, restlessness, excitement, or choreiform activity.

Psychotropic drugs. Psychotropic drug intoxication may cause neuronal damage, most pronounced in the basal ganglia, hypothalamus, and mesencephalon. The following outline, for the most part, refers to tranquilizers as exemplified by the phenothiazines. Most of the signs may also be associated with antidepressant drugs, either dibenzazepine derivatives or hydrazides (monoamine oxidase inhibitors). Where indicated (*) the features are peculiar to or predominant with the antidepressants.

I. Toxic effects on the nervous system

A. Neurological phenomena

1. Dyskinesias, or muscle spasms; parkinsonism, akathisia, dystonia; tetanus-like syndromes
2. Convulsive seizures
3. Lethargy, somnolence, fatigue
4. Other neurological symptoms (headache, dizziness, weakness)
5. EEG slow wave or paroxysmal abnormality
6. Peripheral neuropathy*

B. Mental and emotional reactions

1. Impaired psychomotor function
2. Restlessness and excitement
3. Confusion and delirium
4. Insomnia and bizarre dreams
5. Increase in schizophrenic symptoms or in depression

C. Autonomic and endocrine disturbances

1. Alteration of vital signs
 - a. Disturbed temperature regulation, especially hypothermia
 - b. Tachycardia more often than bradycardia
 - c. Depression of respiration
 - d. Hypotension, especially orthostatic*; hypertension with other compounds*
2. Anticholinergic symptoms: dry mouth and skin, tachycardia, dilated pupils, paresis or paralysis of the bladder or bowel, fever, mental and motor signs (see the text, above)
3. Altered sexual function
 - a. Inhibition of ejaculation and impotence in men, or paradoxically, increase in libido in women
 - b. Gynecomastia in men or lactation and menstrual irregularity in women
 - c. False positive pregnancy test
4. Other effects
 - a. Hyperglycemia
 - b. Nasal congestion; excessive perspiration*
 - c. Weight gain; peripheral edema

II. Systemic toxic reactions

A. Primary reaction

1. Cholestatic jaundice and xanthomatous biliary cirrhosis; liver cell disease*
2. Eosinophilia, hemolytic anemia, agranulocytosis, pancytopenia, thrombocytopenia
3. Contact dermatitis, skin photosensitivity
4. Pigmentary retinopathy, melanin pigmentation of the cornea and lens
5. Questionable teratogenic effects
6. Vagolytic quinidine-like effect in electrocardiogram
7. Shock following electroconvulsive therapy
8. Death due to overdosage

B. Secondary effect on other modalities

1. The potentiation of other drugs such as sedatives, narcotics, anesthetics, amphetamines, hypotensive agents, digitalis, insulin,* as well as the potentiation of alcohol and its complications

2. Sedation leading to hypostatic pneumonia and trophic ulcers
3. Inflammation or infection of the injection sites

The most common toxic effects of the phenothiazines are dyskinesias and anticholinergic reactions. Hypotension, especially of the orthostatic type, anticholinergic phenomena, and potentiation of other drugs (especially those causing hypertension) are the most frequent complications of antidepressant drugs.

Heavy metal poisons. Poisoning by mercury, arsenic, or lead may cause symptoms and signs affecting all portions of the central and peripheral nervous systems. In mercury toxicity, cerebellar signs are often predominant. Encephalopathy, neuropathy, or myopathy may be associated with arsenic poisoning. Chronic manganese poisoning may result in parkinsonism.

Lead poisoning is one of the most frequent exogenous poisons encountered in children and usually occurs when infants chew the paint off furniture or toys. (This activity in infants is not abnormal, but its persistence in older children is an expression of perverted taste sometimes seen in the mentally retarded.) The clinical features of acute lead encephalopathy are the same as those discussed under toxic encephalopathy of children (see above). The diagnosis of chronic lead intoxication can be made from roentgenograms of long bones where dense radio-opaque bands are noted below the proliferating zone of the epiphysis. Chelating agents (edathamil calcium dysodium) are judiciously used in treatment. Supportive therapy is, of course, vital, and symptomatic measures, including anticonvulsants, may be required.

Organic toxic compounds. These include carbon tetrachloride, certain mushrooms, and insecticides. Carbon tetrachloride affects both the central and peripheral nervous systems, but the primary pathological effects in the central nervous system are difficult to differentiate from the effects secondary to severe liver and renal disease. Mushroom poisoning may cause extensive cerebral damage. The insecticides containing organic phosphate derivatives, as well as drugs taken by patients for myasthenia gravis, produce their toxic effect by cholinesterase inhibition. This is manifested by muscarinic effects of abdominal cramps, lacrimation, and incontinence; nicotinic effects of fasciculations followed by generalized muscle weakness and paralysis; and central nervous system effects of headache, dizziness, ataxia, lethargy, convulsions, or psychic phenomena varying from excitation to depression.

Diseases of Early Life, Including Congenital and Metabolic Diseases

The process of embryonic maturation is so complex that one must marvel at the relative rarity of congenital malformations. Many defects are due to abnormality of the germ plasm, but trauma, infection, or chemical stimuli during early embryonic life account for a large number of malformations. Defects vary with the embryonic stage at which alteration in the maturation process occurs, with the site of neural involvement, and with the severity and type of the underlying disturbance. The process of birth itself is, of course, fraught with potential hazards, particularly traumatic and anoxic phenomena. Infections or other illnesses around the time of birth may cause irreparable damage. There has been rapid growth of knowledge in neurochemistry; many metabolic diseases responsible for physical and mental retardation or failure of infants to thrive have been recently found. Important genetic dis-

coveries have revolutionized concepts of certain congenital diseases.

Diseases of early life may be divided into those beginning before, during, or after birth. Except where indicated, these diseases are associated with varying degrees of physical or mental retardation. Convulsive seizures are not uncommon.

Prenatal malformations

Defects of the cerebral hemispheres. Anencephaly is the absence of the calvarium and cerebral hemispheres; it is, of course, incompatible with life. Porencephaly is characterized by large cavities within the cerebral hemispheres. Microcephaly is the reduction in the size of the cerebral hemispheres. Patients with agenesis of the corpus callosum need not manifest signs of disease.

Cervicocranial deformities. These malformations include craniostenosis (premature closure of cranial sutures), basilar impression (elevation of rim of foramen magnum into the cranial cavity), and Arnold Chiari malformation (displacement of the medulla and inferior cerebellum through the foramen magnum). Hydrocephalus is often associated with these and other defects of the occipitocervical junction.

Hydrocephalus. Hydrocephalus is the abnormal dilation of the ventricular system and, in the infant, is associated with head enlargement. It is usually due to congenital obstruction of the ventricular channels (e.g., stenosis of the aqueduct of Sylvius), but it is often seen in paranatal inflammatory diseases that prevent reabsorption of cerebrospinal fluid into the blood stream or in neoplastic diseases that obstruct the outflow of the cerebrospinal fluid. In addition to cervicocranial deformities noted above, hydrocephalus is often associated with congenital defects of the meninges, such as meningocele (failure of the envelope of the meninges to close fully at the midline) or meningomyelocele (failure of the neural tube to close fully, with splitting of the spinal cord and the meninges). The prognosis of hydrocephalus is related to its cause and severity. The process may stabilize with little or no clinical cerebral deficit. Surgery to shunt ventricular fluid around an obstruction or drain cerebrospinal fluid out of the cranial cavity is often indicated but may do no more than prolong a tragic vegetative state.

Syringomyelia and syringobulbia. These conditions are characterized by cavitation within the central portion of the spinal cord and medulla. Although one basis for this disease is thought to be congenital, symptoms may not begin until the 2nd or 3rd decade of life. In the typical case, loss of pain, but with preservation of touch sensations in the hands, precedes other signs of neuraxial involvement.

Mongolism. Mongolism is due to a chromosomal defect occurring in the fetus, often of mothers beyond the age of 40. It is characterized by idiocy and alterations of head and face as revealed by brachycephaly, flattened nose, slanting widely spaced eyes, and small ears. The bones, especially of the fingers, are shortened, and other deformities are common. Death is due to the effect of associated congenital anomalies, especially of the heart, or intercurrent infections. The gross configuration of the brain is more diagnostic than its microscopic appearance. There is reduction in the size of the cerebrum, with large simple convolutions. Under the microscope, alteration in nerve cells and their stratified architecture is seen.

Other chromosomal defects. Other chromosomal defects may be manifested as Klinefelter's syndrome (gynecomastia

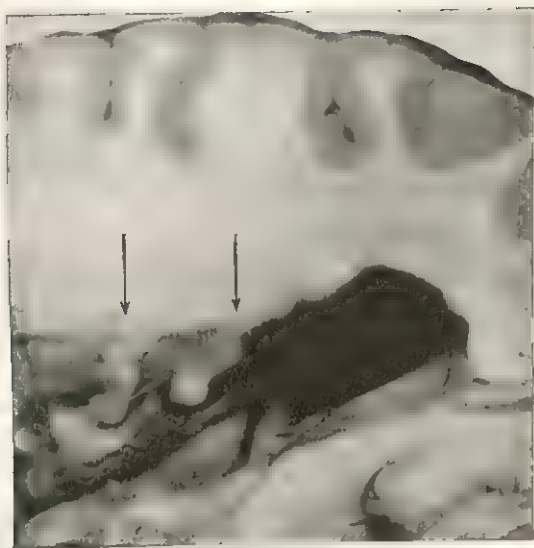


FIGURE 33. Tuberosclerosis. The arrows indicate nodules of glial tissue projecting into the lateral ventricle. (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 221. Williams & Wilkins, Baltimore, 1964.)



FIGURE 34. Cerebral palsy. Ulegyria, right, next to a relatively intact gyrus on the left. Note that maximum shrinkage affects the deep aspects of the convolution. (From Blackwood, W., McMenemy, W. H., Meyer, A., Norman, R. M., and Russell, D. S. *Greenfield's Neuropathology*, ed. 2, p. 387. Williams & Wilkins, Baltimore, 1963.)

and aspermatogenesis in males) or Turner's syndrome (retarded growth and sexual development and webbed neck in females). Both of the above may exhibit mild mental retardation.

Tuberous sclerosis. This is a congenital disease sometimes inherited as a dominant factor. It is characterized by convulsive seizures, mental retardation, and sebaceous adenomas of the

skin. Death is rarely due to the neurological defects. On inspection of the brain, numerous pale nodules are seen projecting from the cortex or into the ventricles like the gutterings of a candle (Figure 33). (These nodules may be evident in air encephalograms.) On microscopy, the nodules reveal an alteration in the normal neuronal pattern with many giant-sized nerve cells. Demyelination is seen and fibrillary glial proliferation is especially prominent with astrocytes forming large multinucleated giant cells. Adenomas and myomas are found in other organs of the body.

Tuberous sclerosis is one of a group of neurocutaneous congenital diseases (phakomatoses). The others are Sturge-Weber disease (see above), Hippel-Lindau disease (see above), Recklinghausen's disease (neurofibromatosis), and ataxia telangiectasia (see above).

Perinatal illnesses

Cerebral palsy. Cerebral palsy may be due to a variety of causes, most commonly asphyxia or mechanical trauma at the time of birth. The premature infant is particularly vulnerable to these stresses, and the correlation of cerebral palsy with prematurity is high. There are many opportunities for the development of asphyxia during the birth process; breech delivery is the most common example. Trauma may cause intracerebral, subdural, subarachnoid, or intraventricular hemorrhages; contusions or lacerations of the brain; or tears of the dural sinuses or tentorium. Some think that venous congestion is a significant etiological factor in cerebral palsy, and others believe that arterial compromise during the birth process is an important mechanism. The manifestations of cerebral palsy depend upon the site of maximum damage. Disease of the cerebral hemispheres and cortex causes bilateral spastic weakness. Lesions of the basal ganglia result in dyskinesias (athetoid or choreiform). Defects of the cerebellum are associated with hypotonia and ataxia. The severity of neurological signs is extremely variable, and mental retardation may or may not be an associated feature (see Section 10.4 for discussion of mental retardation and minimal brain dysfunction).

After the initial insults to the brain have healed, pathological characteristics of birth injury may be noted. Ulegyria is manifested by shrunken gyri, with maximum atrophy of their walls deep within the sulci and relative sparing of their crowns (Figure 34). These gyri are found particularly in zones of the brain between main arterial territories or within one arterial distribution. Sclerosis, rarification, or cavitation of the white matter adjacent to the lateral ventricles is another distinctive feature of cerebral palsy. Atrophy of the basal ganglia, especially the caudate nucleus, is frequently seen in these brains.

Status marmoratus or *état marbre* is a congenital disease clinically manifested by athetosis. The histopathology is characterized by excessive myelination between the caudate and lenticular nuclei, with patchy degeneration of neurones in the basal ganglia and associated replacement by glial tissue. The disease is not always a result of birth injury.

Failure to thrive. This term is used to denote lack of normal physical and mental growth development during infancy. The cause of this condition is often obvious, for gross congeni-

tal malformations, severe feeding problems, and chronic infections will almost invariably be associated with this phenomenon. Sometimes more subtle defects may be the cause. Poor care by the mother, emotional or social deprivation, poor nutrition, chronic intoxication, or low grade infection may be underlying factors. Specialized examination may be required to find genetic factors or enzyme or metabolic deficiencies, such as the malabsorption syndromes or endocrinopathies. Last, but not least, any disease of the brain may result in failure to thrive. Occult chronic subdural hematoma secondary to trauma or subdural effusion following meningitis must be prime considerations.

Kernicterus. See below.

Postnatal diseases

Leukodystrophies. Leukodystrophies are demyelinating diseases of the brain, beginning in infancy, usually familial and invariably fatal. The illnesses are characterized by dementia, progressive paralysis, and ultimate decerebrate rigidity. The pathogenesis of these diseases is unknown, but they may be related to the lipoidoses (see below). The primary pathological lesion is diffuse and symmetrical degeneration of cerebral white matter. Loss of axis cylinders is usually commensurate with the degree of demyelination.

Epithelioid or globoid cell leukodystrophy (Krabbe's disease). This disease begins in infancy and runs a course of 1 or 2 years. Within demyelinated areas are groups of mononuclear epithelial-like cells and larger multinucleated globoid cells. Both types of cells occur most commonly near or around small blood vessels.

Metachromatic leukoencephalopathy (Greenfield's disease). This illness often begins between 1 and 2 years of age and has a course of 2 to 3 years; when beginning in late childhood, its duration is somewhat more prolonged. Prominent metachromatically staining (i.e., staining a tint different from that of the stain employed) lipids occur in irregular granular masses, both intracellular and extracellular, within demyelinated white matter. The metachromatic lipids are also found in the epithelium of renal tubules, and the diagnosis can be made during life by examination of the urinary sediment.

Sudanophilic leukoencephalopathy. This includes Merzbacher-Pelizaeus disease. The illness is more common in males than females, often begins after 1 year of age, and has a very chronic course. It is distinguished from other leukodystrophies by the predominance of sudanophilic neutral fat in the myelin breakdown products.

Spongy degeneration of the white matter. This condition begins in infancy and results in death after 6 months to 2 years. Macrocephaly is often present. In this disease the white matter is replaced by a meshwork of axons and glial fibers which surround cystic areas.

Neuronal disease

Kernicterus. Kernicterus is caused by severe neonatal hyperbilirubinemia, usually due to maternal-fetal blood incompatibility and associated erythroblastosis foetalis. It is manifested during the first 2 weeks of life. Lethargy, opisthotonus, and seizures are common, in addition to jaundice. If the infant survives, extrapyramidal signs and mental deficiency occur, often with deafness. Exchange transfusions with Rh-negative blood during the first 4 to 5 days of life are the best prophylaxis. The chief pathological features are bile pigmentation of nerve cells and their associated destruction. The disease affects predominantly

subcortical nuclear structures, particularly the subthalamic nucleus, Ammon's horn, and the globus pallidus (Figure 18). There is associated patchy demyelination and gliosis.

Werdnig-Hoffman disease. This disease is manifested by progressive spinal musculature atrophy, with flaccid weakness, beginning during the 1st year of life. Death usually occurs within a few months or years, but occasionally the disease becomes static and the patient may live to adulthood. Loss of anterior horn cells is the major pathological finding.

Hallervorden-Spatz disease. This is a rare familial illness characterized by progressive rigidity, choreoathetosis, and mental deterioration. It begins between 5 and 10 years of age and progresses to death after 1 or 2 decades. Under the microscope, deposition of iron pigment is seen in neurones, glial cells, and extracellular spaces. The globus pallidus and substantia nigra are particularly affected.

Alpers disease. Alpers disease is a rare illness of infancy, sometimes familial. Convulsions, mental impairment, spasticity, and extrapyramidal and cerebellar signs progress to death within a few years. The characteristic pathological feature is degeneration of grey matter, most severe in the middle layers of the cerebral cortex, but also affecting most other neuronal structures of the brain.

Metabolic diseases of infancy

Diseases of fat metabolism (lipoidoses). In these illnesses products of abnormal metabolism accumulate in nerve cells, usually displacing the nucleus and interfering with neuronal function. Diagnosis can be made during life by microscopic examination of autonomic nerve cells found in the biopsy of rectal mucosa.

Amaraotic familial idiocy: The infantile form (Tay-Sachs disease). Tay-Sachs disease begins between the 4th and 8th month of life and usually occurs in Jews. It is characterized by blindness, mental deterioration, convulsive seizures, spasticity, hyperkinesia, and, eventually, opisthotonus. A cherry red spot is seen in place of the macula. Death occurs within a few months to 3 years. Deposition of fine fat granules in the cytoplasm (Figure 35) is responsible for swelling of nerve cells particularly in the cortex of the cerebrum and cerebellum. Similar but less prominent changes are noted in microglia. The excessively deposited metabolic products are gangliosides.

Variants of this disease include a late infantile form (Bielchowsky), a juvenile form beginning between 3 and 10 years of age (Batten-Spielmeyer-Vogt), and an adult form (Kufs). These diseases differ from Tay-Sachs disease in that predilection for Jews is not evident, their courses are subacute or chronic, and retinal lesions may be absent or pigmentary degeneration of the retina may occur rather than a cherry red macular spot.

Niemann-Pick disease. This disease occurs most often in Jewish infants, and its neurological features are also very similar to, or indistinguishable from, Tay-Sachs disease. In Niemann-Pick disease, however, systemic involvement (hepatosplenomegaly) is present. The fatty products of abnormal metabolism are stored in the reticuloendothelial system of the body, as well as in the neurones of the CNS. The resultant large foam cells are filled with sphingomyelin and cholesterol.

Gaucher's disease. Gaucher's disease is a familial illness that usually begins in the 4th to 6th month of infancy but may occur in later life. It is characterized by mental retardation,

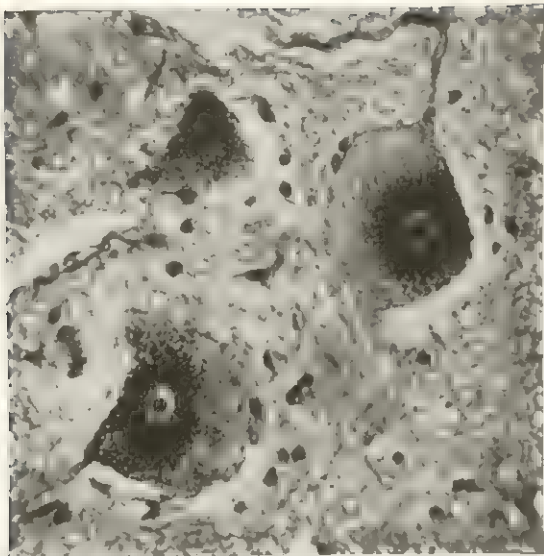


FIGURE 35. Amaurotic familial idiocy. Lipid deposition swells the cytoplasm of neurons (in this case, anterior horn cells of the spinal cord) and crowds the Nissl substance around the nucleus. Thionin. 350 \times . (From Blackwood, W., Dodds, T. C., and Sommerville, J. C. *Atlas of Neuropathology*, ed. 2, p. 9. Williams & Wilkins, Baltimore, 1964.)

bulbar palsy, opisthotonus, and enlargement of the spleen and liver. Death occurs during the 1st year. The lipids, cerebrosides, are stored in the cells of the reticuloendothelial system (spleen, liver, and bone) much more than in nerve cells, but neuronal degeneration is, nevertheless, a common feature.

Gargoylism. Gargoylism is a chronic familial disease beginning at the end of the 1st year of life manifested by mental deficiency, corneal opacity, dwarfism with large skull, and hepatosplenomegaly. The lipid deposits in cells of the brain and other organs are probably gangliosides.

Hand-Schüller-Christian disease. This is a chronic illness that begins between infancy and 5 years of age. It is characterized by bony defects, especially in the skull, affecting predominantly the orbit, pituitary fossa, and adjacent floor of the third ventricle, causing exophthalmus and diabetes insipidus. The bony lesions are granulomas of foam cells containing cholesterol esters. The lesions compress brain tissue, but the neurones themselves are not primarily affected.

Diseases of carbohydrate metabolism

Gierke's disease. This is a glycogen storage disease primarily affecting the liver and kidneys, but not nerve cells. Convulsive seizures may be associated with bouts of hypoglycemia and ketosis. A variant of this disease is sometimes associated with neuronal damage.

Galactosemia. Galactosemia is a familial disease seen in infants several weeks or months after birth. The illness is manifested by jaundice, hepatomegaly and cataract formation, as well as mental retardation and convulsive seizures. Increase in galactose in the blood and urine is due to the infant's inability to utilize the breakdown products of milk digestion. Withdrawal of milk at the earliest age is beneficial.

Diseases of protein metabolism

Phenylketonuria. This is a familial disease, beginning during the first few weeks of life, and is most common in blond, blue-eyed babies. It is characterized by physical and mental retardation and sometimes convulsive seizures. This disease is caused by a defect

in the enzyme required for oxidation of phenylalanine to tyrosine. One of the alternate metabolites, phenylpyruvic acid, can be detected by the green color produced when acidified urine is tested with 5 per cent ferric chloride. If diets designed to lower blood phenylalanine are instituted during the first few months of life, prognosis for near normal intelligence is good. On microscopic examination of the brain, defective myelination and associated gliosis are noted.

Maple syrup urine disease. This condition is noted between 5 and 10 days of life and is manifested by mental retardation, spasticity, myoclonic seizures, and a characteristic odor of

TABLE I
Other Diseases of Childhood and Adolescence

Almost Invariably of Childhood	Usually of Childhood	Often of Childhood or Adolescence
<i>I. Tumors</i>		
Medulloblastoma	Astrocytoma—cerebellum	Craniopharyngioma
Optic nerve glioma	Pinealoma	Spongioblastoma
	Papilloma of choroid plexus	Ependymoma
		Other gliomas
		Hemangioblastoma
<i>II. Vascular Disease</i>		
Sturge-Weber disease	Familial telangiectasis	Aneurysm
		Arteriovenous malformation
		Sinus thrombosis
<i>III. Trauma</i>		
Cerebral palsy		
<i>IV. Degenerative and Deficiency Diseases</i>		
Pyridoxine deficiency	Schilder's disease	Olivopontocerebellar atrophy
Kwashiorkor	Wilson's disease ^a	Charcot-Marie-Tooth disease
Dystonia musculorum deformans ^a	Friedreich's ataxia ^a	
<i>V. Inflammatory and Toxic Diseases</i>		
Haemophilus meningitis	Meningococcus meningitis	Pneumococcus meningitis
Toxoplasmosis	Encephalitis, post-vaccinal or with exanthemata	Syphilis
Cytomegalic inclusion body disease	Sydenham's chorea	Encephalopathy of systemic infection
	Subacute inclusion body encephalitis ^a	Porphyria
	Lead encephalopathy	
<i>VI. Other Syndromes</i>		
Petit mal epilepsy	Periodic palsy ^a	Other forms of epilepsy
Myotonia congenita	Muscular dystrophy	Myasthenia gravis
Riley-Day syndrome		Narcolepsy
		Kleine-Levin syndrome

^a Or of adolescence.

urine, as indicated by the name. Valine, leucine, and isoleucine are elevated in the blood. Dietary treatment may be beneficial, but death usually occurs within weeks or months. Demyelination is the predominant pathological feature.

Other diseases. More than a dozen other diseases are associated with amino aciduria or elevated amino acid levels in the blood. One of the most common of these diseases is histidinemia.

Diseases discussed under other categories. An overlap in this classification of "diseases of early life" with other etiological categories is inevitable. Thus, the leukodystrophies can be considered degenerative diseases. Certain infectious processes (e.g., toxoplasmosis) and some vascular diseases (e.g., Sturge-Weber disease) are congenital. Many cases of cerebral palsy are of traumatic origin. Tuberous sclerosis might be considered under tumors although it is not a truly neoplastic disease. Table I lists diseases of children discussed under other etiological classifications for greater clarity of presentation.

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10.4 OTHER NEUROLOGICAL SYNDROMES

SEYMOUR SOLOMON, M.D.

Dysfunction of the Nervous System

There are several diseases characterized by pathophysiological phenomena rather than well defined or consistent neuropathology. These diseases may be particularly confused with psychogenic disorders.

Dysfunctions of the motor system manifested by hypotonia and weakness

Myasthenia gravis. Myasthenia gravis occurs most commonly between the ages of 20 and 40 years and af-

fects females more often than males. It is probably due to a defect in the metabolism of acetylcholine or to excessive activity of cholinesterase at the motor end plate. There is an increased incidence of disease of the thymus and thyroid glands in myasthenia, and autoimmune interrelationships have been postulated. The disease is characterized by excessive fatigability and weakness, predominantly of those muscles innervated by the cranial nerves. The extremities, especially the upper extremities, are involved to a lesser extent. Double vision, ptosis, dysphagia, and difficulty in chewing are common initial symptoms. Spontaneous remissions sometimes occur, but usually intermittent progression is noted. The diagnosis is established if brief disappearance or improvement of signs occurs within 30 seconds of an intravenous injection of edrophonium (Tensilon). Maintenance therapy consists of neostigmine or pyridostigmine (Mestinon), but some of the toxic effects of these cholinesterase inhibitors (see Section 10.3) may simulate an exacerbation of myasthenia. Thymectomy is of benefit in the early stages of the acute disease in young females.

Periodic paralysis

Hypokalemic (familial) periodic paralysis. This condition begins in adolescence and affects males more than females. It is manifested by recurrent bouts of flaccid weakness or paralysis of somatic musculature, usually sparing muscles innervated by the cranial nerves and muscles of respiration. The symptoms persist for 2 to 24 hours. During the attack there is loss of deep tendon reflexes and of muscular response to electrical stimulation. The episodes usually occur during rest and may be precipitated by a high carbohydrate meal, alcohol, insulin or adrenocortical hormones. The paralysis is associated with a drop in the serum potassium and corresponding electrocardiographic changes (depressed S-T segment and diminished amplitude of T wave). On the other hand, change in serum potassium is not invariable and need not correspond with the course of the paralytic attack. The disease is not progressive. Treatment consists of the administration of potassium during the attack and the prevention of precipitating factors.

Hyperkalemic periodic paralysis (adynamia episodica hereditaria). This condition is on the other end of the spectrum of primary defects of potassium metabolism. As differentiated from familial (hypokalemic) periodic paralysis, the hyperkalemic bouts of paralysis usually begin in the 1st decade of life, affect both sexes equally, are of short duration, and are associated with paramyotonia. Distinction can be made with certainty by determination of the serum potassium level during an attack. The electrocardiogram affords most rapid evaluation of hyperkalemia (prolongation of the Q-R-S interval and T wave elevation). The attack is treated by administration of intravenous calcium.

Finally, periodic paralysis may occur without change in potassium levels and may be associated with spontaneous episodes of hyponatremia.

Dysfunctions of the motor system manifested by hypertonia and weakness

Myotonia. Myotonia is characterized by prolonged muscle contraction in spite of attempted muscle relaxation. It is most often seen as part of myotonic muscular dystrophy (myotonia dystrophica). The latter is a hereditary disease beginning in young adults manifested by myotonic impairment of motor function (see Section 10.1) and dystrophic muscle wasting of the face, neck, and extremities. Associated features include

premature baldness, cataract formation, testicular atrophy, and other endocrinopathies, as well as mental deterioration. Myotonia congenita is a variant of myotonia dystrophica. Paramyotonia is the occurrence of this peculiar muscular reaction in association with cold. Treatment with procainamide or quinine may diminish myotonic phenomena.

The stiff man syndrome. This syndrome is characterized by bouts of severe rigidity and spasm of somatic musculature, lasting hours or days, often precipitated by minimal physical or emotional stimuli. The muscular spasms may or may not be painful. Trunk musculature is particularly involved, and the abdomen may be boardlike during an attack. When generalized, the syndrome resembles tetanus. The mechanism of this condition is unknown, but diazepam (Valium) decreases the severity of muscle contractions.

Torticollis. Torticollis is the unilateral contraction of cervical muscles, predominantly the sternocleidomastoid, twisting the head to one side. This disease may be a manifestation of dystonia musculorum deformans or drug toxicity, especially phenothiazine derivatives. Some believe that most cases of torticollis are fragments of a pathophysiological process akin to torsion dystonia, whereas others believe that the majority have a psychogenic mechanism. Results of medical or psychiatric therapy are poor, but spontaneous remissions are common.

Disease or dysfunction of the diencephalon associated with disorders of sleep or disturbance of autonomic function

Narcolepsy. The narcolepsy syndrome begins in youth or early adult life and affects males much more than females (6:1). Obesity is often present. The syndrome has four main features, although some patients never exhibit more than one. Narcolepsy, the most common feature, is manifested by sudden irresistible desire to sleep while sedentary. Sleep may last from a few minutes to a half hour. Cataplexy is impairment of muscle tone associated with sudden emotional stimulus; it may be manifested by no more than slight buckling of the knees. Total flaccid paralysis occurring immediately upon awakening from sleep, or less commonly, during the transition from drowsiness to sleep, is termed sleep paralysis. The latter lasts only a few seconds but is always frightening. Hypnagogic hallucinations are unusually vivid though brief. The disease is presumably due to dysfunction of the diencephalic reticular system. Narcoleptic sleep and other features of the narcolepsy syndrome are associated with the phenomena of rapid eye movement sleep and appear to be exaggerations of normal physiological events. (We may normally experience sleepiness while sitting quietly, weakness during fright or immediately upon arousing from sleep, and hallucinations (dreams) during sleep.) Treatment with amphetamines or other stimulants is beneficial, but patients with this syndrome may need much more than the average dose.

Akinetic hypersomnia, akinetic mutism, or coma vigil. These are different names for one condition. The patient is mute and immobile, but his eyes may follow people about the room or may be diverted by sound. A painful stimulus sometimes evokes reflex withdrawal or feeble movements, but without manifestations of pain or other emotion. The patient may swallow when fed but does not always chew food. Incontinence

of urine and feces is common. Duration of sleep is greater than normal, but the patient is easily aroused. In contrast to psychotic withdrawal, there is no evidence of negativism or catatonia, although during recovery, if it occurs, the patient may show these symptoms. Akinetic mutism is associated with organic disease of the midbrain diencephalon (especially caudal hypothalamus) and is presumably due to incomplete interruption of the reticular activating system.

Kleine-Levin syndrome. This is a rare disorder of males 10 to 25 years of age. It is characterized by periods of ravenous appetite soon associated with extreme somnolence lasting for days or weeks. An acute illness, fatigue, or headache may precede the episode. During an attack, behavior is disturbed; hyperirritability and uninhibited sexual activity occur. There may be impaired thought processes and hallucinations. Upon recovery, depression of spirits is occasionally noted. The pathophysiological site of this disease is presumed to be hypothalamic and/or prefrontal.

Riley-Day syndrome or familial dysautonomia. This is a rare condition noted during the 1st year of life, usually in Jewish children. The disease is characterized by blotchy skin, defective lacrimation, and excessive perspiration and salivation. Further dysfunction of the autonomic nervous system is manifested by intermittent hypertension with postural hypotension and defective temperature control. The infants feed poorly and frequently vomit. Neurological examination often reveals evidence of both mental and physical retardation as well as emotional instability. Incoordination and indifference to pain may be present. Corneal ulceration and systemic illnesses are common.

Fluid-electrolyte disorders

Water and sodium alterations. Dehydration may cause personality changes progressing to delirium. Lethargy, convulsions, then coma may occur. Hyponatremia is usually associated with dehydration. Overhydration also evokes the above symptoms. In addition, increased intracranial pressure, generalized weakness, and muscular cramps or twitching may be noted. Sodium depletion, often associated with water intoxication, frequently causes nausea and vomiting and signs of shock.

Pseudotumor cerebri, or benign intracranial hypertension, is usually due to cerebral edema, although in the past it was more often considered to be posttotic hydrocephalus, low grade intracranial inflammation having caused venous sinus obstruction. The disease is characterized by increased intracranial pressure with headache and papilledema. The mechanism for this disturbance of cerebral homeostasis is unknown, but metabolic factors are indicated by the high incidence of this condition in adolescent girls or young women who are obese and often have menstrual dysfunction; decreased adrenal function has also been implicated. Other causes of increased intracranial pressure and papilledema must always, of course, be considered (see Section 10.1).

Alkalosis and acidosis. Respiratory acidosis (CO_2 narcosis), due to hypoventilation, results in drowsiness and weakness. Increased intracranial pressure due to vasodilatation may occur. Metabolic acidosis is most commonly associated with diabetic coma and uremia. The hyperpnea of Kussmaul breathing accompanies lethargy, progressing to stupor and coma. Respiratory alkalosis, caused by hyperventilation, frequently produces symptoms of lightheadedness, feelings of unreality, paresthesias, palpitation, drowsiness, tremulousness, tremors, and, finally, tetany. The latter is manifested by carpal spasm, laryngospasm, and neuromuscular irritability as demonstrated by Trousseau's and Chvostek's signs. If tetany is severe, convulsions may occur. Metabolic alkalosis, often due to excessive vomiting, is associated with hypoventilation, apathy or delirium, generalized weakness, and tetany.

Potassium disorders. Excessive serum potassium causes flaccid paralysis (see adynamic episodic hereditary, above), paresthesias, and lethargy. Arrhythmias and cardiac arrest may

occur. Hypokalemia results in flaccid paralysis of somatic musculature (see familial periodic paralysis, above) as well as paralytic ileus; lethargy may be prominent. Sometimes cardiac arrhythmias as well as heart failure occur.

Magnesium alterations. Excess serum magnesium is associated with lethargy, decreased neuromuscular responsiveness, respiratory failure, and finally, coma. Magnesium depletion causes paresthesias, irritability, and delirium. Muscular weakness, twitching, coarse irregular tremors, tetany, or convulsions may occur, and cerebellar as well as basal ganglion signs have been reported. Cardiac arrhythmias may develop.

Endocrine disorders

Parathyroid and calcium. Hyperparathyroidism is associated with hypercalcemia and resultant hypotonic weakness and bone and muscle pains. Personality changes, delirium, dementia, and coma may occur. Osteomalacia is seen in roentgenograms of bones. Hypoparathyroidism causes hypocalcemia, with hyperreflexia, muscular weakness, tetany, or convulsions. Paresthesias are common. Mental changes may range from "nervousness" to frank psychosis. Cataracts form when the disease is chronic, and cerebellar or basal ganglia signs may be noted. Osteoblastic changes in bone and sometimes calcifications in basal ganglia are evident in roentgenograms.

Pancreas. Hyperinsulinism is initially manifested by anxiety, hunger, weakness, palpitation, shortness of breath, and perspiration. Then tremor, irritability, increasing confusion, delirium, or frank psychosis may occur. Muscular twitching or spasms, convulsive seizures, coma, and decerebrate rigidity are the final signs. The cerebral symptoms of diabetes are related to premature atherosclerosis. Diabetic coma has been noted above (acidosis).

Thyroid. Hyperthyroidism causes dyspnea and tachycardia. Myopathy and ophthalmoplegia may occur with or without exophthalmos. Tremor is common, and choreiform movements or convulsions may develop. The disease is associated with emotional symptoms of anxiety, lability of affect, irritability, and agitation, although apathetic hyperthyroidism rarely occurs. Thyroid crisis may result in acute delirium and other symptoms of toxic psychosis. Myxedema is associated with lethargy and weakness. The skin, especially of the face, is dry and puffy; the hair, thin and brittle. There is decreased psychomotor activity, and personality changes are common, especially depression. Memory and perceptual impairments are the chief signs of dementia. Headache and dizziness, dysarthria, and hoarseness are often present. Myopathies may affect the extremities, and pseudomyotonic reflexes can be frequently elicited.

Adrenal glands. Primary (hyper-) aldosteronism, a dysfunction of the adrenal cortex, causes hypertension with potential cardiac and cerebral complications. Muscular weakness or cramps, paresthesias, and headaches are common symptoms. Polyuria and polydipsia may occur. There is associated hypokalemia, hypernatremia, and metabolic alkalosis. Hyperadrenocorticism (Cushing's syndrome) causes symptoms of weakness and fatigability. Personality changes are not uncommon. Obesity of the face, neck, and trunk with purplish striae are characteristic of this condition. Amenorrhea, hirsutism, and loss of libido also occur. These patients frequently develop diabetes mellitus and hypertension. Pheochromocytoma is a tumor of the adrenal medulla causing paroxysms of hypertension, with associated symptoms of anxiety, tremulousness, perspiration, palpitation, and headache. In addition there may be dizziness, paresthesias, pallor and coldness of extremities, and nausea and vomiting. Cerebral hemorrhage is a potential complication. Addison's disease, decreased function of the adrenal cortex, is manifested by progressive fatigue, asthenia, and weakness. Syncope or shock and sometimes tremors or convulsions may occur. Irritability, apprehension, and personality changes are common. Abdominal distress, hypotension, and pigmentation of skin and mucosa are characteristic of this disease. Adreno-

genital syndrome, adrenal hyperplasia, is associated with virilization in children (congenital form) or virilization in women and sometimes feminization in men (acquired form, e.g., adenocarcinoma). There are no primary neurological symptoms.

Pituitary. Hyperpituitarism due to an eosinophilic adenoma (see Section 10.3) in an adult causes acromegaly, characterized by bone overgrowth, especially of the hands, feet, and mandible, and enlargement of the nose, lips, and tongue. Muscular weakness and personality changes frequently occur. The tumor in children is manifested by gigantism. Very rare basophilic adenomas are associated with Cushing's syndrome (see above). Hypopituitarism causes apathy and asthenia, lethargy, and fatigue. The facies is often bland; the skin waxen, pale, and dry; the body free of hair. There is associated hypofunction of other endocrine glands (especially ovaries and testes), hypothermia, and hypotension. This condition in children results in dwarfism. Minor emotional symptoms are common, but depression and frank psychosis sometimes occur. Crises may cause delirium, convulsions, or coma.

Epilepsy

Epilepsy is a recurrent paroxysmal disturbance of cerebral function manifested by somatic, visceral, and/or psychic phenomena usually associated with loss or alteration of consciousness. In years past the epilepsies were classified as idiopathic (essential, cryptogenic) or genetic and as acquired or symptomatic. As more and more knowledge about this subject has been attained, fewer forms of epilepsy have been classified as idiopathic, and this term has little practical value. It has been more useful to name the convulsive disorders by their clinical manifestations, hence the terms grand mal, petit mal, and psychomotor. More recently epileptic seizures have been classified by correlating pathophysiological (electroencephalographic) with clinical phenomena. Under this system of classification, all forms of epilepsy are divided into two groups, partial or focal seizures and generalized seizures (see Section 10.1 for electroencephalographic (EEG) patterns associated with the convulsive disorders).

Partial or focal seizures. These seizures are manifested in the electroencephalogram by discharges that are more or less anatomically localized and arise in cortical or subcortical regions. Organic cerebral diseases usually cause these convulsive disorders, although constitutional factors may be important. Seizures of this type may occur in children, but the incidence increases with age. Partial seizures are divided into those with elementary symptomatology, those with complex symptomatology, and those which begin in a focal manner but become secondarily generalized.

Seizures with elementary symptomatology. Partial seizures of elementary symptomatology are usually motor in character and unassociated with loss of consciousness. They often consist of focal clonic movements involving part or all of the musculature on the side contralateral to the discharging cerebral focus. Adversive seizures are manifested by turning of the head, eyes, and body away from the side of the discharging lesion. Less common focal motor seizures include inhibitory seizures, characterized by focal loss of tone and strength, or seizures that involve speech, either arrest of speech or forced vocalization. Other partial seizures of an elementary type are of a sensory nature. These may be somatosensory phenomena, e.g., local pain over some part of the contralateral face, body, or extremities. Visual, auditory, olfactory, and gustatory symptoms may occur either as an aura of a more generalized seizure or as an isolated

seizure state. Vertiginous phenomena are sometimes of epileptic origin. Autonomic symptoms, occurring in a paroxysmal fashion, are classified as partial seizures of elementary symptomatology. Episodic abdominal pain (abdominal epilepsy) is the most common form.

Seizures with complex symptomatology. Partial seizures with complex symptomatology reveal electroencephalographic abnormality of unilateral or asynchronous bilateral discharges, primarily involving the temporal or frontotemporal areas. These seizures often begin with the simple motor or sensory phenomena described above, and then alteration of consciousness or mental status invariably occurs. Some seizures may be manifested only as impaired consciousness. Others may involve mental and psychological symptomatology with intellectual alteration (e.g., amnesia or forced thinking); illusions or hallucinations (including altered awareness of self and *déjà vu* phenomenon); affective symptoms (e.g. fear or forced laughing); or psychomotor manifestations (automatisms), i.e. psychomotor seizures (see below). These phenomena may occur individually or in various combinations.

Seizures that become secondarily generalized. Partial seizures with either elementary or elaborate symptomatology may progress to generalized seizure activity. Jacksonian seizures begin as focal motor activity in one extremity, spread over the entire side, and, finally, become generalized (grand mal). Sometimes this progression is so rapid that the focal qualities may not be apparent. The secondarily generalized seizures may be symmetrical or asymmetrical, tonic or clonic. During the seizure, the electroencephalographic activity from the discharging focus rapidly becomes (secondarily) generalized.

Generalized seizures. Generalized seizures are presumed to arise in the diencephalon, because the EEG seizure discharges appear from all areas of the cerebral cortex in a bilaterally symmetrical and synchronous fashion. Loss or alteration of consciousness is almost invariable. It is these seizures which have been most often termed "idiopathic," for frequently an organic defect cannot be found. On the other hand, toxic or metabolic disturbances, as well as diffuse or scattered organic cerebral disease, may cause generalized seizures. Those seizures for which an organic cause cannot be found usually occur in children, but at any age seizures may be due to an organic or metabolic defect. This group is subdivided into nonconvulsive and convulsive seizures.

Nonconvulsive seizures. Nonconvulsive generalized seizures are usually manifested as simple loss or impairment of consciousness, i.e. petit mal. The seizure (*absence*) is brief, often momentary, and begins and ends abruptly without aura or sequelae. Petit mal usually begins in children after the age of 5 years (not before 2 years of age) and subsides after puberty. The EEG reveals rhythmic bilaterally synchronous and symmetrical 3 per second spike and wave discharges. Atypical forms of *absence* are usually associated with less classical spike and wave discharges. Petit mal status is characterized by a semistuporous state and, in the EEG, by more or less continuous activity of rhythmic 3 per second spike and wave forms,

or similar but less characteristic activity. Nonconvulsive seizures may be manifested by impairment of consciousness associated with other phenomena including (1) very mild clonic components, (2) increase or alteration of postural tone, (3) diminution or abolition of postural tone (drop attacks or atonic seizures), (4) slight automatisms (primarily movement of the mouth, lips and nodding of the head), or (5) autonomic phenomena (e.g., abdominal distress or sphincteric impairment).

Convulsive seizures. Those generalized seizures characterized by convulsive activity are classified by their motor signs. Infantile spasms are brief myoclonic jerks that involve the entire body, either in flexion or extension. The electroencephalogram reveals polyspike and slow wave activity occurring in a haphazard fashion from all areas of the head (hypsarrhythmia). The clinical and electrical phenomena disappear after the first few years of life, but signs of cerebral disease are usually permanent. Fragmentary myoclonic jerks may occur at all ages. They are similarly associated with polyspike and irregular slow wave activity in the EEG and severe organic cerebral disease. Clonic seizures are seen most commonly in children. Tonic seizures may present as prolonged infantile spasms but also occur in later years. Both clonic seizures and tonic seizures reveal electroencephalographic patterns of bilaterally synchronous spike and slow wave discharges. Tonic and clonic seizures, grand mal seizures, are associated with bilaterally synchronous polyspike and slow wave bursts in the interictal EEG. At the onset of a clinical seizure, the EEG first reveals increasing frequency and amplitude of cerebral activity with the formation of series of spikes; then spike and slow wave activities decrease in frequency as the seizure diminishes. Grand mal seizures may be seen at all ages, except in early infancy.

In addition to the two major classifications of partial and generalized seizures, other seizure types may occur. Erratic seizures in the newborn are tonic and/or clonic, usually unilateral yet associated with generalized paroxysmal sharp and slow waves in the EEG. Similar seizures, with or without alteration of consciousness, sometimes shift from one side to the other. These occur almost exclusively in very young children and are associated with organic disease. In the EEG, focal discharges rapidly spread over the cerebral hemisphere during the seizure, but either bilaterally synchronous or asynchronous spike and slow wave discharges are seen in the interictal record. Finally there are some seizures which cannot be classified above.

Clinical features. The distinguishing clinical characteristics of the most common forms of epilepsy can be briefly summarized. The diagnosis of a grand mal seizure (generalized, convulsive, tonic-clonic) is supported by an aura, tongue biting or incontinence during the seizure, and subsequent exhaustion, somnolence, or muscular aches, although not any of these features need be present. Petit mal epilepsy (generalized, nonconvulsive), on the other hand, is not associated with an aura or subsequent symptoms. Psychomotor seizures (partial, complex symptomatology) may be preceded by an aura of uncinate phenomena, and, although these seizures, usually automatisms, may be extremely variable from one patient to another, they tend to be stereotyped for each individual.

The incidence, etiology, and hereditary aspects of the epilepsies are discussed by Ervin (see Section 21.1). As examples of the diverse mechanisms associated with convulsive disorders, the following are of interest.

Febrile convulsions. Always generalized, febrile convulsions occur before the age of 3 years. The high familial incidence (25 per cent) and normal interictal EEG help to establish the benign nature of this condition, but 20 to 30 per cent of these children later have seizures unrelated to fever.

Post-traumatic epilepsy. These seizures occur within 4 years of the date of cerebral trauma; most often within the 1st year. The incidence of seizures following head trauma is largely dependent upon the severity of cerebral injury. Table I gives approximate statistics.

TABLE I
Incidence of Epilepsy after Head Trauma

Type of Injury	Post-traumatic Epilepsy
	%
Closed head injury	
Cerebral concussion.....	5-10
Cerebral contusion.....	25
Penetrating head injury	
No loss of consciousness or neurologic signs.....	15
Cerebral laceration.....	33
Gross cerebral defect.....	50

Myoclonus epilepsy. Myoclonus epilepsy (*Unverricht*) is a hereditary disease characterized by myoclonic lightning-like jerks of scattered muscle groups, which often fail to move the extremity and are evoked by minimal stimuli. Dementia is progressive, and signs of basal ganglia, cerebellar, and brain stem disease may occur. The disease usually begins in childhood and ends in death during early adult life. On pathological examination inclusion bodies are found in many of the neurones of the cortex and deep ganglia.

Differential diagnosis. In older children and adults the differential diagnosis of epilepsy must include syncope, severe vertigo, cataplexy-narcolepsy, and transient cerebrovascular insufficiency. Psychogenic phenomena, particularly hysteria or attacks of anxiety may be difficult and sometimes impossible to differentiate from psychomotor epilepsy.

Epileptic seizures in young children must be differentiated from several nonconvulsive phenomena. (1) Breath-holding spells occur from 6 months to 3 years of age and are provoked by crying. At the onset of crying, expiration is prolonged; the cry is held or breath is lost for about 15 seconds. Then loss of consciousness occurs for a few seconds with flaccidity, rigidity, tonic spasm, or, sometimes, a brief clonic seizure. These children often have a hypersensitive oculovagal reflex; i.e., ocular compression causes brief apnea and syncope. (2) Spasmus nutans occurs between 6 months and 2 years of age, especially in children living in a dark environment. It consists of rhythmic nodding or tremor of the head with rapid pendular nystagmus. These features can be stopped by closing the child's eyes, but forceful control of the tremor increases the nystagmus. (3) Very young girls may masturbate by squeezing their extended legs together in a tonic fashion. The child may be poorly responsive during this time and fall asleep afterwards. (4) Tics are usually more complex and less stereotyped than myoclonic jerks. The former can be voluntarily controlled for a short time. (5) Paroxysmal behavioral disturbances and temper tantrums may be very difficult to differentiate from psychomotor seizures, but the latter are more stereotyped. (6) After an unusually frightening dream, a young child may briefly appear unresponsive, but this should not be considered abnormal.

Diagnostic studies. In an attempt to determine the cause of a convulsive disorder several simple laboratory studies are advisable in addition to the EEG. The blood count, urinalysis, blood serology, fasting blood sugar, or serum calcium may be diagnostic. For example, severe anemia or leukemia, uremia, lues, hypoglycemia, and hypocalcemia may all present seizures as the initial symptom. Roentgenograms of the skull may reveal evidence of a brain tumor or other cause for convulsions.

Therapy. Most patients with convulsive seizures can be completely or adequately controlled by medication. A large number of drugs have been made available since 1938 when diphenylhydantoin (Dilantin) was introduced. The latter, administered to an adult in doses of 0.1 gm. three to four times per day, with or without phenobarbital (0.03 gm. per dose), is still

the most common treatment of grand mal or psychomotor seizures. Mesantoin (methylphenylethylhydantoin) is somewhat more potent than Dilantin in similar dosage, but more toxic. Phenylethylhydroprimidinedione (Mysoline) is at least as effective as Dilantin. The average adult dose of 0.25 gm. three to four times daily must be attained by gradual increments of smaller amounts. Trimethyloxazolidinedione (Tridione), introduced in 1945, was the first preparation effective in petit mal epilepsy. The average dose for a child is 0.3 gm. three to four times per day. Dimethylethylloxazolidinedione (Paradione) is somewhat less effective than Tridione in similar dosage. More recently ethylmethylsuccinimide (Zarontin) administered to the child in doses of 0.25 gm. three to four times daily, has been considered the drug of choice for petit mal. Other succinimides, methylphenylsuccinimide (Milonitin), 0.5 gm. three times per day, and methyl, methylphenylsuccinimide (Celontin), 0.3 gm. three to four times daily, are of benefit in petit mal; Celontin is also useful for psychomotor and grand mal seizures.

Seizure control is often attained only after trial and error. One drug should be increased from the average dosages listed above to the point of toxicity, before adding or substituting another. When discontinuing an anticonvulsant, gradual withdrawal is mandatory. In the treatment of status epilepticus, a barbiturate is the drug of choice. An intravenous dose of 300 to 500 mg. is recommended for an adult, and this dose may be repeated if necessary.

The anticonvulsant drugs are relatively safe, but many toxic reactions have been recorded. Drowsiness, dermatitis, and gastrointestinal symptoms are common to all. Depression of the bone marrow is rare but obviously serious. Certain toxic reactions are characteristic of a specific drug. Ataxia, nystagmus, gum hypertrophy, and hirsutism occur with Dilantin toxicity. Children and especially adults taking Tridione may experience photophobia. Vertigo may occur with many anticonvulsants but is most prominent with Mysoline overdosage.

Ancillary measures. There are many ancillary measures that may be appropriate in the treatment of patients with convulsive disorders. The amphetamines are useful in counteracting the drowsiness that may be a side effect of anticonvulsant medication. Some believe that amphetamine has a directly beneficial effect in petit mal epilepsy. Meprobamate (Miltown), chlordiazepoxide (Librium), and diazepam (Valium) have some anticonvulsant properties and, as tranquilizers, are preferred to the phenothiazine derivatives, for the latter tend to lower the convulsive threshold. Carbonic anhydrase inhibitors (e.g., acetazolamide) have direct anticonvulsant action, and other diuretics may be helpful, particularly for those women who experience increase in seizure frequency associated with the menstrual period. A ketogenic diet, recommended only as a last resort for children with akinetic petit mal, rarely can be maintained. Infantile spasms do not respond to any measures previously described but, for reasons still obscure, adrenocorticotrophic hormone often decreases or abolishes these seizures. Since pyridoxine deficiency in infants may cause seizures, a therapeutic trial with this vitamin is always indicated. General hygienic measures are important. People with epilepsy should avoid alcoholic beverages, overhydration, fatigue, and emotional stress.

Surgery. Surgical resection of an epileptogenic scar is of value in some patients with focal seizures, particularly temporal

lobe epilepsy. It should be considered after all conservative measures have failed. In properly selected cases, e.g., patients with a single anterior temporal lobe focus, surgery has been about 50 per cent successful in significantly decreasing the frequency or completely halting seizures. Approximately 25 per cent have shown a small decrease in seizure frequency after operation, whereas in another 25 per cent surgery has proved to be ineffective or has caused significant morbidity. The mortality rate of temporal lobectomy is only 1 to 2 per cent.

Seizures with psychic phenomena. Seizure activity evoking psychic phenomena is discussed by Ervin (see Section 21.1). These phenomena are often perceptual, characterized by illusions. An alteration in self awareness and *déjà vu* phenomena are common. Hallucinations, usually formed and complex, may be evoked by seizures. Alterations in mood or affect may occur, most often fear or depression. (Pleasurable or sexual sensations are not associated with seizures and, if laughter occurs, it is not accompanied by appropriate affect.) Disturbance of thought, especially forced thinking, may be a seizure manifestation. Automatism is the most common type of psychic phenomena associated with convulsive disorders. Automatic behavior may follow, may be part of, or may constitute the seizure itself. (The latter is, of course, psychomotor epilepsy.)

The anatomic sites of the psychical states noted above have been evaluated by surgical exploration and electrical stimulation. Although repeated stimulation at the same point in the same individual does not always evoke the same response, the following correlations have been most consistent. Illusions of an olfactory nature may be evoked from the uncus; auditory illusions, from Heschl's gyrus; illusions of taste, from the circular sulcus of the temporal lobe; and visual illusions from the posterior aspect of the temporal lobe. Stimulation of the superior lateral zones of the temporal lobe or the adjacent parietal cortex may produce hallucinations. Feelings of unreality may be evoked from the supramarginal gyrus. Other emotional phenomena may be experienced during stimulation of the temporal lobe deep in the Sylvian fissure or its under-surface. Forced thinking may occur upon stimulation of the frontal as well as the temporal lobe. The insula is associated with intestinal and other visceral symptoms. Automatism may be evoked by stimulating the circuminsular cortex, the amygdaloid nucleus, the anterior hippocampal gyrus, the hippocampus itself, the termination of the anterior commissure, or the anterior portion of the frontal lobe. Automatic activity appears to be associated with epileptic interference of connections between the midbrain-diencephalic centers and those parts of the cerebral cortex related to memory and other intellectual functions. The most common automatisms are those associated with psychomotor seizures, which usually arise in the cortex of the anterior portion of the temporal lobe but may originate in other areas of the limbic system. Sometimes small foci may trigger diencephalic (generalized) epileptogenic activity.

Psychomotor seizures often start as visceral discomfort within the abdomen or head or as emotional phenomena, e.g., anxiety. Uncinate symptoms, illusions or hallucinations of taste or smell, may occur as auras. During the seizure there is alteration of consciousness and thought processes; amnesia is invariable. The seizure may be simple and consist of a syncopal-like episode or of staring blankly into space. Autonomic features are often manifested by chewing, swallowing, or smacking of the lips. Automatic stereotyped behavior is most characteristic. The latter is often bizarre, semipurposeful, and partially or totally inappropriate, but usually the activity has some relationship to the environment. Simple automatisms may consist of fumbling with clothing, manipulation of hands, or aimless stumbling

about. More complex activities may be manifested by the pursuit of a previous line of action or habitual activity, such as boarding a bus to work. During the seizure the patient may obey simple commands; on the other hand, he may be antagonistic or assaultive.

The high incidence of interictal psychological disturbances in patients with convulsive disorders, particularly psychomotor epilepsy, has long been noted (see Section 21.1 for details). Although the neurotic or psychotic manifestations of these patients may be indistinguishable from those of nonepileptics, schizophrenic-like symptoms sometimes seen in patients with psychomotor seizures can often be differentiated from true schizophrenia. The epileptic reveals greater fluctuation of mental status and only spotty loss of associations and makes frequent attempts to maintain contact with reality; dysphasia or impaired perception may also be evident. The autisms, withdrawals, and symbolic processes seen in schizophrenia are usually absent in the patient with seizures.

Certain studies of patients with psychomotor seizures have produced evidence of the organic basis for associated behavioral and mental abnormalities. These phenomena are twice as common in the 25 per cent of patients with bitemporal lobe EEG abnormalities than in the majority who have a consistently unilateral temporal lobe focus. Moreover, in some instances amelioration of psychotic symptoms as well as seizures follows temporal lobectomy. On the other hand, suppression of seizure activity with anticonvulsant medication may, paradoxically, increase the psychological abnormalities often present in these patients.

Pain and Dizziness, the Two Most Common Neurological Symptoms

Pain. Pain, mainly a subjective phenomenon, is difficult to evaluate, but there are several factors to be considered. Threshold of pain varies greatly from one individual to another. At one end of the spectrum is the entity of congenital indifference to pain. There are no objective cerebral alterations in this condition, and it was considered a pathophysiological rather than a psychological disease. (Recent studies have revealed an absence of specific sensory end organs in the skin of these patients.) At the opposite extreme are those individuals with little tolerance for pain, and in this group psychogenic elements are predominant. Attention and distraction are the most important factors influencing the appreciation of and reaction to pain. The attenuation of response to painful stimuli by placebo therapy and the disappearance of pain with hypnosis are two well recognized examples of the power of suggestion.

The difference between "real" and "imagined" pain is more semantic than physiological. Often, however, there may be great difficulty in differentiating pain of organic or physiological origin from pain manifested as part of a psychological illness. Pain with organic disease usually is accompanied by objective signs of the disease, e.g., malignancy, ischemic phenomena, peripheral neuritis. Neuralgias, on the other hand, are not associated with organic disease, but nevertheless usually have a neurophysiological mechanism. These pains follow the anatomic course of a peripheral nerve, nerve root, or nerve plexus, and neuralgias affecting the head and face are most common. There are other

pain syndromes which do not follow specific somatic nerve distributions but are to be distinguished from pain as a manifestation of neurosis.

Cranial neuralgias. The cranial neuralgias are characterized by brief bouts of paroxysmal lancinating pain recurring within the anatomic distribution of a cranial nerve. Often the pain is triggered by external stimuli. These illnesses occur most commonly in older individuals. The pains can usually be relieved by interrupting the affected nerve. The involved nerve does not manifest objective defects on neurological examination, and neither gross nor microscopic abnormalities are seen on routine examination. Recent electron microscopic studies, however, have revealed proliferative and degenerative changes in the myelin sheaths of nerves affected by trigeminal neuralgia.

Trigeminal neuralgia. Trigeminal neuralgia is characterized by pain within the distribution of the fifth cranial nerve, predominantly the second and third divisions. Pains may be precipitated by touching the affected side of the cheek, chewing, or swallowing. This illness is often benefited by anticonvulsant medication (e.g., diphenylhydantoin), but medical therapy may not be permanent. Surgical interruption of the nerve, on the other hand, usually produces lasting relief.

Glossopharyngeal neuralgia. This condition is manifested by bouts of sharp pain in the tonsillar and aural areas, spreading to the base of the tongue and throat. The pains may be precipitated by yawning or swallowing. Superior laryngeal neuralgia is probably a fragment of glossopharyngeal neuralgia. The pain in this disease extends from the larynx to the ear, sometimes along the angle of the jaw, and is precipitated by talking or swallowing.

Geniculate neuralgia. Geniculate neuralgia is characterized by pain deep in the ear and adjacent structures. It is due to dysfunction of the geniculate (sensory) ganglion of the facial nerve.

Other craniofacial neuralgias of uncertain origin. In some cases these pains have a pathophysiological mechanism; in others the pains are of neurotic origin. One or two entities are always considered manifestations of underlying psychological disease.

Occipital neuralgia. This type of neuralgia is characterized by pain over the occipital nuchal area. The pain may extend over adjacent areas of the head and is predominantly unilateral. Pains of this nature may be due to a physiological disturbance of the occipital nerve, but psychological mechanisms must always be sought.

Temporomandibular neuralgia. This condition is manifested by pain in the temporomandibular joint, with radiation of pain beyond that area. This syndrome is due to disease or dysfunction of the temporomandibular joint, but when objective signs cannot be demonstrated by physical or roentgenographic examinations, psychogenic mechanisms are usually predominant.

Sphenopalatine neuralgia. Sphenopalatine neuralgia is characterized by pain behind the eyes, in the cheeks, in the roof of the mouth, at the root of the nose, and in the upper jaw and teeth. Sometimes this pain radiates to an ear, to the occipital nuchal area, to the shoulder or arm. Most probably, pains of this nature are psychogenic rather than due to a dysfunction of the sphenopalatine ganglia.

Atypical facial pain. Atypical facial pain is not a neuralgia as defined above. Instead, this term refers to a constant and often bizarre pain in any part of the face, head, or neck not confined to the anatomic distribution of a trigeminal or other cranial nerve. This syndrome is most common in women in

their late thirties or forties (about the time of the menopause). There is often a long past history of discomfort in the face. The pain may be completely disabling in that the symptom becomes the patient's only concern. These patients eagerly submit to unnecessary dental work and other types of surgery in an attempt to find relief. Although this disease is thought to be psychogenic, psychotherapy has not been any more beneficial than medical or surgical treatments.

Other pain syndromes which do not follow a specific peripheral nerve distribution and may be confused with pain of psychological origin are related to diseases or dysfunctions of the autonomic nervous system or the central nervous system.

Pain originating in the autonomic nervous system

Causalgia. Causalgia is due to dysfunction of sympathetic nerve fibers usually associated with partial peripheral nerve injury. It is characterized by a peculiar burning hyperpathia affecting a poorly demarcated zone of a hand or foot. Associated autonomic and trophic changes in the affected part consist of smoothened and reddened skin, excessive perspiration, swelling, and tapered digits. Sympathectomy is usually beneficial.

Reflex dystrophies. There are other reflex (sympathetic) dystrophies that follow minor trauma. They cause not only pain but also muscle contracture and atrophy (with paralysis or weakness), vasomotor changes (hypothermia, cyanosis, edema), and trophic changes of bones, skin, hair, or nails. Sudeck's atrophy, i.e., post-traumatic osteoporosis, is considered in this category.

Shoulder-hand syndrome. The shoulder-hand syndrome is a form of reflex sympathetic dystrophy but of nontraumatic origin. It is usually associated with coronary heart disease, although it may be seen with diseases of other viscera. This condition is manifested by pain and restricted mobility of the affected extremity. Trophic and vasomotor changes take place in the skin, muscles, bones, and joints. The shoulder-hand syndrome can be prevented by activation of the extremity; physical therapy is required once the symptoms have begun.

Pain originating in the central nervous system

Thalamic syndrome. The thalamic syndrome is characterized by continuous, often indescribable, pain or discomfort over one part or one side of the body. The threshold to superficial pain is slightly raised, but when the stimulus is appreciated it is unusually painful or disagreeable, and the zone of pain may spread from the area of the stimulus over ever widening adjacent zones. There may be delay in appreciation of the stimulus, and the resultant sensation may persist for an unusually long period of time. The thalamic syndrome is usually due to infarction of the contralateral thalamus after occlusion of the thalamogeniculate branch of the posterior cerebral artery. Many characteristics of the thalamic syndrome may occur in other lesions affecting sensory pathways within the central nervous system. Pain of central nervous system origin is extremely resistant to all forms of medical, surgical, and psychiatric treatment. Tranquilizing medications, such as the phenothiazines in high dosage, afford more relief than analgesics. Stereotactic surgery has been used with varying success.

Phantom limb pain. Pain of a phantom limb is a poorly understood, complex, psychophysiological phenomenon. Awareness of a phantom limb is common after amputation. In a small number of patients (2 to 5 per cent) the phantom may

TABLE II

Differentiation of Dizziness of Labyrinthine Origin from That of Central Nervous System Origin

Labyrinthine Disease	Central Nervous System Disease
There may be history of past bouts of dizziness or ear disease.	There may be history of central nervous system disease, e.g., old symptoms of multiple sclerosis.
Episodes of dizziness are paroxysmal.	Dizziness is less acute and more prolonged.
Dizziness is precipitated or aggravated by movement of the head even while lying in bed.	Dizziness need not be aggravated by head movement. Dizziness due to vertebrobasilar artery insufficiency may be precipitated by arising from the horizontal position or by neck movement.
There may be associated symptoms or signs of hearing impairment or tinnitus. Nausea and vomiting often accompany dizziness.	There often are associated symptoms or signs of disease implicating the brain stem, such as diplopia or sensory or motor signs.
Nystagmus, when present during an attack, is horizontal.	Nystagmus may be vertical or rotatory as well as horizontal and is often present after dizziness has disappeared.
Ataxia, if present, occurs only during the attack.	Ataxia may be present without dizziness.
Tests	Tests
The caloric test may be normal or reveal increased or decreased reactivity of the labyrinth.	The caloric response is usually normal but may evoke nystagmus of perverted or incongruent type. ^a
Audiometry often reveals defective acuity and, in Ménière's syndrome, recruitment of loudness of pure tones but impaired intelligibility of amplified speech.	Audiometry is usually normal. ^b
Roentgenograms of the skull may reveal evidence of old mastoiditis or cholesteatoma.	Roentgenograms may reveal intracranial pathology. ^c
Other laboratory features are usually normal.	The EEG, spinal fluid, angiography, or pneumoencephalography may reveal abnormality. ^d

^a Absent caloric response on the side of an acoustic neuroma.

^b Nerve deafness with acoustic neuroma.

^c Enlarged acoustic meatus caused by acoustic neuroma.

^d Elevated cerebrospinal fluid protein with acoustic neuroma.

not disappear or may become painful. The pain appears to be initiated at the amputation stump and perpetuated in sensory cerebral centers.

Epilepsy. Pain as an epileptic manifestation may occur but is rare (see above).

Pains of poorly understood mechanism

Acroparesthesias. These are unpleasant, crawling, tingling, sometimes painful sensations, usually in the hands and arms. These symptoms occur predominantly at rest or at night and are diminished by rubbing or moving the extremities. (The restless legs syndrome (see Section 10.1) is probably related to this condition.)

Postherpetic neuralgia. This condition may persist for a long period of time after the initial infection of herpes zoster. It is not benefited by surgical section of the affected nerve.

Post-traumatic neck pain. Pain in neck musculature often persists for many months after head and neck injury (whiplash effect). Demonstrable changes are not evident in these muscles.

Visceral pain. Pain of visceral origin or pain referred from distant sites may be extremely difficult to diagnose and differentiate from psychogenic pain.

Headache. See Section 30.14.

Dizziness. The symptom of "dizziness" has different meanings for different people. Unfortunately, individuals not only use the words "dizziness" and "vertigo" interchangeably, but they also use the term "dizziness" as synonymous with feelings of faintness, malaise, or headache. *Dizziness* is a sense of imbalance or unsteadiness, whereas *vertigo* is a form of dizziness characterized by a spinning sensation. Although it is customary to attempt to distinguish vertigo from less specific forms of dizziness, in the author's opinion, this differentiation is not crucial. Dizziness or vertigo may or may not be present with labyrinthine disease or disease of the nervous system. Localization of disease cannot be made on the basis of a single symptom. More important is the differentiation of dizziness of labyrinthine (peripheral) origin from dizziness of central nervous system origin by the criteria listed in Table II.

Differential diagnosis

Diseases of the ear. Dizziness may be caused by obstructions in the external or middle chambers of the ear. The most common lesions are wax or foreign body in the external canal, block of the Eustachian tube, or disease of the middle ear, particularly inflammation or injury.

Diseases of the internal ear are the most common causes of dizziness.

Labyrinthitis is due to injury or irritation of the labyrinth by infection, allergy, vascular disease, trauma, or tumor (cholesteatoma). Drugs and toxins often associated with labyrinthitis include streptomycin, quinidine, salicylates, anticonvulsants, nicotine, and carbon monoxide. Many dysfunctions of the labyrinth associated with position and movement are of indeterminate mechanism. Labyrinthitis is characterized by episodes of dizziness which may recur in series. The disease is not progressive.

Ménière's syndrome is caused by hydrops, less commonly hemorrhage, of the labyrinth. The pathogenesis of this syndrome is unknown, but many of the etiological factors listed under labyrinthitis also may be operative here. This condition is clinically distinguished from labyrinthitis by the additional symptoms of tinnitus and hearing loss. The latter are often

most marked during acute bouts of dizziness but persist intermittently or continuously thereafter and often grow progressively severe. There is impaired intelligibility of amplified speech, and audiometry reveals recruitment phenomena.

Diseases of the eighth cranial nerve or brain stem. The auditory nerve may be affected by meningitis, trauma, or, most often, tumor (acoustic neuroma). In the brain stem, involvement of the vestibular nuclei is particularly associated with dizziness, but lesions in other areas of the brain stem also cause this symptom. All etiological categories must be considered. Vascular diseases (vertebrobasilar insufficiency and the lateral medullary syndrome) are predominant in the elderly. Degenerative diseases such as multiple sclerosis and syringobulbia are to be considered in the younger age group. Inflammation, trauma, or intrinsic tumor are less common causes of brain stem disease.

Diseases of the cerebellum or cerebrum. The symptom of "dizziness" with lesions of the brain is often likely to be "faintness" or "lightheadedness" poorly described. Any anatomic or metabolic disease of the cerebrum or cerebellum, especially of an acute nature, may cause dizziness. The toxic effect of alcohol is the most common example. Vascular diseases, post-traumatic conditions, and cerebellar tumors are more frequent causes of dizziness than deficiency states or inflammatory diseases.

Physiological dysfunctions. Dizziness sometimes occurs prior to syncope. Vertigo may be associated with and, in rare instances, is the only manifestation of epilepsy. Dizziness occasionally accompanies migraine. After headache, dizziness is the most common symptom of the postconcussion syndrome.

Proprioceptive impairment. Imbalance due to position sense defects may be interpreted by the patient as dizziness. Diseases affecting the posterior columns of the spinal cord and peripheral neuropathies are the major considerations.

Diseases of the eye. Intrinsic eye muscle imbalance or extraocular muscle paresis sometimes causes dizziness. Refractive error and glaucoma may be associated with this symptom.

Systemic diseases. Virtually any generalized illness may cause dizziness. Endocrine disturbances are sometimes associated with dizziness; particularly hypocalcemia, hypoglycemia, hypothyroidism, and hypo- or hyperadrenalism. Systemic infections, hematological diseases, deficiency states (especially pellagra), and allergic and toxic phenomena often present dizziness as a prominent symptom.

Mental and Emotional Syndromes

Unconsciousness. The definition of coma is not precise, for there is no sharp distinction between stupor, semicoma, and coma. As a rule of thumb, stuporous individuals respond to verbal as well as noxious stimuli, while semicomatose patients respond only to superficial and deep pain stimuli; patients in coma respond only to deep stimuli or do not respond at all.

Syncope. Syncope is a brief loss of consciousness, less than 1 minute, and usually no more than 15 seconds, in duration.

Differential diagnosis of syncope

I. Primary cerebral mechanisms

A. Vascular disease

1. Cerebral ischemia (thrombosis, hemorrhage or embolism)
2. Subarachnoid hemorrhage
3. Hypertensive encephalopathy
4. Carotid sinus reflex (direct cerebral effect)
5. Migraine

B. Epilepsy

C. Other cerebral disease or dysfunction

1. Cerebral concussion

2. Severe vertigo

D. Psychological disease

II. Cardiovascular factors

A. Heart block

1. Adams-Stokes syndrome
2. Carotid sinus effect (vasovagal)
3. Other vagal reflexes
 - a. Vagovagal (precipitated by defects in swallowing)
 - b. Oculovagal (precipitated by pressure over the eyeball)
 - c. Pulmonary or abdominal vagal (precipitated by lung or gastrointestinal disease)

B. Decreased stroke volume of heart

1. Aortic stenosis
2. Other valvular disease (mitral insufficiency or stenosis)
3. Cardiac arrhythmias and severe tachycardia
4. Myocardial infarction and other heart disease

C. Hypotension

1. Orthostatic hypotension (convalescence, drug therapy, postsympathectomy, pregnancy, exhaustion, malnutrition, prolonged standing, adrenal insufficiency, diabetes mellitus)
2. Carotid sinus and other vasovagal reflexes of a vasodepressor nature
3. Shock of any cause (e.g., dissecting aneurysm of the aorta)
4. Micturition syncope (mechanism of the latter not definitely established as hypotension)
5. Severe pain
6. Emotional stimuli

III. Pulmonary causes

- A. Hyperventilation
- B. Cough or the Valsalva maneuver
- C. Pulmonary embolism
- D. Positive pressure breathing
- E. Pulmonary hypertension

IV. Changes in blood: oxygen, carbon dioxide, glucose

- A. Hypoxia (e.g., high altitude or asphyxia)
- B. Hypocapnea or hypercapnea
- C. Hypoglycemia
- D. Other metabolic disturbances

V. Other forms of severe stress (see the differential diagnosis of coma)

Coma. Coma of acute onset is most likely due to trauma, cerebrovascular or cardiovascular disease, intoxication (especially alcoholism), heat stroke, or allergic reactions. Gradually developing coma is probably due to meningoencephalitis or other infectious processes, cerebral neoplasms, metabolic diseases, anoxia, or anemic phenomena. A history often is not available, and the general physical and neurological examinations may not establish the cause of coma. Laboratory studies should then include a blood count and urinalysis (the hematocrit and urinary sugar and acetone can be determined quickly); roentgenograms of the skull; a spinal tap; an EEG; and an evaluation of the blood, vomitus, or urine for drug levels.

Management. In the management of the unconscious patient, the immediate primary concern is maintenance of vital functions (blood pressure, pulse, temperature, and respiration). Shock is the most common cardiovascular factor requiring treatment. Tachycardia or bradycardia may be more difficult to correct. High fever must be brought down by ice packs. Alter-

ations in rate and depth of respirations or evidence of an obstructed air passage may require correction by means of tracheostomy and artificial respiration. Metabolic factors cannot be immediately evaluated, but a major concern is hypoglycemia. Blood should be drawn for analysis, and then 50 cc. of 20 per cent glucose should be intravenously administered. Nutrition, hydration, and electrolyte balance must be maintained. Attention to the bladder and bowels is necessary, and a retention catheter is usually required. The patient should be turned frequently to prevent pneumonia. Sedatives are to be avoided, but if extreme restlessness occurs the drug of choice is paraldehyde.

Differential diagnosis of coma

- I. Primarily intracranial
 - A. Trauma: concussion, contusion, laceration; subdural or epidural hemorrhage
 - B. Vascular disease: thrombosis, hemorrhage, embolism; subarachnoid hemorrhage
 - C. Inflammatory disease: meningitis, encephalitis, abscess
 - D. Neoplastic disease: primary or metastatic
 - E. Convulsive disorders
 - F. Increased intracranial pressure
 - G. Neurosis or psychosis: mutism, extreme negativism, hysteria, depression, catatonic schizophrenia (in these conditions the "coma" more apparent than real)
- II. Primarily extracranial
 - A. Cardiovascular disease: shock, hemorrhage, hypotension, hypertensive encephalopathy; myocardial infarction, heart failure
 - B. Pulmonary disease: hypoxia or asphyxia; pneumonia, pulmonary embolism
 - C. Metabolic or toxic diseases
 1. Endogenous toxins
 - a. Uremia
 - b. Diabetic acidosis or hypoglycemia
 - c. Eclampsia
 - d. Hepatic coma
 - e. Adrenal insufficiency
 - f. Other endocrine or electrolyte disorders (e.g., heat stroke)
 2. Exogenous toxins
 - a. Alcohol
 - b. Sedatives, analgesics, narcotics
 - c. Other drugs: tranquilizers, anticonvulsants
 - d. Heavy metal poisons
 - e. Other poisons: organic compounds (e.g., carbon tetrachloride), carbon monoxide
 - D. Any form of severe stress
 1. Severe disease
 2. Hyperthermia or hypothermia
 3. Allergic reactions
 4. Electric shock

Delirium. Delirium, in the opinion of this author, is a transient state of restlessness or excitement, accompanied by impairment of mental function. All intellectual spheres are affected, particularly orientation for time. Fear may be prominent, with tendency to fight as in a panic. Visual hallucinations and illusions or delusions are common. There is often increased suggestibility, heightened response to stimuli, and emotional lability. Confabulation is common, but

speech may be incoherent. Symptoms fluctuate markedly and tend to be most severe at night. Delirium may last hours or days, sometimes as long as a month.

Almost any organic brain disease may cause delirium. Most common are intoxications, either endogenous or exogenous (especially alcohol or drugs). Cerebral trauma, febrile illnesses, metabolic or other systemic diseases, deficiency and exhaustive states are frequent etiological factors. Patients with senile cerebral disease are particularly predisposed to the development of delirium. Certain clinical manifestations of delirium may be clues to the cause of the toxic state. The classical delirium tremens, especially when associated with Korsakoff's psychosis, leaves little doubt about the diagnosis of chronic alcoholic intoxication. If depression of consciousness follows delirium, the toxic effects of sedatives, hypnotics, or narcotics must be suspected. Amphetamine intoxication often produces euphoria preceding delirium. The toxic effects of alkaloids of the belladonna group are manifested by parasympathomimetic reactions and sometimes choreiform movements. The phenothiazine derivatives and other tranquilizers may cause dyskinesias with delirium as manifestations of toxicity. Cocaine intoxication results in extreme excitement. In addition to excitement, hallucinations and illusions are particularly prominent with marijuana, mescaline and lysergic acid diethylamide (LSD) toxicity.

Although usually a manifestation of organic brain disease, the features of delirium, except for impaired intellectual function, may be psychogenic. Symptoms of delirium may occur in a patient with manic depressive or schizophrenic psychoses, but more often the patient is hysterical and Ganser's syndrome may be concomitant.

Management. In managing a delirious patient, force must be avoided. Movement of the patient by gentle means usually can be accomplished. For example, several people gathering around the patient can gradually crowd him into his room. The latter should be quiet, but lit and bare of decoration. Someone should always be in attendance to calm and reassure the patient. Restraints should be avoided and sedation used sparingly. Paraldehyde is the drug of choice, 10 to 20 cc. in iced fruit juice, or a similar amount in olive oil per rectum; if necessary, 3 to 5 cc. may be injected deep into the muscles of each buttock. Intramuscular chlorpromazine (Thorazine, 50 to 400 mg.) may be administered every 4 hours if necessary. Hydration must be maintained, with vitamin supplementation. Oral or intravenous administration is preferred to the nasogastric tube because of the hyperactivity that the latter often evokes.

Hysteria. The hysterical patient usually appears bland and indifferent to his defect. On the other hand, some patients are anxious, or their attitude is evocative of sympathy. The marked suggestibility of the patient with hysteria is manifested by contradictory responses and changes in and disproportion between symptoms and signs. The history of an emotional disturbance that has acted as a precipitating factor or a past history of psychosomatic phenomena often can be elicited. In differentiating hysteria from malingering, one notes less tangible evidence of secondary gain in the former. For example, the symptoms may allow the hysterical patient escape from

responsibility, whereas the malingerer may seek the settlement of a law suit. The signs of hysteria discussed below usually can be applied to malingering.

Sensory. Psychogenic sensory phenomena are commonly manifested by analgesia; total analgesia is rare as an organic phenomenon. On the other hand, extreme hypersensitivity to examination may be found in hysterical individuals, and responses may not vary with the intensity of the stimulus. A psychogenic glove or stocking distribution of sensory loss has a sharp border, but hypalgesia and hypesthesia, found in a similar distribution with peripheral neuropathy, have a less distinct border and gradations of increasing sensitivity in the distal to proximal direction. The sensory impairment in hysteria does not conform to the anatomical zone of a peripheral nerve or dermatome, and in an extremity the defect may extend only over the medial or lateral side. Inconsistencies in sensory responses are frequently noted. Thus, the patient may profess loss of superficial sensation and yet be able to identify objects placed in his hand. He may deny superficial abdominal sensation and yet abdominal reflexes can be elicited. Complete loss of position sense may seem to be present upon direct testing and yet the patient is well able to use the extremity with eyes closed. Autonomic changes normally associated with pain are useful in testing the patient with hysteria. The involuntary responses of tachycardia, hypertension, hyperpnea, and mydriasis may be evoked even though the patient claims to be insensitive to the painful stimulus. There are several "tricks" used to foil the malingerer and detect the hysteric. A dull individual may be asked to say "yes" when he feels the pin prick and "no" when he does not. With the patient's hands crossed behind his back and fingers interlaced, quickly testing the sensation of right and left fingers may evoke inconsistent responses. The patient with a hemisensory impairment often orients the defective side to his environment, e.g., the wall next to the examining table. As a result, the hysteric may reveal a hemisensory defect on one side when supine and on the opposite side when prone. Over the trunk, the change from normal to impaired sensation is usually in the exact midline with a nonorganic hemisensory defect, in contrast to the overlap beyond the midline of normal sensation with a hemisensory lesion of organic origin. Vibration sensation in hysteria may be experienced differently over the right and left halves of the same bone, such as the sternum or skull. A hemisensory defect that includes the penis, vagina, or rectum is very rarely of organic origin.

Motor. Psychogenic weakness usually varies with the effort of the examiner testing the strength of the affected part. The patient may contract antagonist muscles in an attempt to simulate weakness of protagonist muscles, and resistance of "weak" muscles to passive movement is sometimes found. Covert observation of the patient may reveal withdrawal to unexpected pain stimuli or other use of "paralytic" muscles as when dressing. Inconsistencies may be found in the patient's responses when he is asked to move those fingers that are touched while his hands are crossed behind his back with fingers interlaced. In hysterical hemiplegia, the face and tongue muscles are spared and a circumducting gait is not evident. Hoover's sign is present when downward movement of the hysterically paralyzed leg occurs while the patient lifts his normal leg. Downward drift of an hysterically weak upper extremity is not associated with pronation of organic weakness. There may be lack of resistance on testing dorsiflexors of the feet, and yet the patient may be able to walk on his heels. In psychogenic paraplegia, the urinary and rectal sphincters are usually unaffected.

Coordination. Defects of coordination seen in hysteria are often gross and bizarre. In spite of marked ataxia on finger-to-nose and heel-to-knee tests, the patient may be able to perform fine movements normally. During the Romberg test, the patient may sway only from the hips or fall *en masse* without attempting to catch himself; distracting the patient

during the test sometimes prevents him from falling. Associated movements are often normal in these patients, e.g., normal swing of the "paralyzed" arm while walking.

Reflexes. Reflexes are usually normal in patients with hysteria, but absent gag reflexes and decreased corneal reflexes may occur. Symmetry of diminished or absent reflexes lessens the likelihood of organic disease.

Special senses. With the exception of vision, the special senses usually are not impaired on an hysterical basis. Occasionally, hearing loss is psychogenic and then is usually bilateral and complete; such a patient will make no attempt to read lips. Rarely is the loss of sense of taste or smell hysterical; these defects are very difficult to differentiate from organic lesions. Psychogenic blindness is usually bilateral. When asked to look at a close object, convergence occurs in the organically blind but not in the hysteric. Hysterical amblyopia is often associated with tubular constriction of visual fields. Cortical blindness may simulate psychogenic blindness in that normal pupillary reactions and optic fundi are seen in both conditions. Similarly, the normal funduscopic examination of patients whose blindness is due to retrolbulbar neuritis may lead to the erroneous diagnosis of hysteria.

Other modalities. A large variety of other symptoms may be psychogenic. Dysphonia is the most common speech disorder of this nature. Dysphagia, globus hystericus, may accompany the latter or occur independently. Respiratory dysfunctions, particularly hyperventilation, are often hysterical. Urinary retention frequently has a psychological mechanism, urinary incontinence rarely so. Tics and habit spasms are readily classified as psychogenic. Fits or fainting of a hysterical nature, on the other hand, may be very difficult to differentiate from psychomotor epilepsy or syncope.

Memory. Amnesia is often of hysterical or psychological origin, and its differentiation from memory loss of organic disease may be difficult. Amnesia due to an organic lesion is frequently abrupt and (when associated with trauma) retrograde, whereas the memory loss of psychological origin is often of vague onset and termination. Recovery from organic amnesia is usually incomplete and followed by confusion for hours or days; there is no recall of events during the illness. After the hysterical patient has recovered memory, complete return to normal mentation occurs and he may remember isolated events during the past period of amnesia. In organic disease, precipitating factors may be obvious (e.g., trauma), or occult (e.g., amnesia as the only symptom of a cerebrovascular lesion). A "traumatic" emotional experience may precipitate hysterical amnesia, which serves a psychological need. The behavior of a patient with organic loss of memory is often abnormal, and delirium is common. On the other hand, the behavior of a patient with psychogenic amnesia is frequently purposeful, and he is usually in excellent contact with his surroundings. Amnesia of organic disease is most often generalized in that it affects all intellectual spheres, whereas in hysteria there may be selective loss of certain psychologically stressful topics. Organic amnesia is frequently accompanied by objective neurological signs; psychogenic memory loss, by hysterical signs.

Special tests. Special tests may be of aid in making the diagnosis of hysteria. The EEG (see Section 10.1) in patients with hysterical blindness usually reveals normal suppression of

α -rhythm when the eyes are opened and a driving response to photic stimulation. Under sodium Amytal, psychogenic signs tend to disappear or diminish whereas organic signs are exaggerated. Psychometric tests and hypnosis are useful in evaluating the hysterical patient.

Denial of illness or anosognosia. In this state the patient either denies his physical defect, or there is lost or impaired perception or conception of the affected part. The patient may deny the existence of the affected part of the body or may experience a feeling of depersonalization toward the affected part. Any type of defect may be denied, usually weakness (hemiparesis), or blindness.

There are many degrees of denial of illness. Anosognosia may be explicit, with associated confabulation, or it may be implicit and manifested by withdrawal, inattention, or other psychological mechanisms. Denial may assume various forms of disturbed orientation. For example, autotopagnosia is a disorientation of body parts or defect in body schema, and finger agnosia of the Gerstmann syndrome is one of its manifestations. Reduplication of parts of the body or place or time may occur. Paraphasia (the substitution of a partially incorrect term for the proper word) is common. The individual may refer to himself in the third person.

Anosognosia is most often associated with lesions of the nondominant hemisphere and resultant left hemiparesis, but it may occur with lesions in any part of the brain. The site of brain damage determines the disability that is denied and the perceptual symbolic structure or language in which the denial is expressed. The mechanism of denial, on the other hand, is much more complex. It includes the integration of environmental factors, past experiences, premorbid personality, symbolic values, and type of disability, as well as the degree of brain damage or dysfunction.

Organic mental syndrome in adults

Progressive manifestations. The first sign of organic mental disease is a reduction in adaptive function. There is decreasing interest in social activities. The individual becomes less emotionally stable. Mental processes are slower, and physical activity is also diminished. With the patient's awareness of these changes, depression and anxiety may occur. Sedatives and alcoholic beverages may cause unusually marked lethargy. As all of the above factors increase, the patient becomes more self-absorbed and less sensitive to others. There is further slowing of thought, speech and movement. Memory for recent events becomes slightly impaired, the patient finds it difficult to deal with abstract concepts, and judgment is defective.

Further deterioration is manifested by loss of inhibition. Dress becomes less orderly. Behavior and language are irrelevant, facetious, or circumstantial. Affect is flattened or emotional lability is prominent. All intellectual factors are further impaired with particular difficulty in calculation and in orientation for time. Premorbid personality factors often become prominent, and psychotic behavior may then occur. Lethargy and inappropriate sleep alternate with restlessness. The patient no longer recognizes his deficiencies, and anxiety of the past is lost. Sedatives, tranquilizing medication, alcoholic beverages, intercurrent illnesses, or change in environment (such as hospitalization) exacerbate mental symptoms and may provoke delirium.

The individual at the next stage has obvious dementia. Nevertheless, vocabulary and past memory may still be ade-

quate, and these factors help to differentiate recent organic mental syndromes from congenital or educational defects. Disorientation in all spheres is evident, with severe impairment of all intellectual functions. Confabulation or perseveration of speech and activity occur. Passivity or catatonic posturing may be noted; on the other hand, hyperactivity often is present. The patient becomes relatively indifferent to noxious stimuli but sometimes these evoke excessive infantile responses of crying or rage.

Finally, the patient is totally incapable of caring for himself. He is incontinent of urine and feces and unable to walk or talk. The patient is seemingly unaware of visual, auditory, or noxious stimuli. If he reacts to the latter, it is a generalized rather than a focal reaction. Terminally, the patient becomes stuporous and lapses into coma.

Brain damage or dysfunction of childhood. The extent of neurological disability is dependent upon the size, location, activity, focal or diffuse nature, and age of onset of the cerebral lesion. Age is a particularly important variable. Brain injury in the prenatal or neonatal period may cause severe and permanent damage, whereas similar injury in an older child may be tolerated to a marked degree with much greater recuperation.

Mental retardation. Mental retardation is a general term that includes all forms of intellectual impairment, with onset at birth or early age. The degree may range from idiots, or those humans who barely survive on an almost vegetative level, to the children who have difficulty in school but lead a normal life and will be able to carry out customary social functions and perform simple work. Many neurological features may be associated with intellectual impairment. Most common is speech retardation and subsequent speech disturbance, particularly indistinct speech. In addition, neuromuscular development is often retarded. Obvious motor defects as paresis, dyskinesia, or ataxia may be present. In such patients, cerebral palsy and mental retardation coexist, but it must be emphasized that the two often occur independently. Sensory function is sometimes impaired, and defects of hearing or vision are not uncommon. Other abnormal signs may be noted in the neurological examination. Visceral defects or dysfunctions may be manifested by unusual susceptibility to upper respiratory tract infections or infantile feeding problems. Defective regulation of vital signs is often revealed by excessive responses of temperature, pulse, or respiration to relatively minimal stress. Convulsive seizures are common in the mentally retarded. Emotional symptoms are almost invariable and related to the type and extent of the cerebral lesion, as well as to environmental stresses. Those patients with lesser degrees of retardation are more capable of appreciating failure, feeling rejection, and experiencing frustration and insecurity.

Infancy. Difficulty in making the diagnosis of mental retardation is inversely proportional to the age of the patient. The diagnosis may be impossible in the newborn unless there are obvious signs of cerebral disease. Neonatal infants who are comatose, or have bulging fontanels indicative of increased intracranial pressure, or are in the opisthotonic position with dilated fixed pupils, almost always have some residual cerebral defect, if they survive. In other newborns, abnormal signs are only suggestive of brain damage. The most common of these signs are an abnormal cry, altered autonomic function, cranial nerve palsies, and motor abnormalities. The last may be manifested by myoclonus; defects in posture or movement; or asymmetry of motor power, tone, or reflexes. Analgesia or anesthesia is sometimes noted. Lack of blinking, sucking, grasping, or Moro reflex in the newborn are all very suggestive of cerebral disease.

Minimal brain dysfunction. The term "minimal

brain dysfunction" is preferred to "slight brain damage," for the latter falsely connotes a poor prognosis. In point of fact, organic disease in these children may be transient, insignificant, or absent. The category of minimal brain dysfunction includes those children of normal intelligence (or those just below or above average intelligence) with behavioral and/or learning disabilities. Neurological defects or evidence of socioeconomic or emotional deprivation are not present or are too slight to be obvious.

Behavioral alterations. Behavioral alterations are usually manifested as deviations in motor activity and interrelated defects in attention. Hyperactivity is the most common characteristic of minimal brain dysfunction. The child is constantly active and shows lack of inhibition and impulse control. He touches everything and speaks and acts impulsively; and his behavior is in other ways disruptive, inappropriate, or antisocial. Emotional lability is often present. The child cries with minimal provocation; temper tantrums and panic are easily evoked. Paradoxical increase in activity with administration of phenobarbital and amelioration of hyperactivity after the administration of amphetamine are often noted. In a small percentage of cases, decrease in physical activity may be a manifestation of minimal brain dysfunction.

Attention defects. Most children with this condition have difficulty in focusing and sustaining their attention, for they are distracted by everything. As in the immature, they cannot discriminate unimportant from important stimuli in the environment. The degree of impairment of attention changes from time to time, causing the uninformed observer to suspect psychological mechanisms. Defective attention impairs the ability to deal with abstract concepts and interferes with the learning process. In a smaller percentage of children with minimal brain dysfunction, a phenomenon opposite to the above is present; these children are preoccupied with detail. They show markedly decreased response to different stimuli; perseveration of speech or actions may be noted.

Learning disabilities. Learning disabilities, either generalized or specific, are common in patients with minimal brain dysfunction. Perceptual motor deficits often occur. The child may be poor in writing, drawing, and, particularly, copying geometric figures. Concept formation is frequently disturbed. Specific learning deficits may be present in only one sphere such as reading, spelling, or calculation. Scatter of performance within individual psychometric tests and differences from one test to another are often seen.

Neurological signs. There often are equivocal or minimal ("soft") neurological signs. Defects in coordination may be manifested by a generalized awkwardness (maladroitness), poor finger coordination, or dysdiadochokinesis. Speech defects or a history of retarded speech development may be noted. Confusion of right and left often occurs. Sometimes transient strabismus is seen. Mild somatic sensory defects may be present or slight impairment of hearing or vision. Occasionally, physical defects are evident.

History. The history is of some value in establishing the diagnosis of minimal brain dysfunction. Sometimes slightly abnormal factors in the prenatal, perinatal, or neonatal history can be elicited. Defects in the developmental history or abnormal socioeconomic factors occasionally are noted. Impaired academic progress is most common. There is often a history of similar symptoms in a parent or sibling. Minimal brain dysfunction occurs more commonly in males than females.

Laboratory studies. Laboratory studies are of relatively little value. The EEG may be abnormal or borderline abnormal. Fourteen and 6 per second positive spikes are sometimes associated with minimal brain dysfunction, and many other slight EEG abnormalities have been noted. Psychometric studies are valuable but require expert interpretation.

Diagnosis. Obviously, the diagnosis of minimal brain dysfunction is particularly difficult to establish during the first few years of life, but there may be many clues.

During the 1st month of life, difficulty in sucking or other feeding problems, alteration in expected muscle tone, cranky behavior, or unusual docility may be evidence of brain dysfunction.

At 9 months of age, better criteria exist for the diagnosis of minimal brain dysfunction. The degree of cerebral defect roughly corresponds to the quality and quantity of abnormal signs. In the motor sphere, alteration of muscle tone; abnormal posture of the extremities, trunk, head, or neck; or altered use of an arm or hand are usually significant (see Section 10.1). Eye signs of strabismus, nystagmus, or failure to fixate may be meaningful. Other neurological signs of importance are reflex alteration or persistence of the tonic neck reflex. Retardation in adaptive and social factors is often significant.

In the preschool years, minimal brain dysfunction may be indicated by delay in walking, speaking, or toilet-training. Impaired coordination and other failures to attain expected landmarks of development are important signs. Simplicity of play, choice of younger playmates, and lack of imagination are further clues to this disorder.

Differential diagnosis of organic brain disease of children

Deprivation. Deprivation may cause reversible symptoms and signs of organic brain disease. Malnutrition, avitaminosis, and anemia are well recognized examples of this fact. Emotional deprivation, as occurs with absence of a mother or mother figure or lack of affection, often results in a retarded child. The deprivation of social stimuli, contact with other human beings, may similarly cause mental retardation. Early correction of these factors leads to a normal course.

Autism. An autistic infant is unable to make contact with his environment. There is resultant extreme aloofness. The child does not respond to external stimuli; e.g., when picked up and cradled he does not cuddle or adapt himself to the other individual. There is often obsessive insistence on sameness and corresponding aversion to new things. This marked inflexibility of personality may be strongly defended by temper tantrums or rages. The onset of walking and especially speaking is delayed. (The mechanism of this condition is probably due to an inherent constitutional defect. Some have implicated emotional factors, for mothers of these children have been described as distant and emotionally cool. These maternal attitudes, on the other hand, may well be the mother's reaction to the unloving child, for love must be reciprocated to endure.)

Schizophrenia. Childhood schizophrenia may be first manifested as autism; the diagnosis of schizophrenia is being made as early as the 3rd and 4th year of life. The schizophrenic child, in concert with the autistic child, does not respond to the environment, other children, or adults. Sometimes activity is diminished, but more often hyperactive behavior is noted. Repetitive movements such as rocking and swinging are common. Speech may be retarded or develop in bursts. Regression (in contrast to retardation) of mental and physical development occasionally occurs.

Communication defects. Speech retardation is sometimes the result of overindulgence; the child finds that verbal communication is not required, for his needs are anticipated and immediately fulfilled. Deafness as a cause of speech retardation and associated behavioral impairment always must be considered. Unrecognized visual impairment may retard mental development.

Physiological defects. Hysteria and other psychogenic phenomena are occasionally misinterpreted as physical or mental retardation. The postictal state is associated with a dulling of mentation, and frequent seizures often prolong this condition. During petit mal status epilepticus, the patient may appear awake with marked impairment of intellectual functions. Prolonged systemic illnesses in children are frequently associated with mental retardation. Some children, more often those who

are left-handed than right-handed, have reading and writing difficulties because of maturational dysfunction in the correlation of auditory, visual, and speech mechanisms; mirror writing may be prominent, and reading difficulty may be related to similar transposition of images.

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ASSESSMENT IN PSYCHIATRY

Diagnosis may be defined as the description of signs and symptoms of disordered functions and their classification into entities that are associated with a predictable outcome.

However, because the etiology of many medical disorders has been clarified and specific therapies are available, a medical diagnosis also often permits inferences concerning the etiology of a disorder, as well as the choice of a specific treatment procedure.

In the main, psychiatry has also followed the medical tradition according to which diagnosis and assessment govern the initial phases of the doctor-patient encounter. On the other hand, the role of diagnosis in psychiatry is not quite analogous to its place in other fields of medicine, since, in contrast to the medical disorders, the etiology of many of the psychiatric syndromes is not yet fully understood, and treatment is often empirical. Thus, formal diagnosis in psychiatry does not always implicate specific etiological factors, nor does it always facilitate treatment decisions. To illustrate, under our present nosological system, psychiatric disorders which belong to diverse diagnostic categories are considered amenable to similar treatment procedures. The same treatment method—psychotherapy—is often employed for such conditions as conversion reaction, depression, psychophysiological disorder, and sexual deviation, which differ widely with respect to their clinical features. In these cases, consequently, a formal diagnosis per se is of limited value in planning treatment.

Despite these limitations, accurate assessment does play an important role in psychiatry. Clinical experience has shown that, on the basis of such assessment, it is possible, with respect to certain diagnostic entities, to predict the patient's response to therapy with a fair degree of accuracy. For example, the acute symptoms of many schizophrenic patients improve with appropriate antipsychotic medication, while certain hyperactivity

disorders in children are likely to respond to treatment with amphetamines. Clearly accurate assessment in such cases is required in order to choose appropriate pharmacological therapy, as well as to differentiate between those patients who require drugs and those who may be treated exclusively with psychological forms of therapy.

Another difference between the role of diagnosis in general medicine and its role in psychiatry derives from the greater complexities of psychiatric assessment. Assessment of the medical patient involves the diagnostic classification of his presenting disorder, and the choice of appropriate treatment methods. Psychiatric assessment extends beyond these considerations, because psychiatric treatment often involves exploration of subtle aspects of the patient's personality, which, in turn, requires the psychiatrist to understand his patient in depth. Thus, apart from the criteria which usually serve as the basis for formal diagnosis (for example, the presence of specific symptoms such as hallucinations or delusions), the psychiatrist in the course of his assessment must also identify more subtle deviations in cognitive and affective functions; he must assess the quality of the patient's relationship with others; and he must evaluate the degree to which the patient is able to satisfy his sexual, creative, and material needs. The patient's typical modes of adaptation and the strength of his psychological defenses also constitute important data.

In addition to evaluating the current psychopathology, the psychiatrist must attain some insight into the psychological, social, and organic determinants that may underlie the patient's pathological behavior. These might include the patient's most intimate wishes and fears, areas of specific conflict, and distortions in his relationships with other people. The psychiatrist's understanding of the pathogenesis of these phenomena

often requires detailed knowledge of the patient's developmental history. The patient's environment, with its potential stresses and supports, represents still another important behavioral determinant. Finally, the psychiatrist must determine whether organic factors are operative in the genesis of the disorder.

The psychiatrist elicits data about the patient through a variety of techniques:

The psychiatrist's principal diagnostic tool for the accumulation of the complex information upon which he will base his final assessment of the patient is the psychiatric examination, which comprises, in turn, a mental status examination and a psychiatric history.

The purpose of the mental status examination is to assess current psychopathology. Therefore, it is designed specifically to elicit evidence of disturbances in thought processes and affect, in communication, and in social adaptation.

The psychiatric history provides the psychiatrist with a longitudinal view of the patient's personality development and the genesis of his psychopathology. Typically, areas explored in the psychiatric history would include early developmental patterns, intrafamilial relationships and emotional interaction, and the development of sexual adaptational patterns, as well as the identification of specific traumatic events.

While the psychiatrist's evaluation of the patient will depend largely on the patient's answers to his direct questions, other impressions, which may be equally important in terms of their clinical significance, will be based on the patient's nonverbal reactions, e.g., mood, manner of relating, facial expression, and posture. Various interview techniques have been developed to facilitate the examination of specific types of psychiatric patients. These are described in this area, as are the standard procedures discussed above, i.e., the mental status examination and the psychiatric history. The items which are generally included in the mental status examination and the psychiatric history are described, and the rationale for their inclusion is explained. Finally, the diagnostic inferences which may be drawn from the material elicited through these techniques are discussed.

The psychiatrist may suggest on occasion that data of crucial clinical importance have not emerged clearly during the psychiatric examination. For example, he may be aware that the patient has withheld information deliberately but be uncertain of the clinical significance of this material. The psychiatrist may suspect that the patient's illness is more serious than the current psychological status would seem to indicate; he may suspect that the patient is suffering from a severe psychiatric disorder which is in temporary remission. At other times, the psychiatrist may be prevented from

accumulating all the data necessary for a reliable evaluation of the patient's psychiatric functioning simply because he deems it inadvisable to probe certain critical areas in the patient's life experience. And there is still another possibility. Even after the psychiatrist has elicited sufficient data, he may be unable to resolve important problems involving differential diagnosis, e.g., whether the patient's symptoms are psychiatric, neurological, or physiological in origin; or whether what appears to be a severe psychoneurosis is, in fact, a borderline psychosis. In such instances, the psychiatrist has at his disposal additional means of eliciting information: medical and neurological evaluations and a battery of psychological tests may be used for this purpose. In addition, he may refer to the background data regarding the patient which have been accumulated by the psychiatric social worker.

Medical illness may produce psychiatric symptoms which are similar to symptoms which are psychological in origin. The anxiety associated with hyperthyroidism may be difficult to differentiate from anxiety neurosis on the basis of a psychiatric examination, for example, and the depression which is often associated with hepatitis may simulate psychogenic forms of depression. The symptoms in certain forms of epilepsy are characteristic of schizophrenia as well. When evidence indicates that the behavioral disorders which have become evident in the course of the psychiatric examination may be due to organic factors, a medical or neurological evaluation and appropriate laboratory procedures such as an electroencephalogram are required for the establishment of definitive diagnosis.

Psychological test findings also constitute a valuable source of data for the psychiatrist. Projective tests, such as the Rorschach, the Thematic Apperception Test, and the Children's Apperception Test, may serve to illuminate significant wishes, fears, and conflicts which lie outside the patient's awareness, and which in some instances might not emerge during the initial psychiatric interview. In addition, essential qualities of the patient's thinking, the nature and adequacy of his psychological defense mechanisms, and evidences of major psychopathology such as a schizophrenic thought process can be inferred with varying degrees of accuracy, from the patient's responses to the relatively ambiguous visual and social stimuli provided by these tests.

As mentioned above, in some cases the psychiatrist may be reluctant to probe too deeply into the patient's fantasies and feelings by questioning him directly, lest his questions evoke excessive anxiety which may, in turn, precipitate an exacerbation of the patient's psychiatric or psychophysiological illness. Psychological tests of personality function can be particularly helpful

in such cases, i.e., when the psychiatrist requires further information regarding certain sensitive areas of the patient's life which are not readily accessible to direct examination.

Psychological tests of intelligence may also perform an important diagnostic function. The psychiatrist's estimate of this important psychological parameter on the basis of data elicited through the interview may not be reliable. However, the patient's performance on standardized intelligence tests, such as the Wechsler-Bellevue Adult Intelligence Scale, the Wechsler-Bellevue Intelligence Scale for Children, and the Stanford-Binet, usually provides valid and reliable information in this regard. Once these test findings are available to him, the psychiatrist can distinguish between the patient whose pathological behavior is due to a basic intellectual deficiency and the patient whose impaired functioning may be attributed to psychiatric disorders.

Finally, when brain damage is suspected but cannot be clinically demonstrated unequivocally, psychological tests may be of value in determining whether organic factors are operative in the genesis of the patient's pathological behavior. When brain damage is subtle, mild, and diffuse, has developed slowly, or occurs in a "silent" area of the brain, the resultant deficit may not be clearly apparent from the patient's daily behavior; nor is it likely to emerge clearly in the course of the psychiatric interview.

A group of psychological tests has been found useful for the specific detection of minor deficits in such functions as sensory-motor and sensory-sensory integration, the capacity for abstract thought, attention and concentration, and other subtle integrative and perceptual functions which seem to depend on an intact central nervous system. These tests, which include the Bender-Gestalt, Goldstein-Sheerer, and the Rosvold Continuous Performance Test, among other discussed in this area, are often helpful in identifying brain damage which is not apparent otherwise. At the same time, however, it must be noted that these test findings are not conclusive. That is, brain damage may not be reflected in the specific behavior sampled by these tests; "normal" test results do not rule out the presence of brain damage.

In summary, the psychological tests commonly used to supplement and/or clarify the data elicited by means of the psychiatric interview are variously designed to facilitate assessment of particular aspects of personality function, the nature and extent of psychopathology, the patient's intellectual potential, and the possible presence of organic brain damage. The rationale for the construction of each test is explained in Area E, and specific indications for its administration are discussed,

as are the diagnostic implications of test findings and current professional opinion concerning the general validity of such test findings and their limitations. In addition, the techniques for administration of the test and interpretation of the results derived therefrom are described briefly.

The social worker's report constitutes still another potential source of diagnostic data. The patient's environment, especially his social and family environment, plays an important role in both the genesis and the current status of the psychiatric disorders. When this information is not accessible otherwise, the psychiatric symptoms are pathognomonic for specific atoric status will draw on the social worker's assessment of such factors.

In medical illness the same symptom, namely, fever, may constitute the cardinal manifestation of such diverse underlying pathologies as tumor, infection, or allergy. Similarly, outward manifestations of psychopathology are also limited in scope; although some few psychiatric symptoms are pathognomonic for specific disorders, many others cut across diagnostic categories and may be seen in many conditions. For example, anxiety and depression may be the cardinal clinical features of neurotic conflict, brain tumor, the early stages of schizophrenia, drug intoxication, and even a systemic infection, such as hepatitis.

Nevertheless, a description of psychiatric symptoms is fundamental to any discussion of assessment. It delineates the kinds of information the psychiatric examination is expected to produce and the kind of data the student must look for. Accordingly, the third chapter of this area includes a description of the manifestations of psychiatric illness which are encountered most frequently in clinical practice, with specific reference to their implications for assessment and final diagnosis. Psychiatric symptoms are discussed in Area F of this book as well, from another vantage point, namely, in the context of the specific nosological entities in which they occur.

Psychiatric symptoms are characterized by disturbance at many levels of psychological functioning. This chapter has been organized so that the behavioral parameters which seem most "vulnerable" to disruption by psychiatric disorders are discussed, first, in terms of the criteria of "normal" functioning. The discussion then proceeds to consideration of the various behavioral deviations and disturbances which are considered indicative of psychiatric disturbance. The most striking indices of psychiatric illness include thought disorders (which subsume disturbances in association, memory, and judgment, disturbances of consciousness, and disorientation) and distortions in perception; psychomotor disturbances; disturbances in object relationships; psy-

chophysiological reactions; and pathological manifestations of affect, such as anxiety, depression, euphoria, and ambivalence. In addition, psychiatric disorders also manifest themselves in more subtle ways such as work inhibitions, and in an impairment of creative and sexual functioning.

The psychiatric examination is designed to bring to light all of the patient's psychopathological manifestations and to underscore his specific vulnerabilities. Once the psychiatrist has these data at hand, he can formu-

late more specific hypotheses concerning the possible determinants of the patient's illness and plan an appropriate treatment program. It should be noted, however, that the psychiatrist's formulations should include an assessment of the patient's assets, as well as his liabilities. In other words, if therapy is to be effective, the psychiatrist's awareness of the patient's potential capacity for constructive change and growth must remain in the forefront. For, essentially, the fulfillment of this potential is the goal of psychiatric treatment.

A.M.F.

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Chapter 11

The Psychiatric Examination

11.1 PSYCHIATRIC INTERVIEW

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The interview is the main tool used by the psychiatrist to gain a knowledge of the patient and what is wrong with him. Obtaining a mental status, eliciting a history of the patient's present illness and past life, and carrying out psychotherapy are dependent on a perceptively conducted interview. In fact, all these begin with the initial contact with the psychiatrist. An understanding of the patient in health and sickness comes chiefly from his account of his life events, attitudes, and emotions and of the development of his symptoms. The diagnosis and prognosis are based on these data and the additional information obtained from the patient's relatives, the physical examination, psychological tests, and any other special examinations. With this knowledge, treatment objectives can be formulated, and a plan of therapy that is realistic for the patient can be instituted.

In recent years there has been increasing interest in the psychiatric interview, and important refinements in its use have been developed. The traditional formal examination outline of general medicine has been replaced by greater emphasis on encouraging the patient to tell his story in his own words. The question and answer technique leads to brief and sterile responses and failure to elicit an elaboration of his background. Psychoanalysis has had a great influence on the improvement of techniques in interviewing. Freud in 1905 pointed out that he began treatment by asking the patient to give him the whole story of his life and illness.

The psychiatrist needs to consider not only the implications of the patient's conscious, realistic statements but also the unconscious or transference aspects. By transference is meant the reactivation outside the individual's awareness of attitudes and feelings toward people who were important to him earlier in his life. Infantile feelings of parental omnipotence or of rebelliousness toward parents are frequently di-

rected toward the psychiatrist, who may have trouble understanding such reactions since they are no longer appropriate, as they may have been in the patient's childhood. In his puzzlement, the psychiatrist may feel that his own behavior has been seriously amiss, or he may become angry and blame the patient. The studies of transference relationships by Freud and subsequent investigators have been particularly illuminating of the relationship between the physician and the patient.

Physician-Patient Relationship

The physician-patient relationship is the core of the practice of medicine. It is of concern to all physicians and needs to be evaluated in all patients. Although personality factors are most significant when emotional and mental problems are the core of the illness, they also affect the care of the patient with structural disease. A good relationship, even more than a cure, is expected by the patient; it is common experience that patients are apt to be tolerant of the therapeutic limitations of medicine. Physicians work with sick people, not just disease syndromes. As Alan Gregg put it: "There are no diseases. There are only sick people." Therefore, it is incumbent on the psychiatrist to consider the nature of the relationship, the psychodynamic factors in both himself and his patient that influence the relationship, and the manner in which good rapport can be achieved.

Rapport is the spontaneous, conscious feeling of harmonious responsiveness that promotes the development of a constructive therapeutic relationship. It implies that there is an understanding and trust between the psychiatrist and his patient. With rapport, the patient feels that the psychiatrist accepts him and recognizes his assets, even though they may be outnumbered by his liabilities. Frequently, the doctor is the individual to whom the patient can talk about things he cannot tell anyone else. Most patients feel that they can trust psychiatrists to keep secrets. This confidence must not be betrayed. The patient's feeling that someone knows him, understands him, and accepts him is a source of strength for him.

Physician's attitude toward patient. Failure of the physician to establish good rapport accounts for

much of his ineffectiveness in the care of his patients. Alexis Carrel pointed out that the young physician all too frequently loses sight of the whole man and instead regards his patient as the corpse dissected by the anatomist, the cells and fluids studied by the physiologist, or the consciousness observed by the psychiatrist. However, a live patient brings in a new factor that the medical student's first patient, the cadaver, did not have: transference. The young physician may, in turn, develop a counter-transference, that is, an emotional reaction to the patient based on the physician's own needs and conflicts. The physician identifies with the patient to a greater or lesser degree. Physicians consciously or unconsciously know something about the patient's needs, for everyone has been sick, at least as a child. Thus, the physician develops empathy, which means that he has the capacity to put himself in the patient's place to such a degree that he is able to experience the meaning of the patient's feelings, wishes, and thoughts.

"The secret of the care of the patient is in caring for the patient," remarked Francis Peabody, who was a talented teacher, clinician, and researcher. If a doctor dislikes a patient, he is prone to be ineffective in dealing with him. Emotion breeds counter-emotion. For example, if the physician is hostile, the patient becomes more hostile; the physician then becomes even angrier, and there is rapid deterioration of the relationship. If, on the other hand, the physician can rise above such emotion and handle the resentful patient with equanimity, there may be a victory in the interpersonal relationship, and the patient may become a loyal and cooperative individual. Physicians are bound to like some patients more than others. It is not uncommon for physicians to be emotionally upset by certain personalities or illnesses. However, it is important to try to give a full amount of understanding to all. If the physician feels antagonism, he should try to evaluate the basis for this feeling.

Patient's reaction to physician. The reaction of the patient toward the psychiatrist is apt to be a repetition of the attitude he has had to previous physicians or to parents, teachers, or other authoritative persons who have figured importantly in his life. His reaction may be positive, negative, or ambivalent.

Because the traditional role of the physician is one of taking action and giving advice, patients are sometimes reluctant to tell their stories to a psychiatrist. They come to him with the expectation that all their difficulties will be promptly resolved with no further effort on their part except for a passive compliance with the physician's directions.

Although it is easy for the patient to identify the psychiatrist with another person in his life when there are realistic factors, at times the transference needs are so great that unrealistic factors will serve. For example, a young man can easily look upon an older psychiatrist as a father figure. However, when unresolved conflicts with his father are strong, he may

even endow an attractive young woman examiner with personality characteristics of his father.

The psychiatrist's words and deeds have a power far beyond the commonplace because of his unique authority and the dependence of the patient on him. What the particular physician feels has a direct bearing on the emotional and physiological reactions of the patient. One patient repeatedly had high blood pressure when examined by a physician he considered cold, aloof, and stern. He had normal blood pressure when seen by a physician he regarded as warm, understanding, and sympathetic.

Not only individual experiences but broad cultural attitudes of patients affect their reactions. In one survey of 700 patients, there was substantial agreement among the patients that physicians did not have the time or inclination to listen to and consider the patient's feelings, that they did not have enough knowledge of emotional problems and of the socioeconomic background of the family, and that they increased fear by not giving explanations in nontechnical language. Since psychosocial and economic factors exert a profound influence on human reactions, as has been emphasized by Blum and others, it is desirable for the physician to have as much understanding as possible of the subculture of the patient. Differences in social, intellectual, and educational status have been found to interfere seriously with rapport. Understanding—or lack of understanding—of the patient's beliefs, use of language, and attitudes toward illness influences the character of the physician's examination.

The interrelationship. Lewin pointed out that there is a core of the howling, enraged child in most patients, even in good patients, who are usually defined as cooperative patients. The physician is required to cope with the patient's aggressions. Counter-aggressions also arise, but they are usually sublimated rather than expressed directly, as they were in the days when Dr. Willis flogged the psychotic George III, with the considered approval of a good part of the medical profession. The physician's unconscious guilt, an outgrowth of his incapacity to deal with the patient and his illness, may be alleviated by an accusatory method of questioning, which carries the implication that the patient is responsible for his illness.

Gaining conscious insight into the relationship between the psychiatrist and the patient requires constant evaluation. The better understanding the psychiatrist has of himself, the more secure he feels and the better able he is to modify destructive attitudes. The psychiatrist needs to empathize, but not to the point of assuming the burdens of his patients. He should be able to leave the problems of his patients when away from the office or the hospital. Otherwise, he will be handicapped in his efforts to help the sick person, who needs sympathy and understanding but not sentimentality.

The physician is prone to have some defensiveness, partly with good reason, for many innocent doctors

have been sued, attacked, and even killed because they did not give some patients the satisfactions unconsciously desired. As a protective defensive pattern, the psychiatrist may assume a habitual attitude toward all patients. Although such rigidity may create some comfort and efficiency, it is frequently inappropriate to the particular patient and situation. Greater flexibility leads to a responsiveness to the subtle interplay between two individuals.

The psychiatrist must avoid sidestepping issues that are important to the patient but that he finds boring or difficult to deal with because of his own sensitivities, prejudices, or peculiarities. For example, one medical student insisted on questioning a patient about her relationship with her 23-year-old son. It was evident from the playback of a tape-recorded interview that she wished to talk about her problem with her husband. When the patient was later interviewed by the supervising psychiatrist, she said: "The doctor was a nice fellow, but I could see he was having trouble with his mother. It made me understand my own son more."

In such a complex interaction as the interview, mistakes are usually not disastrous to the relationship if they are relatively infrequent. When the patient senses interest and good will on the part of the interviewer, he is apt to be tolerant of considerable ineptitude. The enthusiasm and interest of the young psychiatrist is likely to counterbalance his inexperience. The unhappy patient is chiefly concerned with getting relief, and the approach of the psychiatrist is more important than his age.

Technique

General considerations. The attitudes of both the patient and the physician are significant in determining the type of interview and its success. The patient comes to the psychiatrist for expert assistance. He may have a relatively realistic attitude characterized by some insight, awareness of the limitations of medical knowledge and skill, trust and confidence in a properly chosen psychiatrist, and capacity to cooperate. On the other hand, he may, like a helpless child, yearn for a parental type of guidance and expect magic from the psychiatrist. When there is such immature involvement on the part of the patient, the psychiatrist may either reinforce this illusion of magic by using a suggestive type of approach or try to dissipate these beliefs through an analysis of the problem.

Some patients come to the psychiatrist under duress because they are sent by relatives or friends. They are prone to be angry, inhibited, and unreceptive. The psychiatrist, through tact and understanding, may win such patients over and develop rapport in spite of such initial difficulties. When the patient shows marked inhibitions, the examiner aims to put him at ease and allows him to talk freely. A receptive manner is helpful. If the patient has questions, they

should be answered frankly. Explanations should be given in keeping with the patient's capacity to understand. Such factors as intelligence, sophistication in regard to personality reactions, and degree and type of illness should influence the vocabulary and content of the psychiatrist's response. Every effort should be made to convey to the belligerent patient both understanding and tolerance for his feelings. If such a patient does not respond and does not wish to talk to the psychiatrist, it is advisable to discontinue the interview and resume contact with him at a later time.

The status of the examiner in the professional hierarchy influences some patients. Those who have had problems with authority may talk most easily to those of lesser status, and those who need to have their security bolstered require attention from a psychiatrist of recognized reputation.

A psychiatrist's knowledge of psychodynamics is of great use in helping him comprehend what is going on and in altering his approach to the patient. For example, if the patient is overbearing, it is likely that he is frightened. The interviewer needs to cope with this underlying fear in order to dissipate the overcompensatory anger. If the patient feels the psychiatrist has empathy, he is likely to talk more freely. It is frequently possible to capitalize on the patient's sense of humor in getting him to talk more easily. Smiling with him helps him feel a sense of rapport. Needless to say, laughing at him alienates him.

In guiding the interview, the examiner should allow the patient's free expression of thoughts and feelings, and he should *let the patient tell his story*. Gaps can be filled in later in the initial interview or in subsequent interviews. Listening is a major tool. Minimum activity encourages the patient to expand on his thoughts and enables him to bring up relevant topics. Attention must be paid to what the patient omits as well as to what he says. Undue emphasis or exaggeration, overt signs of emotion, and changes in manner and tone of voice may give clues to a distortion. For example, when a woman volunteers that her husband is absolutely perfect, her statement should raise suspicions about the soundness of the marital adjustment. But it is not advisable to challenge such dogmatic and emotionally charged statements immediately. These areas can be fully explored later, when the patient feels more secure with the psychiatrist. Misrepresentation and misperception of the facts due to conscious denial or lack of awareness can be clarified gradually.

Evaluating the social pressures existing in the patient's earlier life helps the psychiatrist understand the susceptibility of the patient better. For personality reactions, healthy or unhealthy, are the result of a constant interplay of biological, sociological, and psychological forces. Each stress leaves behind some trace of its influence and continues to manifest itself throughout life in proportion to the intensity of its effect and the susceptibility of the particular human

being. Emotional reactions resulting from strain should be determined in so far as it is possible. The significant point may not be the stress per se but rather what that particular stress means to the person.

The patient must be an active participant when dealing with personality reactions. There is no short cut; he must find out about himself by frankly discussing himself. Patients should be encouraged to discuss the advantages and disadvantages of different possible ways of dealing with a problem. In this way, they learn to make their own decisions and take independent action; and they gain inner security, which will aid in dealing with future problems.

Usually, interviews should not last longer than an hour, although with some alert, receptive patients the initial interview may be prolonged to 1½ hours. Longer subsequent interviews may also be scheduled, especially if it is not possible or appropriate to see the patient frequently. With sicker patients, fatigue and limited productivity indicate that the interview should be shortened.

The ultimate aim is to help the patient change his underlying attitudes and accept emotionally what he has heretofore refused to accept. The patient's confidence in the psychiatrist and his desire to improve can overcome resistance to such change. Resistance implies a conscious or unconscious need to withhold discussion of emotional conflicts. It may be due to shame, guilt, fear of rejection, distrust of the psychiatrist, or a need to hold onto symptoms that provide secondary gain. Frequently, the patient is apprehensive that the anxiety initially associated with his problems will be revived if his repression is removed. Resistance may be shown by talking about irrelevant topics or by directing the conversation to the psychiatrist himself. When patients ask personal questions of the psychiatrist, he may point out that he is interested in the reasons for this curiosity about his personal affairs. However, questions about the psychiatrist's qualifications should be answered frankly.

Question techniques. Questions can be injected when the patient gives appropriate leads. When asked tactfully, questions do not contradict the patient's conception of himself. For example, if a patient who has had three wives complains about the resentment of his present wife, the psychiatrist should not ask him if he has always chosen hostile wives or if he always arouses anger in women. Rather, the psychiatrist should ask whether there have been similar problems with his previous wives.

Leading questions and interpretive comments should be avoided. For instance, if a patient complains of nausea, the psychiatrist should not say, "You must have your nausea when you're at work." He should ask the patient when he has his nausea, and inquire about his environment and his feelings at the time it occurs. The patient himself may then see a connection between the stressful situation and his symptoms.

Thus, instead of becoming defensive because he feels accused, he will be encouraged to develop his own insight.

The perceptive examiner asks questions that will help the patient develop understanding of himself as an individual. The examiner avoids influencing the patient to comply with preconceived theories that do not apply to him. For example, the psychiatrist may want to put all patients with peptic ulcer in the category of those who have unsatisfied infantile dependency needs. Instead, the psychiatrist's questions should lead the patient into an analysis of the development of his symptoms. With this approach, the patient gains an understanding of the hidden meanings of his personality reactions. When sufficient evidence in support of an interpretation has been given, the physician may use this data in making a more direct interpretation. Reformulating the patient's own interpretations may help in clarifying and consolidating insight. There is great variation in the capacity to make introspective observations and to understand their meaning. Those with little ability to revive unconscious thoughts and comprehend inner meanings need the most guidance from the psychiatrist.

Note taking. It is usually desirable to record some verbatim statements as aids in the evaluation of the patient and his illness. Notes should be taken as unobtrusively as possible and should not be so extensive as to interfere with the free flow of the patient's talk. Reassurance that the notes are confidential should be given, especially with patients who feel uncomfortable about them.

Psychiatrists should be alert to the reaction of the patient. When the interviewer feels uncomfortable about taking notes or belabors getting all the data on paper, the patient is likely to have an unfavorable response. If the patient objects to note taking, it is best to discontinue it. On the other hand, many patients object when the psychiatrist fails to take notes. They may consider note taking as a sign of the physician's interest and appreciation of the importance of what is being said.

When notes are not taken during the interview, the physician should take the time to record the data immediately after the patient leaves. However, if no notes are taken during the interview, there is danger that the interviewer's own personality reactions will excessively contaminate the patient's record. So if the psychiatrist doesn't take notes, he might consider sound recordings, which have several advantages over written notes: they are more complete, and they interfere less with spontaneous, easy communication.

Attitudes of the psychiatrist. The psychiatrist needs to listen without reacting, even though he may be reminded of his own disturbing problems or experiences. Therefore, he himself should be relatively well adjusted and have sufficient sources of satisfaction and security. His attitude toward his conflicts must be clarified so that they do not interfere with his

emotional stability and his capacity to concentrate while listening to his patient. The psychiatrist's self-respect is of significance, since ability to respect others is dependent to some degree on one's own self-respect.

Complete passivity on the part of the psychiatrist leaves the patient feeling helpless. However, some psychiatrists go to the other extreme: they pontificate and give interpretations based on their own personal reactions rather than those of the patient. When the patient expresses asocial attitudes, such as murderous impulses toward members of his family, the psychiatrist must avoid showing that he is shocked.

The psychiatrist should keep in mind that it is his medical training and experience that sets him apart. His patients may or may not have greater personal assets than he. The fact that a person needs help with his emotional difficulties by no means constitutes any basic inferiority. So, an authoritarian attitude on the part of the psychiatrist is uncalled for and interferes with the patient's ability to talk easily. Indeed, it is likely to constitute a traumatic repetition of a cultural or parental pattern. Yet many psychiatrists succumb to the temptation to exert authority as retaliation for annoying authoritarian domination to which they themselves have been subjected.

Initial Interview

Since patients are usually anxious and may find it difficult to talk, even under the best of circumstances, the setting should be one where there is quiet, privacy, and freedom from interruption. A comfortable chair should be provided for the patient. The psychiatrist should introduce himself and invite the patient to be seated. A courteous, interested, respectful, considerate, and tolerant attitude on the part of the psychiatrist helps put the patient at ease. The emphasis should be on developing a good relationship, since the relationship determines to a great degree the kind of information the patient will give, and the psychotherapeutic interaction depends on the rapport established.

The psychiatrist should avoid seeming to be in a hurry, since such an attitude inhibits the patient. A stilted, detached, or cold attitude or evidences of anxiety, anger, or indifference alienate the patient. The psychiatrist may develop empathy by trying consciously to put himself in the patient's place.

Asking the patient about the chief problems that brought him to the psychiatrist or hospital is usually the best way to start the interview. The patient can then be encouraged to tell the story of his present illness in his own words. All too frequently, patients complain to psychiatrists that other physicians have not permitted them to talk freely about what they consider important. Listening carefully and perceptively is a major ingredient of the interview. When the patient has the psychiatrist's undivided attention, it stimulates him to unburden himself. One patient said

that he discontinued going to a certain psychiatrist because the doctor read his mail during the interview, and another patient could not tolerate a doctor who habitually munched on oranges.

The conversation should be guided rather than pursued in the manner of a prosecuting attorney. The latter approach leads to frequent "yes" and "no" answers and a failure to gain a depth of understanding of the problem. Simple explanations, reassurance, and praise may be used to obtain information when the patient needs to have his anxiety alleviated. The use of simple English rather than technical terms helps to overcome barriers in communication. However, the physician should avoid the use of slang or swear words. The patient should be accepted in terms of his own ethical and moral values. The psychiatrist should avoid being moralistic, prejudicial, dictatorial, or punitive. He should convey an atmosphere of being authoritative but not authoritarian.

Free expression is a valuable tool. In describing the associative anamnesis, Deutsch and Murphy emphasized allowing the patient to talk freely and making sound recordings for later close scrutiny of what he has said and how he has said it. What is said and the way it is said are of primary significance, but also to be noted are such nonverbal aspects as gestures and facial expressions. Therefore, the patient is asked to give the bodily sensations accompanying his ideas so that the somatic and psychic components can be observed simultaneously. A comparison of the emotional setting of previous attacks and illnesses with the manifestations occurring during interviews gives clues to which factors are more or less coincidental and which are dynamically related to the syndrome under observation.

The patient is frequently more able to talk about himself during the first interview than later, when he has mobilized defenses and resistances. Quiet attentiveness on the part of the physician lessens the development of anxiety, which leads to blocking and silences. But when the patient does stop talking, the psychiatrist should ask a question or two: prolonged silences are apt to be disconcerting. In asking questions, the psychiatrist should repeat the patient's phrases as much as possible so as to minimize the personal distortions of the physician.

What the information obtained means to the patient is highly important. There should be follow through on the leads the patient gives. When the meaning is not clear to the psychiatrist, tactful questioning is indicated. Skillful, discreet, diplomatic questioning enables the interviewer to bring up intimate topics the patient might otherwise be reluctant to discuss. The psychiatrist whose demeanor is comfortable and non-apologetic can be accepted when he asks highly personal questions about such subjects as sex. The more intimate topics can be introduced by asking less emotionally charged questions, such as those concerning physical development. As a natural sequence, the pa-

tient's attitudes and feelings about the topic can be brought up. If the patient becomes unduly upset, the subject should be dropped.

When the patient belabors a subject, change the topic. If he persists in dwelling on it in a garrulous or circumstantial way, it is appropriate to say, "There are other important things for us to cover." Then bring up another subject of possible significance.

There is need for flexibility and individualizing. Flexibility implies altering techniques to suit different patients and to suit one patient at different times. The psychiatrist should develop variations in technique that are suited to his personality. Psychiatrists taught a specific method of interviewing usually deviate in certain ways, although they may conform to the general approach.

Interpretation. Discussion of present problems gives the psychiatrist an opportunity to ask whether there have been similar problems in the past. This approach gives him more information about the past and also gives him insight into the origin of sensitivities. In the first contact with the patient, however, interpretations are to be avoided or, at most, given with the greatest caution, unless the patient has provided unusually strong evidence in support of them. It is better to let the patient reach his own conclusions because then they have more meaning for him.

Avoid pointing out inconsistencies until later interviews, when rapport is well established. Patients need to maintain self-esteem and self-respect. Bringing up his deficiencies is difficult and painful. Since the patient has a need to feel pride in himself, the psychiatrist should not embarrass him.

Terminating the interview. The patient may be warned that only a few minutes more time is available. Such a statement should be given during an appropriate pause rather than injected in the middle of a discussion that seems highly meaningful to the patient. The psychiatrist may point out to the patient that he has asked many questions and then ask the patient to raise questions of his own or to mention something else that he feels is particularly significant.

If no further interviews are anticipated, the psychiatrist can give a brief summary and recommendation. If further interviews are contemplated, the psychiatrist may state that there is need for more discussion, express continued interest, and suggest that the patient think over the topics covered and what he might wish to add during the next interview.

Recommendations for further interviews should be accompanied by a proposed plan for investigation in order to reach a decision about treatment. Or, if there has been sufficient clarification, the psychiatrist may recommend a tentative or specific plan of treatment. It can be simply stated that more time is needed in order to give an adequate opinion. This can be reassuring to a patient who does not want a premature formulation based on insufficient knowledge.

Subsequent Interviews

Subsequent interviews should continue the understanding and therapeutic approach initiated in the first contact. The patient should again be permitted to express what he wishes. If there is a lag in getting started, the psychiatrist may ask him what has been on his mind, how he has been feeling, or what has been happening. The patient may be encouraged to expand on topics introduced during the first interview, or inquiry may be made about areas that were insufficiently covered or were not discussed at all. If during the initial interview there was interruption of a topic that seemed highly significant, the psychiatrist may reintroduce the topic and suggest that they continue where they left off.

To avoid giving excessive direction, the psychiatrist should permit pauses so that the patient can organize his thoughts. If the pause becomes awkward, a question can be asked about the previous statement. Long silences are apt to indicate preoccupation with the thought content concerning personal conflicts, anxiety about revealing too much, or exhaustion of the subject under discussion.

When the patient is having difficulty bringing out pertinent data, questions that will cover his background and clarify his problem are indicated. A play-by-play account of his daily 24-hour pattern is useful. Note under which circumstances the patient feels at his worst and at his best. How do the symptoms affect the patient? Do they fluctuate from day to day? From morning to evening? From hour to hour? Are they affected by eating, exercise, work, social or other particular situations? What brings relief, temporary or otherwise? Are there known precipitating factors, such as worry, accidents, disappointments, bereavements, financial difficulties, or other stresses? Did relatives or friends have similar symptoms, and what feelings did the patient have about them and their illnesses? The aim of understanding and modifying disordered patterns should take precedence over a descriptive classification of the patient. A dynamic formulation of the whole problem is the most significant part of the complete diagnosis.

If the patient shows some asocial behavior, the psychiatrist should continue an attitude of analyzing and understanding; he should not condone or condemn. The patient is apt to withdraw further if blame is placed on him or his relatives. There should be respect for his defenses and opinions. Attention should be paid to the patient's strengths as well as to his problems. The psychiatrist should focus on relevant material, so that coverage is as comprehensive as possible. When rapport has become well established, some challenging of the patient's ideas may be interjected.

Special Types of Interviews

Interview techniques need to be varied according to the personality reactions of the patient, the type

and degree of illness, and the objectives of the interview. Varying degrees of permissiveness and directiveness may be used. Different approaches to different patients are indicated, and the approach to the same patient should be changed when appropriate.

Nondirective interview. This method, as espoused by Rogers, emphasizes minimal activity on the part of the interviewer. When there are pauses, the interviewer repeats the last words of the patient. Rogers has called attention to a significant defect in much interviewing: all too frequently the psychiatrist talks too much, expounds on his own ideas and philosophy, and implants his own ideas through suggestion. When the doctor monopolizes much of the interview time, the patient has no opportunity to express himself.

However, extreme nondirectiveness leaves the patient feeling abandoned and is likely to create considerable anxiety. Only a limited number of well oriented, intelligent patients appear to be suitable for a strictly nondirective approach. Most patients need guidance from an experienced interviewer and are stimulated and reassured by some verbal interchange.

Consultation interview. In a consultation, where it is necessary to give an opinion after a limited period of interviewing time, a more directive approach is required than when a long term therapeutic contact is planned. Therefore, as much essential information as possible must be obtained during the interview. However, such interviews usually lack depth of understanding and therapeutic value to the patient.

Stress interview. This type of interview has its advocates and has a minor place in the armamentarium of interview techniques.

Most patients feel some degree of anxiety or other emotion when talking to a psychiatrist. Through his manner or a word of reassurance or praise the psychiatrist often can decrease this emotion so that the patient can continue to tell his story. However, certain patients are monotonously repetitious or show insufficient emotionality for motivation. Apathy, indifference, and emotional blunting are not conducive to discussion of personality problems. In patients with such reactions, stimulation of emotions can be constructive. These patients may require probing, challenging, or confrontation in order to arouse feelings that will promote progress in furthering understanding. For example, the *la belle indifférence* of the hysteric may be converted into anxiety so that the patient can experience enough discomfort to talk about his conflicts.

Interview with anxious patient. In patients with anxiety attacks, attention should be paid to what thoughts and environmental strains precipitate or increase the anxiety. When the stresses are not evident, prolonged careful investigation may be necessary to elucidate the sources of the emotion. Repressive or suppressive forces may have to be gradually overcome and analysis made of the current situations that evoke feelings. The original stimuli may have been applied symbolically to other people, and much time

and patience are necessary to disentangle the complicated elaborations that have developed. Revival of unconscious mechanisms through such techniques as free association, dream analysis, and hypnoanalysis may eventually result in definitive insights. Endogenous factors and a series of exogenous circumstances, rather than a single traumatic event, are usually responsible for the illness.

Frequently, only vague feelings of apprehension or the bodily accompaniments of anxiety are evident. In such cases, the painful emotion may have been repressed, but it may continue to operate in the unconscious by producing psychopathological reactions.

Interview with patient displaying psychophysiological symptoms. Psychophysiological symptoms are present in a wide variety of clinical syndromes, whether the illness is primarily structural, psychological, or psychophysiological. Such symptoms may be related to either overt or hidden emotions. Careful study of the correlations between stresses, resultant feelings, and bodily symptoms leads to an understanding of the mechanisms. Much psychosomatic research has been concerned with the documentation of such reactions.

When the temporal coincidence of stress, emotions, and physiological reactions is unknown, enlisting the aid of the patient as a collaborator is helpful. Skillful use of this approach in interviewing, and demonstrable measurement of physiological variables, frequently overcome lack of awareness of the psychophysiological relationships and result in clarification of reactions and in therapeutic progress.

Interview with depressed patient. Depressed patients have a short attention span and should have relatively brief interviews. Their tendency to reiterate in a destructive, self-depreciatory way may require active interruption by the psychiatrist. Many patients with depressive illnesses do not make clear statements of mood disorder. Instead they may express their illness through physical complaints or such symptoms as insomnia, diurnal changes in feelings, irritability, or difficulty in concentration. Clarification of the affective nature of the disorder may come by obtaining expressions of futility, hopelessness, self-depreciation, shame, and thinly veiled hostility.

The possibility of suicidal preoccupation should be investigated. The patient may be asked about his interest in life, whether life has seemed to be worth living, and whether he has had thoughts of dying or of taking his own life. If there have been suicidal attempts or thoughts, questions should be asked concerning what he thinks about the reactions of others to these attempts or to his death and what means of suicide he has contemplated.

Since death is a sensitive, taboo topic, the psychiatrist may fear that talking about it will result in an increase in anxiety, depression, or suicidal preoccupation in his patient. He may, therefore, avoid frank

discussion of it. But if questions about suicide are asked tactfully, they are not disturbing and do not increase suicidal ideas. On the contrary, many patients feel relieved to be able to talk to a confidant about such thoughts. Verbal expression may lessen the need to take action. Words of reassurance, such as a statement that death is frequently considered as a possible solution to emotional problems, can be helpful.

Interview with delusional patient. The psychiatrist should show interest, understanding, and receptiveness. He should try to show that he realizes the patient is expressing thoughts and feelings with significant meaning, although the meaning may not be clear at the time. Since the psychiatrist should represent to the patient a person soundly based in reality, he must not subscribe to the patient's delusions. He should neither agree with nor contradict the patient. Rather, he should try to find out more about the nature of the delusional thoughts and who the patient feels is responsible for them. A skeptical attitude may help raise doubts in the patient's mind and may eventually lead him to an understanding of the delusions as an irrational outgrowth of his conflicts or illness.

Interview with the withdrawn patient. If a patient is absorbed with his inner world of fantasy and is unable to talk spontaneously about his feelings, the psychiatrist must be active in asking questions. He should pay close attention to the patient's reactions and should change the subject when there is difficulty in discussing certain areas of conflict. Shifting to subjects that are less disturbing helps the patient accept the psychiatrist and paves the way for the establishment of rapport, which can be used later in discussing topics initially avoided.

In extreme withdrawal, as found in the patient with catatonic stupor, there should be frequent, brief visits. When there is no response to questions about the patient's feelings, the physician may express an interest in talking later to the patient and explain in a kindly manner that he will be available to help when the patient is ready to communicate with him. The mute patient may be acutely aware of what is going on, and care needs to be exercised to avoid saying anything to him or about him to others in his presence that may antagonize and further alienate him. Some seemingly inaccessible patients may show some signs of reacting to the talk of the psychiatrist through gestures or changes in facial expression. Such nonverbal communications should be carefully observed and should influence what is said to the patient. They may be precursors to verbal contact.

Interview with manic patient. Good rapport is not possible with a highly excited patient. The examiner should maintain a calm, receptive attitude and note carefully the thought content. Overtalkative disturbed patients give valuable information about underlying conflicts that they are not likely to bring up when they regain better control of themselves.

Interviewing Relatives

The families of patients can give much valuable data to help the psychiatrist understand the illness, the prognosis, and the therapeutic potentialities. It is important to have contact with them to give them some understanding of the problem and to enlist their cooperation. Similar help can often be gained by obtaining information from friends, associates at work, or other significant people in the patient's life. Most relatives of patients, particularly those of hospitalized patients, want to be acquainted with the psychiatrist and to obtain information about the illness, such as its probable duration and the plan for treatment.

It is essential to interview relatives of children, the mentally retarded, psychotic patients who cannot give a clear history, and patients with character disorders, who notoriously misconstrue or misrepresent facts. Relatives of patients with other illnesses can give significant supplemental information and express points of view that add to the understanding of the problem. When a patient has marital conflicts, it is necessary to see the spouse. Distortions due to thinking difficulties, repressions, and emotional coloring of the data can then be clarified or corrected. For example, a person with a depressive illness may state that he has never been happy and has always been a failure, whereas he has really been successful.

The patient should usually be told about contemplated interviews with relatives before they are held and should be reassured that his confidence will not be betrayed. It can be pointed out that emphasis will be placed on gaining additional information that will be helpful in understanding him and that, during the interview, the relative will be encouraged to do most of the talking. When the patient is strongly opposed to the psychiatrist's interviewing his relatives, the interviews should usually be deferred or not held at all, unless the patient is a child or grossly psychotic. When the patient objects to having his own doctor interview his relatives, the interviews can be carried out by another staff physician or by a social worker, if one is available.

The psychiatrist who identifies with his patient and has heard sharp condemnations of relatives may find it difficult to avoid being antagonistic to the family. Contrariwise, the psychiatrist who is irritated by an uncooperative, hostile patient may be excessively sympathetic with relatives. In guarding against such reactions, he must keep in mind that an understanding tolerance is due both his patients and their relatives.

There are likely to be many discrepancies in the accounts given by different individuals. Relatives are often fearful and antagonistic and strongly influenced by shame because of psychiatric illness in the family and guilt over real or fancied mistakes they have made in relating to the patient. The information from various sources must be evaluated carefully. History

obtained from relatives may have greater validity than that given by the patient. Although it is important to learn what the past events were, it is even more important to know what they meant to the patient and how they affected him. In weighing the data, the psychiatrist must consider the fact that the patient's fantasies may be of greater significance than reality.

Suggested Cross References

The psychiatric interview is designed to elicit information regarding the patient's psychopathology. For a detailed description of the various forms of psychopathology commonly encountered in the clinical practice of psychiatry, see Linn's section on psychiatric symptoms (Section 13.1). Other sources of data about the psychiatric status of the patient derive from the psychiatric history, psychological tests, medical examination, and social service evaluation which are all discussed in the other sections in Area E, on assessment in psychiatry.

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which it occurred, the significance of the principal figures in that environment, and the patient's adaptive techniques, such as defense mechanisms and security operations. In short, the history attempts to answer the question: "How did this patient become the person I see before me now?"

The history is also a current commentary. It includes a description of the patient's present environment and the stresses and sources of pleasure that characterize it. It also contains a description of the persons who are significant to the patient, and who now have an influence on him.

There is no one correct form for eliciting or recording the psychiatric history. However, it is important for a student to have a form, so that he learns to cover the important developmental areas. When the student has gained enough experience, he will doubtlessly modify whatever form he has learned to suit his own personality and his own approach. The outline suggested below is offered in this light.

The patient presents himself to the psychiatrist, or he is brought by his family, because of some difficulty he is experiencing. This is the matter that is usually uppermost in his mind during the initial interview. Sometimes, however, a patient who is denying the life difficulty or is unaware of it has uppermost in his mind a desire to impress the psychiatrist with the normality of his behavior and the exaggerated concern of his family. No matter how the patient is presented to the psychiatrist, the current situation or problem is his chief concern. This should always be recorded in the patient's own words and be recognized as the *chief complaint*.

The patient's concern with his present situation does not always match the psychiatrist's desire to understand how the present problem evolved from the past. The psychiatrist's chief asset in eliciting the history is his ability to listen critically. The less threatening he is to the patient, the more the patient will trust him with the details of his personal life. Therefore, the order in which the psychiatrist obtains the history will usually have to differ from the order in which he will record it in final form.

The psychiatric history should be a written document. By recording his data, the psychiatrist is compelled to organize the facts he has obtained into a meaningful story. The most useful form for a history is often a chronological one in which the present illness is shown evolving as part of the individual's life story. When reviewing the written history, the psychiatrist may note what information he has failed to obtain. This review can enable him to become aware of the areas which have not been satisfactorily covered and the questions which may still lack answers. Such study may indicate areas which the patient may have avoided or which the psychiatrist himself may unconsciously have omitted. Becoming aware of these gaps should lead to inquiring after the reason for their existence. This, in turn, may

11.2 PSYCHIATRIC HISTORY AND MENTAL STATUS

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The purpose of the psychiatric history is to furnish the psychiatrist with an understanding of his patient's personal development, the environment in

yield fruitful clues for the approaching therapeutic endeavor.

A written history is also a source of information to others. This is particularly true in an institutional setting, where the psychiatrist may be employed only temporarily. Together with the mental status examination, the history should provide a picture of the patient at that particular time, which may be of importance in the future.

The beginner often asks: "How many sessions should be spent eliciting the history?" The answer depends to some extent on the purpose of the psychiatrist's encounter with the patient. For example, an interview to determine an individual's fitness for military service will differ from one that leads to outlining a course of therapy. The latter demands a more accurate diagnosis and evaluation of the individual's personality structure and patterns of adaptation.

In an institutional setting, the psychiatrist may be able to spend several hours a day with the patient to elicit his history and then organize and record the data within the first few days of admission. With an out-patient, this is not usually feasible. Moreover, the out-patient is usually quite concerned with how his current stresses and discomforts interfere with his job or home situation. Therefore, the first few sessions represent a combination of maneuvers, permitting the patient some time in which to focus on the present situation but also, for a part of each session, directing his attention back to the developmental periods so that the psychiatrist may arrive at a dynamic formulation, establish a tentative diagnosis, and plan the optimal therapeutic approach. This is usually done with the indication that, once the history has been obtained, the therapist will have fewer direct questions and the patient will be expected to carry more of the sessions' direction by sharing the thoughts that come to mind.

The psychiatric history may arbitrarily be divided into eight sections: (1) identification of the patient; (2) chief complaint and present illness; (3) personal history; (4) family history; (5) mental status examination; (6) physical examination; (7) psychodynamic formulation; and (8) diagnosis, prognosis, and recommendations.

Identification of the Patient

This should include the following details: name, age, sex, ethnic and cultural background, marital status, occupation, and means of referral. It may include a statement about the patient's housing situation. If the patient is being admitted to a hospital, the section should indicate whether this is the first such admission or whether this admission represents a rehospitalization for his psychiatric disorder.

Chief Complaint and Present Illness

Chief complaint. This should always be stated in the patient's own words. Although the patient's fam-

ily may view the problem quite differently, the manner in which events are perceived by the patient himself will be of the greatest importance to the examiner. There will be times when the subtleties of the patient's perceptions may not be apparent to the psychiatrist until some time after their collaborative effort has been under way. A verbatim record of the chief complaint permits the psychiatrist to review it periodically in the attempt to learn why events appeared as they did to the emotionally disturbed patient. Improvement in the psychotic patient may be gauged in part by his own ability to reconsider earlier perceptions of his situation. As the patient improves, he and the psychiatrist may acquire understanding of how distorted perceptions came about. Although both patient and doctor may not succeed in achieving this understanding, they should certainly strive to acquire it.

Present illness. This section must set forth the story of the present illness as the patient has become aware of it.

Interviewing the patient. The psychiatrist will rarely obtain the history of the present illness in chronological order. The usual patient will be somewhat repetitious in discussing his illness, giving emphasis to those aspects that most trouble him. He usually intersperses his story with digressions and follows association trails that may be extremely informative to the psychiatrist even though they are not directly related to the present illness.

In eliciting the history, the psychiatrist must listen patiently, permitting the patient to tell his story spontaneously, and must carefully observe the patient's behavior, changes in posture, intonations, facial expressions, and emotional reactions to the various subjects discussed. If the patient is spontaneously productive, it is wise to permit him free rein in giving his account of what has befallen him and to limit questions as much as possible. The patient must be aware of the psychiatrist's sympathetic interest and willingness to be helpful; and, it is hoped, he will perceive the psychiatrist's respect for him as an individual. Especially at this stage, the patient must learn that, no matter what he has to report, the psychiatrist, in contrast to his family or friends, will listen uncritically and will not argue or scold, attempt to deny the patient's perception of events, or ridicule him for reporting strange ideas.

If the patient does not report any stresses or events which may have precipitated the present episode, the psychiatrist must inquire about them. He must obtain a clear description of each symptom or sign of illness of which the patient is aware. Where a symptom constitutes a prominent part of the illness, the details of its first occurrence must be obtained. The social context in which symptoms arose must be presented clearly.

The report. From the wealth of data that the examiner has obtained, he must extract and or-

ganize those items which will provide an intelligible and sequential presentation of the development of the present illness. This presentation is rarely in the same order in which the psychiatrist has obtained the data. Not infrequently, organizing the data into such a structured history will bring to notice significant connections of which the patient may not have been aware and which may have therapeutic import.

This section should record whether the patient has encountered such difficulties before. If there were previous occurrences, the dates and outcome of each episode should be included. If there were earlier psychiatric treatments or previous hospitalizations, they should be recorded here, giving the name and address of the psychiatrist or the hospital and dates of admission and discharge. With written consent from the patient, summaries of previous hospitalizations should be obtained. The mode of therapy employed and outcome of each hospital admission should be recorded. If there were hospitalizations for non-psychiatric illnesses, they should be indicated in the next section, the personal history.

A psychotic patient may be unable to give a description of the current problem and may even deny that any exists. In such a case, the informant who supplies the information should be clearly identified, his relationship to the patient stated explicitly, and the problem reproduced in *his* own words. It may occasionally be advantageous to have statements about the problem from several informants.

Personal History

The history of each period of the patient's life—infancy, childhood, adolescence, and adulthood—should be described separately. If the history is written in this chronological fashion, the behavior patterns which the individual has developed as he has matured emerge clearly; the environmental forces that have helped form them will also become apparent. Similarly, limiting physical or social factors can also be appreciated and their effects understood in relation to the period in which they occurred. The present illness may then be seen as the inevitable consequence of the patient's life story. For each period, the psychiatrist should record his survey of the patient's social, sexual, and vocational functioning, along with the inhibitions imposed by excessive or inappropriate fears and guilt, and the sources of the patient's successful pursuit of pleasure.

Infancy. Here first-hand data can be obtained only from parents. The patient and other informants can merely report what they have been told. The psychiatrist wishes to learn all he can about the physical and emotional climate into which the patient was born. Therefore, he attempts to learn whether the patient was a planned child; what the physical health of the mother was during pregnancy; what the nature of her relationship with the father was at that time; some details concerning the labor and delivery; the

health of the patient during the neonatal period; the age at which he first sat up, walked, and talked; the method of toilet training used and the age at which sphincter control was achieved. An attempt should be made to discover what the patient's patterns of eating and playing were and what his parents' attitudes were to his behavior as an infant.

Physical motility. Infants display considerable variation in physical motility. Some are relatively passive; even when hungry, they may display little more than increased eye movement or head turning. Others inform their mothers of hunger or other discomfort with loud noises, much crying and thrashing about in the crib, and sucking movements that may eventually carry the baby's whole fist into his mouth. There are indications that much of this variation is inborn, but parents may respond to it with attitudes ranging from guilt or displeasure to pride, depending on what they think their baby *should* display. When the infant's behavior does not meet the parents' expectation, a cycle may be established: disapproval from the parent, stemming from his own anxiety, engenders anxiety in the infant, which then causes more anxiety in the parent. Such cycles sometimes constitute the dominant pattern of interaction between parents and growing children and often have serious emotional consequences.

Sleeping patterns. A similar inquiry should be made into sleeping arrangements. It is desirable to know what they were during infancy, and whether and when they were subsequently altered. If an infant shared the intimacy of his mother's bedroom but was displaced by his father's return from military service or the birth of a sibling, the displacement could play a major role in his subsequent emotional development and affect his relationship with his father or sibling.

Significance. A child's normal emotional development is related to his mother's ability to nurture him. Therefore, information concerning the mother's emotional and physical health during pregnancy and during the patient's infancy is of great importance. Whether the mother was able to feed and care for her baby in a patient, tender, and loving manner is of more significance than whether he was bottle-fed or breast-fed.

The way in which toilet training was carried out probably exemplifies the subsequent relationship between the patient and the mother. The mother who is severe in this matter is often equally strict in setting other standards for the child to meet during the first decade of development.

Serious physical illness during the first year of life, in which such vital functions as respiration or feeding are threatened, may initiate life-long anxiety in the child. Physical illness that leaves permanent residue or congenital defects that limit the attainment of physical skills damage the growing child's self-confidence and self-esteem, qualities which will be necessary for his success throughout the remainder of childhood and, indeed, into adulthood.

Childhood. This section can be divided into two periods: from age 1 up to entry into school, and from then until the onset of puberty. Here, as in the section concerned with infancy, the psychiatrist needs

to gain an understanding of the physical and emotional climate in which the patient was raised. He attempts to learn what the patient's personality was like during those childhood years and whether there were marked changes in dominant personality patterns and, if there were, what caused them. He tries to elicit a history of the usual childhood illnesses and how they were tolerated by the patient and his parents; a history of other illnesses, injuries, or hospitalizations, with emphasis upon the emotional reaction to them by the patient, his parents, and other people important to him; and a history of serious illnesses or deaths in other members of the family and how they affected the patient. The psychiatrist attempts to learn the patient's reaction to beginning school and to the subsequent school years; the history of any truancy, school phobias, academic difficulties, or outstanding achievements; the level of his academic performance; the pattern of his relationship to peers both in school and outside; his reaction to any moves from one school to another; and family attitudes toward such activities as school performance, religious instruction, church attendance, music lessons, athletic participation, etc.

It is important to note whether the parental expectations were consistent with community norms or significantly deviant. If the latter, how did the parents justify themselves to the child, and how did he accept the parents' standards? What was the relationship between the parents during this period? To what extent did the child observe affectionate display between his parents, and to what extent was affection openly given to him? The variation in family attitudes toward open display of affection or candid acceptance of children's sexual curiosity is still very great in our society. What was the parents' attitude to the child's sexual curiosity and to any questions he may have asked about sex? How did they react to childhood sexual experimentation?

Other data to be described in this section include the patient's reaction to the birth of younger siblings; the nature of the siblings' relationship as they grew up; whether the child played alone or usually with playmates; and whether there were enduring friendships or frequent changes of playmates. In stress situations, did the patient show somatization responses? If so, of what sort were they, and were they recognized as being emotional in origin by the parents?

The psychiatrist also attempts to learn evidences of the patient's sexual interest or activity. What outlets were permitted him for expression of hostility; what evidences of excessive or inappropriate fearfulness became manifest; was there a history of nightmares, temper tantrums, enuresis, or nail biting; what avenues for pleasurable experience were provided; and what techniques did the growing child employ to bolster self-esteem and self-pride?

Here again, as in the section concerning infancy,

an inquiry into sleeping patterns and sleeping arrangements must be made.

Significance. In childhood, as in infancy, attainment of appropriate skills increases pride and self-confidence and encourages the individual to experiment further with his ever expanding universe. During this period, the accepted standards of society must be learned so that the child can function away from home, at school and at play, and learn that he can operate successfully without the constant surveillance of a protecting parent.

In learning the rules of his particular society, the child inevitably undergoes some frustrations. If the consequent anger is not to be internalized, he must be permitted outlets for its expression. The psychiatrist must learn what the patient was forbidden by his family and what he was allowed, and how successfully this formula was integrated into his personality. What techniques were available to the growing child for expressing anger? Were his independence and self-reliance fostered or inhibited? Some of this information will come to the psychiatrist as concrete evidence; but some he will have to deduce. He should, of course, distinguish between concrete information and deduction in his report.

The significance of childhood illnesses depends particularly on the reaction of the parents and on how much anxiety they may have transmitted to the child. The child's life-long attitude toward illness is determined in large part by what happens during these formative years. For example, there are some individuals who respond to illness as though they were invulnerable or even immortal and others who react to a minor upper respiratory infection as if it were a serious disease. Some people minimize physical illnesses, while others dramatize them and appear to delight in telling friends the details of every symptom. These different attitudes originate early in life, as a result of attitudes toward medical treatment and relationships within the family.

A further illustration contrasts treatment attitudes. A generation ago, all children who had rheumatic fever were kept in bed for periods of 6 months to a year, with their physical activities permanently restricted thereafter. Now practice calls for continued activity, depending on the patient's physical condition. The emphasis is on maximum participation in all the activities in which the child's peers engage, so that his self-image is not damaged and he does not develop false ideas of required immobilization.

Adolescence. The same questions asked about previous developmental periods must be reviewed here. The goal is to ascertain the adolescent's adaptive techniques for building self-pride, coping with anxiety, and expressing anger. The particular demands made upon him during this period are both biological and social, the one relating to the onset of puberty and the appearance of sexual impulses, and the other to his scholastic preparations for a career.

The psychiatrist attempts to learn what the patient's reaction was to the physical changes of puberty: for the girl, emotional reactions to breast development, preparation for menarche, circumstances of and reaction to first menstruation, pattern of reaction to subsequent menstrual periods; for the boy, preparation for nocturnal emissions, reaction to them and to spontaneous erections; for both sexes, masturbation fantasies and behavior, homosexual episodes, heterosexual behavior, and dating patterns. The reaction of the patient's family to his adolescent sexual behavior is also an important part of

this historical development. Was the family's attitude consistent with that of the community or at variance with it? Did the parents instill feelings of guilt in response to the patient's inevitable sexual curiosity? The absence of memories of sexual thoughts during adolescence indicates an inhibition fostered by parental attitudes, which condemned sexuality on moral grounds. How much guilt was engendered by masturbation? Under what circumstances did the patient acquire sexual information? In what situations did sexual behavior first occur, and what was the adolescent's subsequent emotional reaction?

The psychiatrist should also ascertain whether the adolescent was isolated or whether he was accepted by his peers and found membership in some group, thus building self-esteem. Were there abrupt changes in the patterns of relating to others?

School performance may be one guide to the adolescent's general functioning. It is also an indication of his ability to organize his energies into constructive patterns and of his capacity to plan meaningfully for adult responsibility. How much day-dreaming occurred, and to what extent did fantasy fulfillment take the place of realistic goal planning? What were the evidences of rebellion against family standards in the patient's attempt to forge his own identity? Or were family standards accepted, and to what degree?

Significance. The adaptive patterns the individual unconsciously develops to survive in his particular environment become clearer as he nears adulthood. Many emotional difficulties become apparent during this period if the adaptive techniques prove inadequate to the increasing social, vocational, and sexual demands made on the adolescent by his body or his environment. If the adolescent encounters defeats in some areas, he may be less inclined to try again. Withdrawal from social relationships or from previously enjoyed activities are clues to malfunction. If the adolescent avoids activities in which his peers participate, the reason for the avoidance should be elucidated. The psychiatrist may suspect the existence of excessive or inappropriate fearfulness and attempt to confirm his suspicions. This, in turn, should lead to an identification of the substitute activities through which the adolescent attempted to compensate for the social defeats represented by his withdrawal and for the consequent damage to his self-esteem and pride.

The relative amounts of passivity and self-assertion that characterize the patient become clearer during this period and establish themselves more firmly as patterned behavior. The psychiatrist should learn how these modes developed in the patient. Which were subtly or openly encouraged by the family? Which techniques did the patient apparently find successful in achieving acceptance by parents and other significant figures? If the adaptive patterns that were successful in achieving emotional security in the family are unsuccessful in coping with others in the outside world, the child often becomes confused and uncertain. The psychiatrist must learn whether the patient resolved this and similar conflicts by adopting more successful survival techniques or by withdrawing from the competitive struggle. Withdrawal always signifies defeat and results in decreased self-esteem.

In order to participate successfully in society as an adult, the adolescent must integrate into his personality those techniques necessary for achieving a relatively happy and mature adaptation. These include such qualities as healthy self-asser-

tion, vocational capacity, a realistic self-image, and an ability to form relationships with others characterized by candor, trust and sincerity. It is important to note that societies other than our own may emphasize other qualities. The standards that an individual must aspire to are determined largely by the society of which he is a part.

Among the experiences that increase self-confidence are those that require some initiative. Often these include some experimentation with behavior which the adolescent knows does not meet strict parental approval. In every generation, such experiments and other adolescent rebellions have engendered anxiety and reproach among adults. When the United States was primarily a rural country, such rebellion was exemplified by smoking cornsilk behind the barn and sparking in the family buggy. Today, in our largely urban society it appears to be manifested mostly in sexual behavior, echoing society as a whole, which has moved away from the double standard.

The psychiatrist must learn whether the patient was able to experiment with new ideas during adolescence. These need not have been in the sexual area only. It is not unusual for adolescents to question religious practices or affiliations. The psychiatrist must learn whether such attempts by the adolescent to forge his own identity were acceptable to parents or whether they were condemned and, if so, how severely. If adolescence was entirely free of such rebellious episodes, it may mean that self-assertion was inhibited. Such inhibition should then show up in other behavioral foci. Evidence of guilt should be noted, along with evidence of exaggerated conformity after attempts at rebellion which had been defeated by what the adolescent perceived as excessive parental disapproval. If the patient did conform in this way, the psychiatrist must look for signs of disproportionate fear in his subsequent behavior.

Mature, emotionally secure parents recognize that adolescents need to learn from experience, and they permit experimentation while providing guidance when it is sought. The parents' own practices, which sometimes differ from what they preach, are known to the adolescent. His ability to adopt parental standards as his own eventually or to reject them is an indication of a secure parent-child relationship.

Adulthood. The onset of adulthood is arbitrarily delineated for the purposes of history taking. Graduation from high school may conveniently end the section on adolescence, but adulthood may truly be said to begin when the individual moves from his parents' home and becomes self-supporting. Entry into college is frequently associated with leaving home, and for many individuals it represents the beginning of adulthood.

Whether the patient goes from high school directly into college, into the labor market, or into military service, the history must record whether or not the move was a result of his own desire and planning, and what his reaction to it was. It must show how the patient attempted to satisfy prestige needs; how he coped with fears, anxieties, and hostilities; and whether his techniques for doing so differed from methods employed earlier. Did he allow himself to become aware of anxious and hostile feelings, or did he have to deny them? Were these feelings accompanied by excessive or inappropriate guilt, and did this represent a change from previous patterns?

Career planning, sexual experimenting, courtship, and marriage—all should be described in this section;

their pattern will probably be consistent with the patterns for handling emotional drives which have been seen evolving throughout the history. The psychiatrist should be alert to repetitive patterns manifested in job performance and in social relationships. If there were many job changes, why did they occur? Does the patient always ascribe the precipitating cause to factors outside himself, or does he recognize his own degree of responsibility? Is the patient able to develop close relationships, or are his relationships always casual? Does he maintain friendships, or are they always short-lived and changeable? What evidence is there of his capacity to love others? Is he exploitative toward his girl friend, wife, or children? Does he give as well as take? The history must record evidences of emotional crises and difficulties as the patient progresses through adulthood; it must tell how they were resolved, and whether they recurred. It should also note, as in earlier periods, the effect on the patient of physical illness, and of the diseases and deaths of parents and other people who are important to him.

Marriage. If the patient has been married, a detailed history of the relationship must be included. What first attracted the patient to the partner? Which person took the lead during courtship? What difficulties were encountered? Did either family object to the relationship? If so for what reasons? To what extent did the couple understand each other's goals for the marriage? Were they able to discuss such potential areas of difference as church affiliation? Were children desired? Since raising a family is a cultural expectation, it is of great importance if either partner did not want children. If both desired to have a family, did they agree on its size? Were they in agreement about contraceptive techniques?

What has been the history of the sexual relationship during the marriage? Merely recording the fact that the patient enjoys sexual intercourse does not provide the type of information the psychiatrist requires. What is the usual coital pattern? Who takes the lead in initiating sexual activity? Are both partners orgasmic? Is there a history of impotence or frigidity? Have there been abortions? How did the patient react to each pregnancy and each childbirth? Which were planned and which were not? What is the history of extramarital episodes? What was the patient's emotional response if either he or his mate proved to be sterile? Did the couple adopt children? If so, how did they go about it?

Significance. The psychiatrist must view alleged motivation critically, knowing that manifest behavior often serves to hide unacceptable impulses and tendencies. For example, marriage may sometimes represent refuge to an individual tormented by unacceptable homosexual impulses. Marriage may represent an easy escape from the frightening challenge of college discipline, or it may express spiteful defiance of parents. Of course it may also represent a mature readiness for self-realization and the ability to take an adult place in the community. A detailed history of the courtship and marriage can indicate to the psychiatrist the extent to which the

patient relies on wishful thinking instead of planning maturely to reach his goals. When wishful thinking does occur, its effects are usually evident in other areas of behavior as well.

The significance of abortions may not be revealed until later periods of emotional depression. During depressions occurring in the 5th or 6th decades of the patient's life, the psychiatrist frequently hears expressions of remorse and guilt concerning abortions that occurred twenty or more years earlier.

When listening to descriptions of children, the patient's psychiatrist must also be alert to any correlations that there might be between the patient's attitudes toward them and his attitudes toward his own siblings or other significant persons in his family of origin. Often, the patient's attitudes towards his children represent unconscious displacements of emotion from significant figures of his childhood.

Family History

This section should include a description of the parents and siblings in the patient's family of origin. Although some mention of these important persons probably occurred in the patient's account of his life history, they should be described individually and in greater detail here. Their names, ages, occupations, economic and social status, marital records, and history of physical and emotional illness should all be recorded. In particular, the psychiatrist should inquire about the possible occurrence of depression, psychiatric hospitalization, suicide, alcoholism, drug addiction, mental retardation, convulsive disorders, or syphilis.

In addition to these factual data, this section should indicate how the patient felt about each of these relatives, what the nature of their relationship was during the patient's childhood, and what it is like now. If there were divorces or marital separations, what was his emotional response? Was it different from that of his parents? A similar description of the patient's spouse and children may be made here or in the preceding section.

Mental Status Examination

The purpose of recording the mental status examination is to enable the psychiatrist and others who may need to review the chart to obtain a precise picture of the patient's emotional status and mental capacity and functioning. Therefore, verbatim samples of the patient's speech and thought content should be included.

For clarity, the mental status examination should be recorded in a certain order and organized according to certain categories. However, these need not be the order in which the examination itself is conducted, for that order usually depends on the circumstances under which the patient and psychiatrist meet, the degree of cooperation of which the patient is then capable, and the degree of intactness of his sensorium. In any particular situation, the examiner must exercise his own judgment about which parts of the mental examination are to be emphasized.

Even if a patient is inaccessible or stuporous, it is

nonetheless important to attempt the mental examination and to record the findings. Not only does this provide a picture of the patient *at that time* to someone reading the case record later, but the description of the patient is valuable as a base line for future comparison.

Interview behavior

Relationship to psychiatrist. Was the patient cooperative, indifferent, or withdrawn? Did he welcome the opportunity to present his views to the psychiatrist? Did he recognize the purpose of the interview? Was he openly hostile or assaultive? Did he display a friendly attitude? If so, was it excessively friendly or inappropriately "chummy?"

What is needed here is a general view. A specific description of the patient's emotional reactions is to be presented below.

General appearance and grooming. Was the patient dressed with normal neatness? Were the clothes he wore appropriate to the season and the occasion? Were they clean and in good repair? Was the patient clean? Was his hair combed? Were his fingernails cut?

Motor behavior. Here the psychiatrist presents a picture of the patient's over-all motor behavior during the interview. Were his motor acts appropriate to the situation? Were they smoothly coordinated, jerky, or awkward? Was there hyperactivity? If so, give a careful description.

Was his motor behavior purposeful or seemingly aimless? Was any motor act self-injurious or destructive of objects in the room?

Was the patient willing to shake hands in greeting? Was his handshake of normal firmness or was it abnormally limp? Was there evidence of cogwheel rigidity or waxy flexibility? Did the patient display wringing of the hands, tics, twitching, or a tremor? If so, was it constant or "on intention" only?

If the examiner suspects that the patient is abnormally slowed, he may time the patient's reactions by giving him simple commands, such as asking him to walk across the room, to untie and tie his shoelaces, or to write out a dictated sentence. In the report, the examiner should give the time it took the patient to respond. The patient should be given a simple explanation for the test, such as, "I want to see how long it takes you to do certain things."

Posture. Was the patient normally relaxed, stiff and guarded, or limp and sprawled out in the chair?

Gait and carriage. Did the patient carry himself erect or slouched over? Was his gait normally brisk, slow, desultory, dilatory, unsteady, or poorly coordinated?

Facial expression. Was the facial expression appropriate to and consistent with the subject under discussion? Did it change appropriately with change of subject? Was the patient's face unexpressive and flat? Did he look to be normally attentive, apathetic,

or indifferent? Did the patient at any point show elation (to what degree: mild pleasure, appropriate smile, or uncontrolled laughter); fear (to what degree: mild anxiety or apprehension, crying, or absolute terror); or anger (to what degree: frowning, scorn, or rage and fury)?

Voice and speech. Evaluation of the patient's speech should include consideration of the following factors: (1) Intensity. Was the patient's voice normally audible, excessively loud, or excessively soft? (2) Pitch. Was his voice monotonous or did it show any abnormal changes in pitch? (3) Speed. Did the patient speak at the usual rate of speed, very slowly, or rapidly? (4) Ease of speech. Did the patient speak easily, under much pressure, or hesitantly? (5) Spontaneity. Was his speech spontaneous, did he respond only when questions were put to him, or was he mute? (6) Productivity. Did the patient speak with usual verbal productivity, or was he garrulous, or laconic? (7) Relevance. Were his productions relevant, flighty, or easily distractible? (8) Manner. Was his manner of speaking pedantic, excessively formal, relaxed, or inappropriately familiar? (9) Deviations. Was there evidence of neologisms, echolalia, clang associations, or verbigeration? (10) Reaction time. Was it appropriate or abnormally slow? If significantly slow, the psychiatrist should time the interval between asking a question and obtaining the patient's response. (11) Vocabulary and diction. Were his vocabulary and diction consistent with his social and educational background?

Disturbances in speaking may occur at certain times during the interview, depending on the material under discussion. Themes of special emotional significance to the patient may produce alterations in any of the above qualities. Special note of this should be made when it occurs.

Emotional reactions. These are best recorded in the patient's own words. It is important to note the consistency of his stated emotion and its appropriateness to the subject under discussion. The examiner must note any inconsistency between the emotional reactions which the patient reports and those which he is observed to be having.

If the patient does not report his feelings spontaneously, questions designed to elicit a statement about them may be helpful. If asking the patient how he feels does not obtain the desired information, more specific questions should be asked. Are you sad? Happy? Fearful? Are you worried about something? Does something hurt you?

For the unresponsive patient, the examiner must note signs that suggest certain feelings. These include his observations of the patient's facial expressions and their changes, pulse and respiration rate, tearfulness, sweating, and blushing.

Content of thought. What does the patient speak about spontaneously? How does he account for having come to the hospital or to the psychiatrist's office?

It is preferable to let the patient give an account of his problems without interrupting him with questions. However, there may be times, as with a patient who is easily distracted, when the examiner wishes to focus the interview more sharply. In examining a patient who does not voluntarily share his thoughts, the psychiatrist may ask: What are your worries? How did they come about?

Are there subjects about which the patient refuses to speak? Evasions and outright refusals to speak are as significant as the patient's answers, and they should be noted.

Persecutory trends. These may be elicited by asking: Do you think anyone is against you? Do people say things about you behind your back? What does it seem they say? When you get on a bus or a train, do you feel the other people turn around to look at you? Do they watch you during the entire ride? Is anyone trying to control your mind? How are they attempting to do this? Why do you think this is happening?

Hallucinations. To test whether the patient is hallucinating, the psychiatrist can ask: Have you ever heard anyone call your name aloud and, when you turned around, found no one there? Do you hear other things without discovering their source? What things? If the patient can identify a voice or voices, then the examiner should ask: Whose voice is it? Is it a man or a woman? Do you hear more than one person? Do you hear this in both ears? What is the person saying? Is it pleasant or unpleasant?

Do you ever see strange things? Do you ever see things you know are not really there? How do you think that comes about? What do these things look like? Do they frighten you? Are they moving or still?

Do you smell strange odors or feel things on your skin when you cannot see anything there? Do you have unusual tastes in your mouth? When does that occur? What brings it on? What is the strangest experience you ever had?

The examiner may believe that the patient is responding to hallucinations even though he denies it or declines to confirm the examiner's suspicions explicitly. In such instances, the examiner must carefully record what he has actually observed. Did the patient turn his head suddenly? Did his eyes appear to be following something in motion? Did he stare at a particular place in the room? Did his gaze return to a particular place at intervals during the interview? Did he mumble or appear to be conversing with a third person?

Hypochondriacal trends. These may be elicited by asking: How is your health? How do you sleep? Are you often ill? How frequently do you usually visit your doctor? Are there any special foods in your diet? Do you take any medicines regularly? What do you keep in your medicine cabinet? The examiner may wish to be even more precise in certain cases and

ask questions such as: How is your heart? Your bowels? Blood? Sexual organs? Brain?

Schizophrenic trends. Ideas of unreality, which may characterize an incipient schizophrenic episode, should be asked for. Do you ever feel outside yourself? When crossing a street, do you ever feel as though someone else is moving your legs? Does the world look different to you? How? Do things about you sometimes seem not to be real? Does their size seem to change?

Depressive trends. When present, depressive trends are usually mentioned by the patient himself. However, it may be helpful to ask: Do you think you are going to get well? Are you blue? Have you ever thought of hurting yourself or committing suicide? Did you ever try to do something like that? Do you think you are a wicked person? Why?

If the patient is severely depressed, he is rarely spontaneous in describing his ideas. Severely depressed patients will often acknowledge nihilistic thoughts. These may be elicited by asking: Do you think everything is hopeless? That the world has stopped? That things outside no longer exist? That tomorrow will not come?

Ideas of grandiosity. When present, grandiosity is usually indicated by the patient himself. He may describe himself in exalted terms. He may exaggerate the amount of his wealth or the number of automobiles or homes he owns. It may be helpful to ask: Do you receive messages from God? Do you have any unusual powers? What is your real rank? Do you think people recognize who you really are?

Compulsions. These may be asked about with questions such as: Are there any habits that you have? Are there any things you feel you must do in a certain way? More specifically, the examiner may ask: Do you have to wash your hands in a particular fashion all the time? Or bathe or shower in a certain way? Or use the toilet in a certain way? Is there anything you must do first in order to be able to fall asleep?

Obsessive thoughts. Such thoughts may be elicited by asking: Are there any thoughts that continually run through your mind? Are there certain prayers or particular slogans you feel compelled to say to yourself? Under what circumstances?

Phobias. When present, phobias are usually spontaneously described. However, the examiner may inquire: Do you have any particular fears? Do you have any morbid fears? Are there any places you feel you must avoid? Why? Are you able to use elevators? Do you feel you cannot go to the upper floors of tall buildings? Or into subways? Or to church? Or to any particular neighborhood or street intersection? When did you first become aware of such a problem?

Sensorium. This section describes the patient's state of consciousness and his ability to perceive his

environment correctly. The following items must be tested:

Orientation

Time. Does the patient identify the date correctly? If not, is he approximately correct? Can he give the month? Year? Season? Time of day? If he is in a hospital, does he know how long he has been there?

Place. Does the patient know where he is? If he is in a hospital, does he know its name and location?

Person. Does the patient know who he is? Does he know who the examiner is and what he represents? Does he perceive the hospital staff and other patients correctly?

Recent memory. This may be tested by asking the patient: Where do you live? What is the address? What are the names of the other people who reside there? How did you come here? With whom did you come? What have you eaten today? Where did you go yesterday? What was in the newspaper or on the radio news program today?

The particular questions to be chosen for testing recent memory depend on whether the patient is hospitalized or is being seen as an out-patient.

Remote memory. This may be tested by asking the patient: Where were you born? What was the date? Where did you grow up? What was the address? Where were your elementary and high schools located? What were the principals' names? How far did you go in school? How old were you when you took your first job? Where was that? How long have you lived at your current address? When were you married? What was your wife's maiden name? What are the names and birth dates of your children? What are the names and addresses of your siblings?

Questions must be appropriate for the particular patient. Thus, if the patient has been hospitalized previously, he may be asked when and where that was, the names of previous physicians, and the locations of their offices.

For foreign-born individuals, dates of immigration and naturalization are important and should normally be within recall. Similarly, questions designed to reveal their mode of travel to the United States may be included.

Retention and immediate recall. These faculties may be tested by giving the patient a date or the name of a person and asking him to remember it, as he will be asked for it later in the interview. The examiner should then test him after 5 minutes and again after 20 minutes or toward the end of the interview.

Auditory memory span may be tested by asking the patient to repeat a series of numbers. The patient should be able to recall and recite at least seven numbers forward and five numbers backward without error.

Visual memory span may be tested by pointing to an object or to the time on a watch and asking the

patient to remember them. The examiner should then test the patient after 5 minutes and again after 20 minutes or toward the end of the interview.

Counting and calculation. Intactness of these functions may be tested by asking the patient to count to 20 forward and backward; to subtract 7 from 100 and to continue subtracting serially. The examiner should note whether the patient makes mistakes and is aware of his errors. When the patient is finished, the examiner should ask him whether his remainder is correct? How does he know whether it is correct? Can he check his answer? Simple tests involving multiplication and division should be given.

It is important to note whether the patient performed these simple functions within an appropriate time span or whether his mental functioning was abnormally slow. If the latter is true, the time interval between question and answer should be noted. The examiner's impression of the patient's effort to be cooperative must also be noted.

General knowledge. The examiner must form an impression of the patient's intellectual capacity and his general knowledge. The measurement of intellectual capacity is a function of the clinical psychologist, employing tests that have been statistically validated. However, a rough estimate of the patient's intellectual capacity forms a part of the psychiatrist's mental examination. It may be estimated by testing for his general knowledge, keeping in mind the level of schooling he has completed.

Sample questions (in order of difficulty) include: What do we do with food? Name some foods. What are houses made of? Cars? Clothes? Name some rivers, mountains. Who is the President of the United States? Who was President before him, and before him? Who was the President during World War II? During World War I? Who is the governor of the state? The lieutenant-governor? For how many years is the President elected? What is the boiling point of water? What is its freezing point?

Abstract thinking. An impairment in the ability to think abstractly is found in several thought disorders. Any disorder that tends to make thinking more rigid, such as schizophrenia and some organic brain syndromes, may reveal this phenomenon. It may be tested by asking the patient the meanings of some of the more common proverbs. If asked the meaning of "Don't count your chickens before they're hatched," the normal subject answers in some general terms about the hazards inherent in drawing premature conclusions. If abstract thinking is impaired, the answer may well approximate a concrete restatement of the original proverb.

Insight. This represents the patient's ability to comprehend his current situation correctly. Does he believe himself to be ill? Does he feel the need for help? Has he come voluntarily or unwillingly to be examined? If he is in a hospital, why does he think he is there? If he does believe himself to be ill, how

does he account for the illness? To what extent does the patient evaluate himself realistically? To what degree does he understand the dynamics of his own personality and the origin of his problems?

Judgment. This refers to the individual's capacity to interpret his environment correctly and to orient his behavior in it appropriately. The psychiatrist wants to know how the patient has been functioning in school or at work, and whether he has been exercising prudence in these areas and in his family relationships.

Reliability. This refers to the examiner's impression of the patient's veracity or capacity to report his situation accurately. An estimate of the patient's reliability is an important part of the case record.

Physical Examination

Every patient requires a complete physical examination, which must include a neurological examination. It is imperative that the psychiatrist recognize that somatic disorders may present themselves through behavior disturbances. This may be more obvious when the structures of the central nervous system are directly involved. Involvements outside the nervous system may range from disturbances in circulation or nutrition to toxic manifestations of infectious diseases. The list of possible causes of behavioral disturbances is extensive. Therefore, all indicated physical and laboratory examinations must be included in the diagnostic investigation.

Psychodynamic Formulation

Having elicited the psychiatric history and performed the necessary physical and mental examinations, the psychiatrist must then attempt an amalgamation of the knowledge he has acquired. This section of his psychiatric work-up attempts to answer the questions: How did the patient become the person he is today? What were the environmental and genetic influences that shaped his personality during his early years? How did he express his fears and angers? What were his sources of pleasure and pride? How has the reality of his life circumstances produced his current situation?

This section includes an assessment of the patient's adaptive techniques and an evaluation of their effectiveness. It should attempt to explain the causes of his psychodynamic breakdown.

Diagnosis, Prognosis, and Recommendations

For psychiatric therapy to have a rational basis, it must be built on an accurate understanding of the

patient's development and life history and on the results of the physical and mental examinations. These are the elements on which an accurate diagnostic description and psychodynamic formulation are based, and they, in turn, lead to the prognosis and recommendations for appropriate therapy.

Diagnosis. In an attempt to maintain uniformity, diagnoses should adhere to the standard nomenclature of the American Psychiatric Association. Where the psychiatrist feels that this is not satisfactory, he may supplement it with whatever qualifying terms he feels apply. However, the necessity of categorizing within one nosological system can be helpful in developing a conceptual framework, particularly for students. The framework will probably be modified as the psychiatrist develops his own way of thinking with continued study and practice.

Prognosis. A prognostic statement is a part of the evaluation of the patient. It is based on the psychiatrist's understanding of his patient's assets, strengths, and adaptive weaknesses and the reality of his life situation. It is modified by the history of the patient's previous patterns of adapting to situations of stress and relative normality. Proficiency in developing prognostic skills depends on the student's insistence on including a prognosis in every work-up he does and following it up by observing the course taken by each of his patients.

Recommendations. These follow the systematic study of the patient. If the psychiatrist can understand the patient's development and the vicissitudes of his life experiences, he should be in a position to recommend an appropriate course of therapy. Alternately, there will be times when the recommendation may be for no psychiatric therapy. When psychiatric referral has been for the purpose of evaluating a patient, such a recommendation may be most helpful to the referring physician.

Suggested Cross References

For a more detailed discussion of the various symptoms mentioned here, see Linn's section on psychiatric symptoms (Section 13.1) in this area. Sections on psychological tests (Sections 12.1 and 12.2) and the role of the physical examination in psychiatric diagnosis (Section 12.4) may also be found in this area.

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Chapter 12

Ancillary Data in Psychiatric Assessment

12.1 PSYCHOLOGICAL TESTING OF INTELLIGENCE AND PERSONALITY

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Test construct

It seems best to view psychological tests as microscopes or x-rays if one wants to grasp their significance, advantages, and limitations. Performance on psychological tests, it is assumed, reflects certain selected performances in real life. Another assumption is that differences in test performance correspond to differences in life performances, other conditions being equal—be they differences among many individuals or differences among several test examinations of the same individual.

Different tests yield information about different psychological aspects. Tests of potential intellectual capacity differ from tests of intellectual efficiency. Tests of acquired mental skills differ from tests of ability to apply acquired skills to the solution of new tasks. Tests often give information not accessible in direct interviewing because it is not always possible to differentiate adequately between the level of highest potential capacity and the level of actual effective functioning. Thus, many ineffectual psychotics perform surprisingly well on some tests of abstract reasoning; less frequently, an apparently imaginative patient does poorly on tests of imagination as well as on tests of reasoning. Some patients, after brain concussion, appear clinically to reason logically and on a superior intellectual level but reveal a severely and consistently defective immediate memory on a variety of memory tests. A severe memory defect leads to confusion, even if the patient's verbal reasoning is superior. The norms of every standardized test enable the examiner to evaluate any individual's test performance and its implications for performance in life far more realistically than a non-standardized interview can. However, the increased precision that testing provides is not always necessary for the understanding or treatment of diseases.

Reliability and validity are indispensable concepts in psychological testing. A test is reliable when re-

peated applications of the test yield the same results, provided the tested individual or mental function has not changed significantly between the testing periods. Reliability is the self-consistency of a test and depends primarily on the length of the test (longer tests tend to be more reliable) and the spread of test scores in the group of subjects measured (the greater the spread, the greater the reliability). Whereas reliability refers to how dependably a test measures what it measures, validity refers to how well the test measures what it is supposed to measure. A test can be reliable without being valid, that is, without having any useful application. It may have no significant correlation with any important empirical variable of emotions, conduct, reasoning, etc. A test cannot be valid unless it is reliable. It can have different degrees of validity when it is correlated in various degrees with different variables or personality aspects. For example, tests of emotional attitudes are more valid as indicators of internal emotional attitudes than of overt behavior in emotionally stimulating social situations; and verbal tests of intelligence reveal with higher validity potential reasoning power than effective handling of reasoning problems.)

Microscopic or x-ray evidence is always limited, and this limitation applies to psychological tests. Sometimes a test is easily and validly interpreted, and at other times its relevance is doubtful or incomplete unless it is integrated with other data. The degree of reliability of different tests and of different uses of the same tests varies. The application and interpretation of some tests require long and difficult training; in other tests, they are relatively simple. The projective personality tests are among the most difficult to interpret; and consequently, in the present stage of development, it is still true that the skill of the interpreter of these tests is no less important than the tests themselves. The paper and pencil questionnaires (the personality inventories) eliminate the influence of the examiner almost completely, both in the administration and in the interpretation of the subject's responses, if norms are available. The application of intelligence tests requires sound training and care which is all the more true of projective tests.

Intelligence Tests

General concepts

Intelligence. Intelligence is a controversial concept. The most widely accepted definition of intelligence is: the capacity to solve new problems by means of rea-

soning. It involves an understanding of the relevant issues in new tasks and thinking of successful or satisfactory solutions to the tasks. The emphasis on novelty of the tasks serves the purpose of differentiating acts of intelligence from memory feats, although it is realized that memory has a role in reasoning. In tests of intelligence, reasoning is stressed, not concrete performances, because manual performances are easily influenced by transient emotional stress and by training. Moreover, it is useful to have a measure of potential intelligence in order to have an estimate of what kind of work the individual could be doing. This potential power cannot be measured directly, but it may be inferred from the results.

Factors to be kept constant. Since test results depend, at least in part, on training (including relevant experiences of any kind), interest, and effort as well as on intellectual capacity, it is important that training, interest, and effort be kept constant so that differences in intelligence can be measured in terms of differences in test scores. This requirement is met by (1) constructing tests measuring a great variety of mental tasks, (2) limiting the unqualified application of test norms to subjects who had at least the same educational opportunity as those whose test performance provided the norms, and (3) making certain that the subject was sufficiently motivated in answering the test questions.

The psychologist's role in ascertaining interest and effort is essential and can be difficult in the case of young children and withdrawn psychotics. Depression, which always affects test performance unfavorably, escapes detection easily. Test results should not be accepted as valid unless a qualified psychologist feels confident that all requirements of reliable testing have been met.

Intellectual level. The intellectual level, determined by a reliable examination with a sound test after the 4th year of life (provided there is no speech disorder and no disease of the central nervous system), is one of the most lasting and most important human traits. Individuals with adequate intelligence may not achieve what they are capable of for a variety of reasons, but no matter how hard a person with insufficient intelligence tries, he cannot achieve what is beyond his capacity. Time and again claims are made and alleged proofs are offered that intellectual capacity (the I.Q.) can be raised by proper training. But analysis shows that the improvement in the I.Q. on reexamination is spurious because motivation and cooperation greatly differed on both examinations.

Individual versus group tests. When an individually administered test differs from a group test, the result of the group test should be disregarded. Individual examinations are far more reliable than group tests because of the opportunity the examiner has during the individual test to estimate and control the degree of cooperation, a matter of particular importance in the study of mental patients.

Emotional factors and brain disorders. Intelligence tests measure reasoning about impersonal and rational mental problems, the solution of which may require prolonged and conscious concentration. Different types of tests differ in their resistance to emotional factors and are affected differently by different types of brain lesions. With the exception of patients with lesions in the speech areas of their dominant cerebral hemisphere, the ability to define words resists functional and organic brain disorders best, and vocabulary test scores can be accepted as approximate measures of premorbid intellectual ability.

As more and more is learned about specific test result patterns in different kinds of brain disorders, specific conclusions replace broad generalizations. In general, the effect of emotional stress or of functional and organic brain disorders on test results increases with the degree to which the test is an "open eye test," that is, the degree to which it involves visual-motor perception and coordination, speed, and adaptation to a new task, especially if the task is of no perceptible significance to the patient in his daily life. Words, speech, and communication are always important. "Closed eye tests" that can be answered quickly and briefly on the basis of long acquired and well tested verbal knowledge without the use of the hands or the senses (except hearing) resist deterioration best. This is well illustrated by the significantly greater variability of scores on nonverbal tests, particularly in the case of very disturbed mental patients.

Measuring and scoring I. Q. Modern psychological testing began in the last decade of the 19th century when Alfred Binet developed the first intelligence scale to separate the mentally defective (who were to be given special education) from the rest of the children (whose school progress was to be speeded up). Realizing that intellectual capacity cannot be measured directly and that test scores are a function of training and practical experience as well as of intellectual capacity, Binet eliminated the effect of differences in training and experience by constructing the first battery of diverse tests, assuming that training and experience would be approximately the same for all children on a test battery, even when they differed on the individual tests of the battery.

Binet also introduced the concept of the mental age (MA), which is the average intellectual level of a particular age. The intelligence quotient (I.Q.) is the ratio of MA over CA (chronological age) multiplied by 100 to do away with the decimal point. When chronological and mental ages are equal, the I.Q. is 100, that is, average. Since it is impossible to measure increments of intellectual power past the age of 15 by available intelligence tests, the highest divisor in the I. Q. formula is 15.

Another way of expressing the relative standing of an individual within his group is by percentile. The higher the percentile, the higher his rank within a group. For example, if an individual is at the 80th per-

centile level, he exceeds 80 per cent of the group in the trait measured and is exceeded by the remaining 20 per cent. An I.Q. of 100 corresponds to the 50th percentile in intellectual ability for the general population. The intellectually lowest per cent are usually classified as mentally defective.

Purposes. The reason for intelligence testing is to ascertain the role the intellectual level may play in the difficulties the subject experiences or to make educational or occupational plans for the future. Nontest estimates of intellectual capacity can be difficult, especially if the patient's education has been irregular or if he is inhibited and tense. The level of intellectual capacity has a definite influence on symptoms and the psychotherapeutic process.

Individual tests. The Binet test battery was revised and enlarged by Lewis Terman and published in this country in 1916. Two newly revised and greatly enlarged parallel batteries, L and M, of the 1916 tests were published by Terman and Merrill in 1937. The new revisions extend from the mental age of 2 years to the highest adult intellectual level.

These tests have been largely displaced in clinical practice by the Wechsler Adult Intelligence Scale (WAIS), published in 1939 and revised in 1955, and the Wechsler Intelligence Scale for Children (WISC), published in 1949. One reason for the displacement is the difference in the content of many of the tests. The WAIS consists of tests of interest to adults. The Binet is of primary interest to children. However, the chief reason for preferring the WAIS and the WISC over the Terman tests is that considerable time is saved in administering the WAIS and the WISC. This saving is made at some cost in accuracy. Both the WAIS and the WISC are less discriminating in the youngest and oldest subject groups, and even among the most and least intelligent at any age level, than are the 1937 Terman tests. The latter are more accurate as measures of mental deficiency.

The Terman revisions of the Binet, the WAIS, and the WISC are all individual intelligence tests; that is, they are administered to one person at a time, giving the examiner an opportunity to control cooperation and other behavioral patterns.

Wechsler Adult Intelligence Scale (WAIS) (This is an intelligence test for adults and adolescents of both sexes from the age of 16 up. The scale is designed for individual administration and consists of six verbal and five nonverbal tests. Norms are provided for each of the tests, for the verbal test group, for the nonverbal test group, and for the entire scale. The order in which these single tests are given is not important.

Three of the 11 tests give results that correlate very highly with the entire scale. They are verbal and include the test of general information, the similarities test (a test of logical hierarchy), and comprehension questions (chiefly a test of social intelligence). The similarities test measures a basic function of

abstract intelligence, subsuming two specific terms under their appropriate generic term: for example, orange and banana are fruit, praise and punishment are methods of correction. The comprehension questions call for answers regarding matters of social importance, such as, "Why should people pay taxes?" and "Why are people who are born deaf usually unable to talk?"

One of the verbal tests consists of arithmetical problems. Results on this test are influenced considerably by training and experience. The fifth verbal test is repeating digits forward and backward. Strictly speaking, this is not an intelligence test but one of immediate recall. Performance on this test is considerably affected by mood. People who are greatly worried by emotional problems are, as a rule, too preoccupied to do well on this test. On the other hand, some detached schizophrenics can do remarkably well and even some brain disorder patients without distinct memory defect can repeat long series of digits. The vocabulary test calls for defining single words. It is a good test, but it requires more time than the others. Schizophrenics who have primary thought disturbances often score poorly on the similarities or comprehension questions.

Three of the nonverbal tests—the digit symbol (placing geometric symbols in squares beneath digits according to a key), the object assembly (resembling jigsaw puzzles), and the colored block designs (imitating, with colored blocks, designs presented on a printed card)—are particularly sensitive to brain damage. The picture completion and picture arrangement tests complete the list of nonverbal tests.

Although David Wechsler, the originator of WAIS, suggested that the I. Q. computed on the entire scale be used as an indication of intellectual capacity, it seems advisable to use only the verbal test performance (excluding repeating digits) in the calculation of the I. Q. because performance on the verbal tests is much less variable than that on the nonverbal tests and because verbal tests resist the effects of emotional tension, psychosis, and brain disease more effectively than do nonverbal tests, unless there is damage to the speech areas of the dominant cerebral hemisphere. Performance on nonverbal tests varies noticeably with mood disturbances in schizophrenia, but performance on verbal tests is relatively stable. A subject rarely introduces idiosyncrasies into his intelligence test responses that would throw light on his emotional attitudes.

A subject's I. Q. score indicates the degree of deviation of his intellectual capacity from the average. In this lies its importance. By general agreement, an I. Q. of 100 has been selected to denote average intellectual capacity on all intelligence scales, but the tests differ somewhat in the probability of obtaining I. Q. scores differing from 100. Therefore, I. Q. scores are not directly comparable unless they are 100 or near 100. On the WAIS, the middle 50 per cent of the adult and adolescent population (there are no sex differences) obtain I. Q.s between 90 and 110. The lowest quarter obtain I. Q.s below 90, and the lowest 5 per cent obtain I. Q.s of 75 or less. Analogously, the upper quarter obtain I. Q.s over 110, and the highest 5 per cent obtain I. Q.s of 125 and over.

Group tests. These tests are so named because they are given to many subjects at the same time, although they can also be administered individually. The great-

est users of them are schools and the armed services. Being paper and pencil tests, they nearly always require good reading and thus are unreliable with poor readers. They are speed rather than power tests. They rely on questions where the answer is usually a choice among alternatives (multiple choice). They are economical and convenient but much less reliable and valid than individual tests. It is particularly inadvisable to attempt predictions in the case of emotional disturbance because transitory emotional upsets interfere with speed of reading and responding and with grasp of printed questions. Motivation during mass testing leaves much to be desired in many individuals. It is preferable to give an abbreviated individual test rather than a group test to the mentally disturbed.

Among the widely known group verbal tests are the American Council on Education Psychological Examination (ACE) for college freshmen, the Cooperative School and College Ability Tests (SCAT) for grades 4 to 14, the Lorge-Thorndike intelligence tests for grades 1 to 12, the Otis Quick-Scoring Mental Ability Tests for grades 1 to 16, and the Concept Mastery Test for undergraduate and graduate college students.

Personality Tests

Personality. Definitions of personality are numerous. They rarely exclude one another logically, but they emphasize different aspects of the concept. The most frequent reason for their multitude is the inclusion in the definition of not only a description of human behavior but also references to causal factors, confirmed or hypothetical. Since similarity of behavior does not always imply similarity of motivation, internal psychological attitudes that escape direct visual inspection must be included in the concept of personality.

A purely psychological definition of personality—one that omits physical, physiological, sociocultural, biographical, and other factors (relevant as these are in shaping personality) but that is a good working definition and is accessible to clinical observation and psychological test measurements—is the following: *personality is the role the individual plays in interhuman relationships when he feels his vitally personal matters are involved, the term "role" connoting not only overt behavior (conscious and unconscious) but also internal attitudes, action tendencies, and inhibitions (conscious and unconscious).*

Projective personality tests. The word "projection" in the term "projective personality tests" should be taken in its basic psychological meaning. These tests are concerned with visual images, elicited by and externalized on the ambiguous test stimuli and thus made objects in space.

It is frequently thought that the word "projection" should be taken in its specific Freudian meaning, which limits the process of psychological projection to traits (action tendencies, emotional attitudes, instinctual drives, intellectual processes, etc.) that the projecting individual represses in himself because they

cause him anxiety when he becomes aware of them and that he, denying them in himself, unconsciously ascribes to others when he cannot repress them completely. The fact that every examination with any projective test reveals traits of which the subject is aware, of which he approves, and which he does not hide, as well as some which cause him anxiety and some others of which he is unaware, proves that the Freudian concept of projection is too narrow a theoretical base for the modern projective tests of personality. Besides, there is room and need for a theory of the tests (for an explanation of how and why the tests reveal what they do) and for a theory of personality (for an explanation of how and why people become what they are). Freud's theory of projection is just one personality theory.

In projective personality tests, the subject projects himself by making something definite out of an indefinite sense datum or relatively ambiguous stimulus. Thus, everything that is definite in his responses reflects the subject's habitual ways of reacting. These modes of reaction are never the same in all details in any two people or in any two examinations of the same person. But no adult ever changes his personality completely, except the relatively few who markedly deteriorate because of a severe organic brain disease. Two or more Rorschach test records of the same individual, taken even years apart, hardly ever differ enough to prevent correct matching in experiments that consist of selecting the record of an individual from among the records of 20 or more subjects, using another test record of that individual as a clue.

Assumptions. The following assumptions provide a partial basis for a theory of projective personality tests.

Selection. There is no perception without selection, and the process of selection is a function of personality. This is the broadest principle underlying the tests. Selection is not a superficial or accidental process; it reflects significant life interests, the intensity and quality of emotions, fears and anxiety, physical and mental strength, and degree of activity. The degree of spontaneous activity determines both perceptions and attitudes toward the world. It is through action that we verify the existence of an object and discover its full significance for us. The nervous system is active not only in receiving impressions but also in reacting to them, and selection plays a role in both reception and reaction. Selection is inevitable because of the inability to perceive and react to all potential stimuli. *What matters and how much it matters are functions of personality.* The primary function of selective perception is to facilitate action, sometimes to start action, but always to aid the acting organism.

Visual imagery. Visual imagery aids our orientation in reality much more than does the imagery of any other sense. Rorschach postulated that even the form aspects of visual percepts (visual images projected on the stimulus cards) correspond to significant personality traits. Sight is the most active, most highly organized, and most informative of our senses. It is also the most important sense phylogenetically.

Ambiguity of stimuli. This is what makes genuine self-expression possible. The visual stimuli can be considered ambiguous when they meet the following requirements: (1) They elicit a great number of different percepts from different people looking at them. (2) Each individual produces a limited number of percepts. (3) The set of percepts produced by one individual differs from those of others to a maximal degree. (4) Each in-

dividual's set of percepts varies concomitantly with his personality changes. (5) The information contained in the percepts is of a satisfactory degree of validity no matter by whom produced. The freedom the subject has in the selection of the areas he interprets and in the manner he interprets assures freedom of self-expression.

Conscious effort. The weaker the conscious effort, the greater the freedom of self-expression. The projective tests differ a great deal among themselves in the amount of conscious effort required to answer them. Drawing human figures and other objects, answering questions, and completing sentences in writing require more effort than freely associating to inkblots or even making up stories about pictures, although the latter limits the imagination far more than do the more indeterminate inkblots. The amount of useful and valid information obtained decreases as the amount of effort in answering the test increases. Any definite objective task that demands voluntary and conscious control, be it ever so small, places some limitation on spontaneous self-expression.

Directions. Absence of specific directions facilitates self-expression. When the subject can determine the nature of his task as well as his response to a given task, his freedom of self-expression is greatest. The projective tests differ a great deal in this respect. The inkblot test permits the greatest freedom in this respect because it does not demand any consistency, objectivity, or rationality. The subject can produce successive responses of very different types, varying in significance, without feeling any tension or being aware of any internal inconsistency or irrationality. When making up stories about pictures, the demand for consistency is much greater, and the subject unwittingly follows the rules of rationality and objectivity, since the stimuli themselves, pictures of real people, suggest that the stories be in some relation to the world or to objective human relationships as they are known to the individual taking the test. This is still more the case with the Minnesota Multiphasic Personality Inventory. After all, the sense of reality works automatically except in psychotics severely handicapped by their illness.

Ignorance. Anxiety is alleviated through ignorance of what one discloses about himself. Unless the subject knows the projective techniques well and makes a successful effort to give responses that, interpreted according to standard test rules, create an impression deliberately intended by him, the test responses are reliable. The more the test stimuli and the interpretation of them by the subject absorb the subject's genuine involuntary attention, the freer and more reliable is his test performance. Nearly all people enjoy the free play of their visual associations and do not think about the significance these associations may have. This attitude of ignorance and unconcern, most easily sustained on the Rorschach and hardest to sustain on personality inventories, keeps the subject willing, consciously and unconsciously, to cooperate. Being unaware of what one discloses seems to be crucial for the validity of the tests if they are to give information not readily available through other sources. Awareness of what one reveals arouses anxiety and ambivalence easily; it alerts the mechanisms of disguise and displacement.

Creative imagination. This faculty facilitates the expression of specific personality traits. At least some degree of creativeness is necessary to give meaning to inkblots and pictures of people, to draw, and to complete unfinished sentences. Very little, if any, creativeness is needed to answer questionnaires. When the subject does not know by what standards his responses will be evaluated, he is not restrained in his freedom of associations by self-criticism and is more creative than in a state of critical self-evaluation. The significance of this assumption is illustrated by the fact that original—that is, extremely rare—and particularly unique interpretations always disclose something very important about the creators of these interpretations, even when the examiner does not know what it is they reveal. The drive they reveal plays a great role and is usually

conscious to the individual, even when he does not know he has revealed it in his response.

Persistence. The persistent and lasting test aspects reflect the persistent and lasting personality traits that constitute the basic structure of personality, assuring continuity and assimilation of experiences, stability, learning, and control over self and environment. When subjects are retested, a comparison of the easily changeable aspects of the test responses with those that change slowly or little is necessary before a decision can be made as to the nature and degree of personality change. This assumption implies that the degree and nature of the test changes correspond to the degree and nature of personality changes. This assumption, necessary for the validity of the tests, is confirmed best in the case of the revised Rorschach and least in the case of personality inventories.

Anxiety and difficulties. These stimulate imagination more than do pleasure and contentment. All projective techniques seem to reveal trouble, inner conflicts, and tension much more readily than contentment, happiness, and success. This is not true of personality inventories, but these techniques are not projective tests. Among the reasons for the ease with which projective tests sample trouble and worry is their functioning like psychological microscopes: all surfaces look rougher under a microscope than when viewed with the naked eye. Sometimes the stimulus favors dysphoric reactions (for example, many Thematic Apperception Test pictures). Another relevant reason is that an important function of imagination and thinking about sense data is the function of warding off possible trouble and preparing for handling trouble. An attitude of care-free self-confidence seems to stimulate thinking and imagination much less than does anxiety. States of gratifying relaxation are states of diminished readiness for both mental and physical action. An unanxious, well adjusted person does not linger in his own past because he does not have much unfinished psychological business that stirs unpleasant memories. This assumption explains, in part, why projective tests are valuable in psychopathology.

Parallelism. The handling of projective test stimuli parallels the handling of personally vital interhuman relationships; the latter includes not only overt behavior toward others but also internal attitudes, not accessible to direct observation, related to the handling of significant interhuman relationships. Unless the internal attitudes are considered, the assumed parallelism cannot be demonstrated. In fact, projective personality tests reveal the inner man more fully than the outer man. Moreover, only results of a full analysis of the tests can parallel the role the individual plays in personally vital interhuman relationships. When the analysis is limited to the verbal narrative or anecdotal content and the nontest psychosocial behavior of the individual is limited to overt and directly observable action, no parallelism can be expected because pertinent aspects of test responses and actual living are left out of the comparison. The Rorschach test does not even allow a direct comparison between verbal test content and overt psychosocial conduct; it would be absurd to view the subject's responses about animals, inanimate objects, and many other objects as literal descriptions of his own social behavior. It requires a special dictionary to translate the subject's manner of handling the test stimuli into ways in which he deals with others, internally and externally. The translation from test behavior to life behavior is almost direct and simple in the case of some test components, and it is indirect and complex in the case of other test reactions. Projective tests differ in the degrees to which they meet the requirements of the parallelism assumption. Their degrees of validity differ accordingly.

Principles. Not all reactions to any psychobiological test, including projective personality tests, are of equal significance; they vary in degree of validity and importance. Some are of little if any significance, some may have an unknown meaning, and some are

very valuable. There are two formal principles that aid in the sorting out of projective test responses and even of dream and interview material. They are named the verb versus noun principle and the same figure versus other figure principle.

Verb versus noun principle. It is easier to deflect an action tendency toward another object or person than to suppress it. We love our desires more than the objects of our desires. People change the objects more readily than the desires themselves. Since drives are expressed in verbs and objects of drives are expressed in nouns, verbs are much more likely to be undisguised and valid at face value than are nouns, which frequently fail to indicate the primary or genuinely intended object. Changing of imaginary human figures is easy in dreams and in projective personality tests, especially in interpretations of inkblots. On the other hand, imagined drives need not be changed because the dreamer or tested subject can make them appear innocuous to himself in his own imagination: he can make the wishes come true and the dangers safe.

The easiest way to calm anxiety while engaging in spontaneous visual imagery is to have one's unacceptable, tension-producing drives carried out in imagination by characters unlike oneself or to direct them at characters unlike the real persons for whom they are actually intended, though the subject may not be aware of it. Nouns connoting human beings, then, are likely to be more frequently distorted than verbs connoting social interactions. The nature of the test stimuli (blots, pictures) facilitates this difference in distortion. The verbs can be classified into groups according to whether they indicate movement toward or away from others, movements overcoming or surrendering to the pull of gravity, free versus inhibited movement, active versus passive movement, successful versus failing actions, lonely versus social activities, etc. The difference in the degree to which drives and their objects are distorted must be remembered in studies of validity; otherwise, validation of projective tests misses its purpose.

Same figure (SF) versus other figure (OF) principle. The SF is a test figure of the same sex, approximately the same age, etc., as the subject; the OF differs from the subject in all these traits. The principle states that drives ascribed to the OF are less likely to be manifested in overt behavior than those attributed to the SF. In other words, drives acceptable to the subject tend to be projected onto the SF, the unacceptable ones are projected onto the OF. The meaning of the difference between same sex and other sex test figures applies also, though in a lesser degree, to the difference between same age and other age, human and nonhuman test figures, and to the difference between statements made using the first person singular pronoun and the third person singular pronoun.

Since it is most difficult to say whether an action tendency elicited by a test is conscious or unconscious, the terms "acceptable" and "unacceptable" are pre-

ferred. The principle implies that drives and other attributes ascribed to the OF are at least partly inhibited and cause anxiety when the subject becomes conscious of them or tries to carry them out in action. Special favorable conditions (strong motivation, good rationalization) are needed to actuate the unacceptable drives.

What a subject says about the OF may also divulge his views of real people of the opposite sex, different age, etc. A subject who is anxious about his weakness may reveal his feeling by ascribing weakness to children in his test performance. Similarly, fear of old age and death can be expressed by creating old and sickly test figures. Knowledge of ourselves and knowledge of others are interdependent, and the greater the inhibitions (the unacceptability of one's own drives), the greater the likelihood of feeling uncomfortable with others. As inhibition increases, the likelihood of preconceived and distorted ideas about others as well as oneself also increases.

Inferences from the OF regarding the subject's unacceptable drives seem to be more frequently confirmed than those concerning the manner in which the subject thinks other people relate to him. The SF-OF principle can be applied to Rorschach human movements, Thematic Apperception Test characters, free drawings of males and females, and even dream figures.

Rorschach perceptanalytic test. (The purpose of the Rorschach test is to deduce personality traits of individuals from an analysis of spontaneously produced visual images stimulated by indeterminate stimuli, a set of inkblots. A stimulus is called indeterminate when it can be interpreted in a variety of ways with equal plausibility.)

Leonardo da Vinci was the first to use indeterminate forms to stimulate creative imagination and to test future painters. Alfred Binet, in 1895, revived the use of inkblots as a test of individual differences, but he limited their scope, calling them a test of passive imagination. George V. Dearborn, in 1898, was the first one to realize that inkblot responses can reveal complex traits reflecting social relationships and the degree of emotional stability.

It is doubtful that Rorschach knew about the work of his predecessors. His greatest achievement was the discovery that not only the verbal content of the responses but also the formal aspects of the visual images contribute important information about distinct personality traits. Although many diverse responses to the blots are obtained, the fact that each individual limits his personal reactions to relatively few responses contributes greatly to the reliability and validity of the technique. Rorschach records of the same individual are very similar, regardless of the number of examinations, unless the personality changed as a result of a psychosis or brain damage.

Description. The Rorschach test consists of ten symmetrical inkblots, printed on a white background and mounted on 6½-by 9½-inch cardboards (see, for example, Figure 1). Five of the blots are in varying shades of gray, two are red and gray, and three are multicolored. The subject can view the blots in any position, but he is not allowed to hold them at a distance greater than arm's length. The examination con-

sists of the performance proper, during which the free visual images are obtained, and a subsequent inquiry. The purpose of the inquiry is to remove any doubts the examiner may have concerning the images produced by the subject and thus to assure reliable scoring.

Scoring. The main scores are divided into four categories. The area scores indicate the portion of the blot interpreted: the whole blot, a frequently selected detail, a small and rare detail, or the white areas. The next category, the determinants, includes movement, color, shading, and form responses. The third covers content: humans, animals, anatomy, botany, inanimate objects, etc. The fourth category contains components indicating the degree of accuracy with which the images fit their respective blot areas. There are good, poor, and indeterminate fits. The subject is permitted freedom of association. Encouragement to elaborate on some of the responses does not invalidate the test, so long as the examiner makes no direct suggestions.

The scores or components help in the analysis of the test records by providing a summary. The *W* or whole responses cover whole blots and are positively associated with a genuine readiness to achieve something noteworthy through personal efforts: no *W*, no drive; many *W*, marked drive. However, the quality of the drive and the results depend on a number of other traits besides genuine readiness to achieve something difficult and constructive.

The *D* components stand for details or parts of blots that are often selected for interpretation. The *D* are the most frequent area components, and a marked reduction of their number suggests poor judgment. The *d* scores cover small and rarely selected blot details. When increased in number, they indicate a tendency to preoccupy oneself with tiny, disparate details that, put together, do not amount to much. The main implication of increased numbers of *d* is alleviation of anxiety through keeping oneself busy with small and unimportant tasks.

Increased white space responses or *S* (more than two) are associated with constitutional strength, habitual oppositional attitudes, and a tendency to change decisions, each time with a feeling of finality. Psychotics with *S* may be difficult to handle, but they resist the effects of psychoses better.

The *M* or human movement responses reveal deep seated action tendencies that press for outward manifestation whenever there is an opportunity. The *FM* components symbolize animal movement, and the *m* scores symbolize movement of inanimate objects. The *m* scores seem to reveal attitudes the subject considers desirable but beyond his psychological means. The *FM* responses tend to influence overt behavior in states of diminished consciousness, such as great fatigue, intoxication, and twilight states.

The color responses are divided into three components: *FC* or form-color, *CF* or color-form, and *C* or

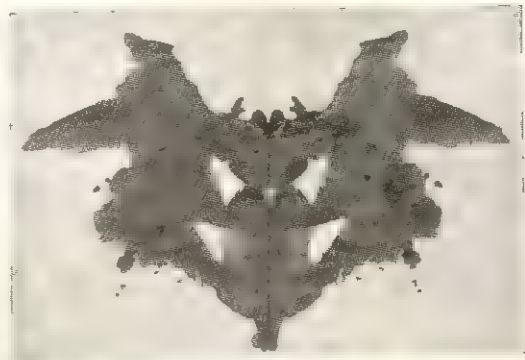


FIGURE 1. Plate I of the Rorschach Test. (Reprinted by permission, Hans Huber Medical Publisher, Berne.)

formless. color. All these *CR* (color responses) disclose emotional attitudes regarding others. As the form element in the *CR* increases, the consideration for others increases also, but the intensity of emotions weakens. Being a late addition, the shading and dark color responses have been given a variety of symbols and meanings in Rorschach literature. The light shading responses or *cR* are related to alleviating anxiety through a decrease of motor activity (increased motor control); the dark or black color responses the *cR*, are associated with alleviation of anxiety through counterphobic increases of motor activity.

The *F* or form responses are, as a rule, the most frequent in an individual test record. If not, the individual tends to take too many things personally. The *F* scores represent action tendencies or attitudes that are least personal, relatively most socialized and rational. A separate component is the percentage of sharply perceived forms; when this drops below 70 per cent, the capacity for prolonged and conscious control over thought processes is strikingly decreased. The rare people whose *F*+ percentage is 100 are intellectually meticulous, if not rigid.

Content components are indicated with abbreviations: *h*, whole human being; *hd*, human body parts; *sex*, genitals; *bt*, botany; *ntr*, nature; *bl*, blood; *obj*, inanimate objects; etc.

Since the publication of Rorschach's book in 1921, many new components have been added but are not in universal use.

Interpretation of basic life roles. The realization that an individual can act as if driven toward a definite and persistent purpose even when unaware of it is a discovery that has radically changed psychology in recent decades. Drives that change least and, when they do, change gradually are revealed by the *M* (human movement responses) of the Rorschach inkblot test. These potential behavior patterns press for overt manifestation insofar as internal and external conditions permit. They are stronger than the effects of pain and pleasure, and most of their driving power comes from the unconscious.

Three main types of *M* can be differentiated: assertive, compliant, and blocked. In the assertive, the

movement overcomes the pull of gravity, and the M figures expand in space, for example, "two women dancing." If this kind of assertive movement is felt to be unhampered in any way, if it is free and spontaneous both physically and mentally, a person producing such M exclusively would be described as self-confident, ready to assume responsibility for himself and frequently for others as well, having initiative, and eager to leave a mark of his personality on others.

In the compliant M, the figures give in to the force of gravity or submit to the influence of another power, reducing movement or self-controlled expansion in space, for example, "falling down," "bowing." Persons who produce exclusively compliant M lack self-confidence, look for a benevolent guide who would take the ultimate responsibility for their thoughts and actions, and suffer from having their spontaneity curtailed. The great majority of people who seek psychotherapy have compliant M or essentially assertive M with serious restriction of spontaneity and freedom of action in their M figures. An example of the latter is: "two men trying to lift something; it's heavy, and I doubt that they'll make it."

Patients with assertive M are easier to help psychotherapeutically than those with compliant M. Reexaminations show that the quality of the M is the last test component to change, if it changes at all. There is no more desirable M than an easily performed, spontaneous, counter-gravity activity. Patients undergoing a real character improvement move toward this ideal M in their post-treatment reexamination. Some patients undergo an apparently spontaneous movement in the opposite direction, toward compliant M or assertive M restricted in freedom and speed of expression. Such changes are usually a sign of an approaching psychotic breakdown.

The third type of M is blocked between assertion and compliance and thus discloses deep-seated and hard to change obsessive doubts whenever an important decision affecting significant human relationships must be made. The classical example is: "two men pulling in opposite directions with equal strength." Much energy is spent, but no overt movement or change is made. Such individuals have lost much of their self-confidence but have not yet surrendered to the directing and domineering influence of others. They do not know whether to trust themselves or others, to take responsibility for themselves or depend on someone else for support and guidance.

The action tendencies or life roles revealed by the M go back to early childhood, and thus the M responses throw light on patient-parent relations. Even minor variations in the content of the M seem valid and should be analyzed. No single Rorschach plate elicits, always or exclusively, information about the subject's attitude toward father or mother. However, M components in which male figures appear indicate life roles developed in living with father; M components with female figures disclose life roles developed

in living with mother. "Quarrelling women" suggests that the patient developed verbal aggressiveness while accommodating to mother. "Bowing men" points to father as responsible for the patient's compliance; it is expressed in an acceptable social form, but it is a handicap nevertheless.

People who produce M responses of different kinds are more complicated than those with but one type of M response. Since overt behavior is never a vector or average of all potential behavior patterns (we are never perfectly integrated), the presence of various types of M does not complicate life as much as might be expected, although it does cause strain. Effective doers usually have only one type of M, the assertive type as a rule. On the other hand, introspective individuals produce M scores of a large variety. The capacity for diversified M seems associated with psychological perceptiveness and intuitive understanding of others. Schizophrenics who produce many M responses do not deteriorate, and deterioration caused by brain damage results in the loss of the ability to produce M responses. Cerebral cases with M have a better insight into their condition than those without M, and thus they complain more of their handicaps. As M increases, pride appears. The main concern of the individual with many M responses is to be at peace with himself and to live up to his own standards rather than those set by others.

Interpretation of emotions regarding others.

Clinical observations and projective personality test conclusions gain in clarity and meaning when emotional attitudes regarding mainly others are separated from those regarding primarily the subject himself. These two types of emotions can vary independently of each other, especially in mental patients.

Emotions concerning others can be defined as desires to associate with or dissociate from others with the intent of continuing or discontinuing the exchange of pleasures and pains. This definition divides emotions into positive (love, affection) and negative (hate, repulsion) and defines them as desires that can be accompanied by conscious feelings of varying intensity and awareness. The first impulse of a person motivated by a negative emotion is to avoid others; it may develop into open aggression if attempts at avoidance are frustrated, as in the case of children who cannot leave their parental home. Positive emotions prompt the seeking out of others to experience pleasure through them. These promptings fail if the other does not approve of the intention and refuses to be involved. It takes more tact, persistence, and effort to gratify positive emotions than negative ones, at least in the case of the great majority of adults. One has to be trained to love successfully; hating comes much more easily. Thus, sheer human inertia explains the prevalence of dislikes.

The Rorschach measure of positive emotions is a meaningful interpretation of chromatic color areas in which appear objects or processes indicative of a se-

cure or attractive life, for example, "red apples," "canaries," "bouquet of flowers," "beautiful landscape." Negative emotions are indicated by meaningful interpretations of chromatic color areas that suggest a state of disintegration or destructive processes, for example, "blood," "ugly painting," "cross section of a human body," "burning (destructive) fire." Successful psychotherapy increases the relative number of positive color responses.

Patients without any color responses are emotionally flat; those with many color responses are frequently stimulated to seek others for pleasure or avoid others to discontinue pain or fearful emotional relations. The negative color individual dreads emotional involvement with others because he expects to suffer as a result of such involvement. He is a frightened person who can be quiet in manner and is often mistaken for an indifferent and unemotional one. In both schizophrenic and organic deterioration, there is decrease in color responses. The emotionless diencephalon lesion cases do not produce Rorschach color responses.

Signs of anxiety. Projective tests reveal anxiety in so many different ways that it is necessary to specify the types of anxiety to be meaningful. Furthermore, every Rorschach sign of anxiety simultaneously indicates the life area causing anxiety and the manner in which anxiety is experienced and alleviated.

It is important, too, for best results to differentiate between anxiety and fear. Anxiety can be defined as a dread of an impending danger, the nature and probability of which is unknown and not calculable, accompanied by tense and physically exhausting alertness, an apprehensive self-absorption that interferes with an effective and advantageous solution of reality problems, an irresolvable doubt concerning the best means of counteracting the danger and one's own capacity to meet the emergency effectively when it arises. Though similar, fear differs from anxiety in that it is a dread of a known external danger, the probability of which is approximately calculable, and against which definite, objective, and effective defense measures can be taken. Fear, unless excessive in degree and thus changing into anxiety (the excess introducing the incalculable element), mobilizes mental and physical energy. Anxiety cuts down initiative, intensifies the feeling of weakness and raises the probability of being overwhelmed and destroyed.

The classical sign of anxiety is a sudden and temporary paralysis of function. Its main Rorschach manifestation is an initial delay (measured in seconds) in the production of a meaningful interpretation of a new stimulus. Occasionally, subjects fail to give any response at all to a Rorschach plate, thus displaying the highest degree of shock. There can be other shock manifestations, such as exclamations, critical remarks, etc. The Rorschach shocks indicate neurotic ambivalence regarding the advisability of

acting in accordance with spontaneous and genuine action tendencies.

The color shock, nearly always red shock, elicited by plate II or plate VIII reveals neurotic ambivalence regarding emotional desires involving others. Color shock individuals tend to blame others for their frustrations. Dark color or dark shading shock, measured by delays in responding to plate IV or plate V, is associated with anxiety over experiencing anxious and depressive states, feelings of inferiority, and blaming oneself for one's frustrations.

The frequent sex shocks pertain primarily to male genitals (potency difficulties in males, anxiety over contact with male genitals in women) when triggered by plate VI and to female genitals (castration fear in males, anxiety over possible injury or pregnancy in females) when elicited by plate VII. Sex shocks can occur as early as the 8th year of life and apparently have the same meaning as in adults. They vary greatly in intensity and sometimes are the only shocks in the test record. Plate IX shock is a valid indicator of heterosexual intercourse anxiety. Plate III shock always means that the patient is neurotically ambivalent about being his true self and, in most cases, about whether to give in to homosexual tendencies. A plate III shock in the absence of noticeable psychosexual difficulties may signal the onset of a manifest psychosis.

If not due to inadequate preparation of the subject for the test, plate I shock (failure to see anything in it or longest initial reaction time in the record) suggests paranoid schizophrenia. Shock on plate X is rare; when there is delay, it probably means anxiety regarding ability to tackle successfully the relevant problems of the future and severe criticism of past personal achievements.

Interpreting the Rorschach plates at a rapid and even pace, for example, with all reaction times below 10 seconds, signifies absence of consciously felt anxiety. It is good and normal not to feel anxiety when there are no serious personality problems. Psychotics who react in this nonanxious way lack insight into their illness and cannot be helped psychotherapeutically. Absence of shock to a plate suggests absence of anxiety and acceptance by the subject of what he does and experiences in the area to which shock on this plate pertains. Thus absence of shock on plates VI, VII, and IX (all three) means that the individual is not anxious over his psychosexual intentions, active doings, and passive experiences, regardless of what they are. Homosexuals without sex shock do not want to change, even if they give lip service to the idea of change. An analysis of the Rorschach shocks alone gives knowledge about areas that trouble the subject and in which therapeutic help is likely to be desired and areas that cause no trouble, at least at the time of testing, and where probing is likely to be resented, thereby jeopardizing the success of therapy.

One of the main ways of alleviating anxiety is a

reduction of motor activity, partial withdrawal with attempts at making one's self inconspicuous. It is a prudent method in a tightly organized society in which records are kept on everyone and are consulted. Light shading responses—meaningful interpretations of the graduations of gray on the blots—are the most important Rorschach signs of this method. As these responses, such as "furry skin," "billowy clouds," "topographical map," increase in absolute numbers and relatively to the sum of chromatic color responses, so does the individual's ability to automatically (without conscious effort) suppress subjectively undesirable motor impulses concerning others.

The other method of alleviating anxiety consists of increasing motor activity, which results in performing an action designed to reduce anxiety by attacking the source of anxiety directly or indirectly or, less frequently, in escaping anxiety by flight (suicidal attempts). The belligerence that often characterizes dark color individuals exposes them to the danger of retaliation.

When a subject produces more than three responses each of light and dark shading, he is unpredictable in the handling of anxiety. Since he cannot alleviate anxiety in both ways at the same time, he alternates, to the bewilderment of others. The great majority of patients with many responses of both kinds are schizophrenic. Few adults (no more than one fourth) produce dark shading responses. More than three fourths of adults produce at least some light shading responses. Dark color responses can appear below the age of 3. The light shading type is very rare below the age of 7. The dark color responses are prominent in brain concussion and relatively frequent in epilepsy and delinquency. They are associated also with intermittent depressive moods that come and go and are not unwelcome; these moods differ greatly from chronic and deep depressions with psychomotor retardation.

Anxiety indicated by human movement responses appears when the subject actuates the life role contained in the response. "A man just run over by a steam roller" as a response to plate IV expresses an expectation of being destroyed by inimical forces, not necessarily physical. "A contortionist with head between his legs and a grotesque mask" as a response to plate IV suggests pathetic attempts at gaining attention and influence. Both M responses point to great inner anxiety and insecurity.

Signs of depression. Deep depressions are revealed on the Rorschach by a uniformly very slow pace of interpretation with long initial delays, lack of imagination, great reduction in movement and color responses, and sometimes even a significant drop in whole responses. Any frustration projected onto an indeterminant, ambivalent stimulus—one that could be interpreted with equal plausibility in several or more different ways—discloses depression. Handicapped or frustrated movements, such as "trying hard to climb, I doubt that they'll make it," or strenuous

movements suggests persistent depression associated with attempts at self-assertion. Producing significantly smaller numbers of test components that express interest in the world and in spontaneous personal activities points to depression. It is much more difficult to lift the depression indicated by human movements than depression indicated by uniformly long initial reaction times.

Greatly reduced numbers of whole responses (covering entire blots) signify depression, with resignation and giving up of ambitions for personal and noteworthy achievement. When there are no other signs of depression, this reduction of drive is not associated with subjectively acute depressions but with chronic depressive underactivity. In general, there is a small and gradual increase in the signs of depression with increasing age after the 4th decade.

Signs of drive for acting out. An analysis of the verbal content alone on the Rorschach results in a list of potential behavior patterns, but content alone does not suffice to predict the chances of the behavior patterns being acted out. Evidence of well controlled, goal-directed, and prolonged voluntary attention is revealed by clarity and completeness of thoughts adequately verbalized, respect for reality (making interpretations fit the test stimuli), and production of sharply conceived images. This is an important control factor, preventing overt manifestation of action tendencies that the individual may feel should be suppressed. This control, the Rorschach F+ percentage, requires conscious effort and has the limitation of all consciously maintained attitudes. After a while, fatigue sets in, and the control may cease to function. The value of a high F+ percentage (percentage of sharply perceived forms) is demonstrated by schizophrenics whose behavior in conventional social situations betrays nothing peculiar.

A better control is provided by the light shading responses, being at least equal in number to color responses. This control functions without the subject's conscious effort and is more reliable than the F+ percentage. Shading responses vary more readily than color responses and can be more easily affected by psychotherapy.

There are also negative controls, which consist of a reduction of drive. Low whole responses show reduced ambitious striving; compliant, passive or qualified, inhibited movements ("trying hard to," "about to," "getting ready to") and other signs of obsessiveness point to inhibitions and delays that serve as controls. This must be said also of shocks, slow pace of interpretation, and low numbers of color and movement responses.

In schizophrenia there is an additional negative control, a lack of integration or depersonalization (extremely difficult to evaluate, if at all, on any psychological test). Highly inhibited individuals can afford to produce disapproved, antisocial, and even bizarre

ideas because of the very small likelihood that these ideas will lead to actions.

Interpretation of symbols. Psychological symbols refer to those action tendencies affecting inter-human relationships and not to static objects. "Death" symbolizes emotional loneliness and depression; rarely does it symbolize physical destruction. "Food" means emotional hunger much more frequently than physical hunger. "Blood" symbolizes fear of close emotional ties with others and fear of mental pain rather than murderous intentions or fear of physical injury. "Eyes" always reveal great sensitivity to criticism by others and to self-criticism, but paranoia can be inferred only when the patient is a schizophrenic. High percentages of anatomy indicate fear of not having sufficiently good reasoning power and a wish for better intellectual functioning rather than symbolizing sexual activities.

It is advisable to divide content according to the formal Rorschach components with which it appears. Content in form responses is more ego-distant (further away from the core of the acting personality) than content in human movements. Form content expresses fears of the environment or wishes that can be gratified by objects in the environment. Responses like "ragged edges," "torn wings," "crushed animal," disclose fears of being overwhelmed by external dangers. They are produced mainly by schizophrenics in their most anxious early phases of psychosis and also by cases of brain damage (especially head trauma) and occasionally even by very energetic and successful normal achievers who feel they have overextended themselves.

Such an unrealistic response as seeing color where none exists, for example, "a yellow butterfly" in the completely gray plate V, is produced rarely but occurs in all diagnostic groups, even very mild neurotics. It is related to a good character trait: the deliberate and successful attempt to feel and appear serene when actually suffering from a depression. The depression of cases with color projection is frequently underestimated, which may be serious in very disturbed patients.

Content of human movement responses is very close to the ego, to the core of the acting person, and thus it is of great significance. "Knives," "scissors," "swords," and similar form responses are signs of fear of being attacked; but "two men fighting" is a sign that aggressive behavior, or at least the tendency to it, is an inherent part of the personality: the subject wants to attack.

When an activity is capable of causing intense excitement in the doer, and the repertory of overt movements necessary to carry it out is simple and limited, allowing little room for variety, responses that symbolize this activity are easily and usually validly read. This is true of physical sexual activity and acts of bodily aggression. However, the repertory of all aggressive acts is so large that even strong aggressive attitudes can escape detection in tests. It is possible to develop great skill in

interpreting correctly (as proved by subsequent clinical observations) the symbolic meaning of many responses.

Signs of sexual disturbance. Many Rorschach signs of inadequate heterosexual attitudes in males have been suggested. The signs that indicate definite sexual aversion to women and clinically noticeable tendency to homosexuality are: (1) anal responses, human or animal, male or female; (2) bisexual figures endowed by the patient with both male and female primary or secondary sex characteristics; (3) spontaneously expressed inability to decide whether a figure seen in the blot is male or female; (4) figures reclining backwards with legs at least partially raised (this correlates highly with passive homosexual tendencies in males and with desire for heterosexual intercourse in females); (5) human movement responses that are frankly sexually exhibitionistic, such as fan dancers of either sex; (6) misinterpreting the usual female figure in the center of plate I or the bottom center detail of plate VII as men or male genitalia.

It is very difficult to infer overt homosexual practices correctly. Moreover, many homosexuals produce none of the above six signs. On the other hand, "two penises, side by side" and "two men touching each other with their backsides" are valid indicators of overt homosexuality. If an area frequently interpreted as a phallus (top center grays of plate II, VI, or X) is perceived as black or as covered with dirt, guilt over homosexual activity can be inferred.

Relation to symptoms. When the human movements exceed the colors on the Rorschach, the symptoms are usually ideational, thoughts rather than actions. When the colors outnumber the movements, the symptoms are motor.

The classic obsessive-compulsive reaction on the Rorschach is to perceive the blot well, to suggest a sharply conceived form to fit the respective blot area, to note spontaneously the discrepancies between the blot shape or color and those of the imagined object, to be right about the discrepancies (which are real), and to steadfastly keep in mind both the sensation of the blot and the image of the object while comparing them with each other. The larger the absolute number of such responses, the more prominent the obsessive-compulsive symptoms. Limiting freedom of action in the human or animal movement responses indicates obsessiveness in making vital decisions. When movements and colors are about equal in number, and there is also color or dark shading shock, the character structure is likely to be obsessive-compulsive. The same uncertainty and tentativeness of responses, the same spontaneous explanation of causal and spatial relations that slow down the process of interpretation, the doubt and self-criticism, the same guarding against possibilities of misunderstanding and failure are apparent on the Thematic Apperception Test.

By contrast, the conversion hysterics are not intellectually uncertain, produce very few anatomy responses, are not concerned with the adequacy of their

test responses, but their perceptiveness, both physical and psychosocial, is limited. Patients with dark color responses are counterphobic.

Significant group differences have been found between suicidal and nonsuicidal cases in several tests. However, the effort to find significant differences between attempted and completed suicides has failed, and prediction of fatal suicides is not feasible with any accuracy. Similarly frustrating has been the search for dependable criteria of alcoholism in individual cases, although some group differences have been noted.

Absence of psychosis, presence of inner stress and anxiety, inadequate capacity for a good, automatically functioning self-control (fewer Rorschach light shading than color responses) is a frequent finding in psychosomatic cases.

Usefulness in diagnosis. The Rorschach excels all other tests as an aid in making neuropsychiatric diagnoses, although there are cases in which it fails when the clinical examination and other tests provide relevant evidence. The diagnoses most frequently missed by the Rorschach are paranoid schizophrenia and brain damage with mild mental changes. An outstanding asset of this test is the information it contributes about the manner in which the patient reacts to his sickness and the curative steps he takes to minimize the effects of the illness on his thinking and acting.

There are four different diagnostic procedures, which are not mutually exclusive, but complementary.

1. The pathognomonic procedure is limited by the relatively small number of patients with pathognomonic reactions and the small number of pathognomonic signs.

2. The most intensely studied procedure is the descriptive-statistical one, which consists of noticing the frequencies with which all scorable test components occur in various diagnostic groups. It is based on the assumption that an individual whose test record approaches the average test performance of a particular diagnostic group is likely to belong to this group. Experience shows that this approach is not very successful because the test scores obtained by members of different groups overlap too much to be helpful in individual cases and because the absolute and relative frequencies of the scored test components vary far more with the severity of the disease and the patient's reaction to it than with the specific nature of the mental illness.

3. The third diagnostic procedure is systematic. It depends on both a pattern analysis of test components (correlating them instead of taking them one at a time, noting only their frequencies) and on a theoretical assumption substantiated by decades of clinical observations and concerned with the behavior of patients struggling with mental illness. The best validated systematic approach pertains to schizophrenia. It resulted in a pattern of underactivity or withdrawal and characterizes about 30 per cent of mild or early

schizophrenia. Patients who manifest this pattern fare relatively well, without appreciable deterioration, for 3 to 5 years and should not be given intensive, insight-giving psychotherapy because the removal of the defense (underactivity) intensifies the psychotic symptoms and undermines self-control. These patients are frequently misdiagnosed as obsessive or anxious neurotics.

4. The fourth diagnostic procedure is potentially the soundest but actually the most difficult one. It requires a thorough knowledge of clinical neuropsychiatry and psychopathology and an excellent mastery of the Rorschach and other tests. It consists of deducing the patient's main personality traits from the test results and using this information as a basis for diagnostic conclusions.

The Rorschach method has a built-in test of the sense of reality that must always be evaluated in any differential diagnosis involving a possible psychosis. It is necessary to differentiate between the image produced by the patient in response to the blot and called a "percept" and the patient's elaboration, both perceptual and verbal, on the primary percept. The original percept reflects the basic condition of the patient's mind much better than does the secondary elaboration. The latter is influenced primarily by emotional attitudes and the patient's way of handling his illness. The original percept reveals the condition of the primary and basic thought processes. Thus, good images with bizarre elaborations bespeak a better mental condition and thus imply a better prognosis than do vague, limited, and confused images with normal appearing, nonconspicuous verbal elaborations.

Only schizophrenics produce pathognomonic Rorschach signs. These signs must be defined in very exact terms to be truly pathognomonic. One of them, contamination, is relatively frequent and can be defined as the unknowing fusing of two or more visual images (of shapes of objects) that cover the same blot area into one unintelligible visual image, without the patient being able to disentangle the resulting confusion. The visual images must overlap at least partially. Often when a patient's attention is drawn to his contamination, he will deny having produced it. This denial does not invalidate the significance of the contamination but indicates a mild form of schizophrenia in which the patient is capable of intellectually rallying when given the opportunity. Contaminations retain their diagnostic significance, even if it is obvious that emotional strain is partly responsible for the content of the response. Children below the mental age of 8 years produce pseudocontaminations, a confusion of color and form (not several forms) with a pleasing content, for example, "flags in the sky" (blue in plate VIII), the color of the area suggesting the sky, and the form suggesting the flags. The content of the pseudocontamination is part of normal experience, but the content of a genuine contamination is likely to be

peculiar, for instance, "liver of a statesman," "female butterfly."

The second most frequent pathognomonic sign of schizophrenia is the inconstant percept of variable dimness. This consists of placing securely only part of the visual image on the blot and having difficulty in delineating the rest of it, leaving it in a dim and variable state. For example, a patient had no difficulty in locating an animal's head in the upper half of the right gray area of plate II, but he was puzzled as to how much of the animal's body he saw—that is, how much of the blot area was included in his own response.

A third pathognomonic is the use of an indeterminate visual image. The patient is not sure what he imagines. His image is very vague, but his words sound definite. An extreme example is: "This is a prehistoric creature which never existed and of which nobody knows anything." The patient simultaneously affirmed and denied his image. A similar response, given earnestly, is "half of nothing." To be pathognomonic, the response must be given in earnest.

One type of response, almost pathognomonic, expresses the schizophrenic's emotional ambivalence, such as, "two friends, toasting each other and fighting; their heads are bloody." Here love and hate are entwined in one intimate relationship. The experience of emotional ambivalence is not limited to schizophrenics, but schizophrenics are almost the only subjects who express it in a clear visual image on the Rorschach.

There are no easy rules for diagnosing all patients with high degrees of accuracy (over 80 per cent), but some experienced clinical psychologists have developed very high diagnostic skills, based in part on subtle signs difficult to quantify. It is hoped that eventually knowledge will advance and diagnostic rules will result in conclusions of high validity though based on formalized rules.

Thematic Apperception Test. The TAT, as the Thematic Apperception Test is usually called, was introduced by Dr. Henry A. Murray in 1935 as a new way of interpreting stories made up about pictures representing, among other things, human beings of both sexes and different ages, appearing alone or in a group, in various surroundings, and in various types of interaction. The interpretive system is based on a psychoanalytical theory about defenses against anxiety feelings.

Originally, the chief usefulness was seen in revealing action tendencies or drives of which the subject himself was unaware. When it became obvious that some conscious as well as some unconscious tendencies were revealed by the test, its aim was enlarged to study many personality traits, including dominant drives, emotions, neurotic defenses against anxiety, conflicts, intellectual level, work habits, active ambition, attitudes toward parental figures, and psychopathology.

In administration of the TAT, the subject is shown one picture at a time and requested to tell a complete story, that is, to describe the interactions taking place, the events leading up to these interactions, the

thoughts and feelings of the figures involved, and the outcome.

Description. Murray and his collaborators offered a set of 10 pictures for males, another set for females, and a third set for both sexes, the last set to be administered at a later date. For a number of reasons, among which a lack of time seems to be paramount, the TAT is rarely given in more than one session, and the usual number of pictures shown is about 10 (see, for example, Figure 2).

The selection of the pictures is important, since every picture teases out some specific type of information. This results not only from the differences in pictorial content but also from differences in the degree of anxiety the pictures arouse, enabling the subject to change deliberately his spontaneous, freely associated stories in order to make the desired impression on the examiner and, through him, on others. The TAT stories are more easily and more frequently changed for this reason than are the inkblot interpretations. Many subjects feel that they can predict the meaning that the examiner will attach to their TAT stories.

The use of pictures specially prepared to study specific attitudes or drives—delinquency, social relations, special occupational activities, etc.—has been disappointing. The main reason seems to be the subject's ability to guess the aim of such special examinations, and this awareness arouses anxiety or fear that, in turn, curtail the freedom of association. Thus, paratroopers retested shortly before executing a jump did not express as much fear when interpreting pictures plainly related to the dangers of parachuting as they did when interpreting pictures not related to parachuting.

Administration. The administration of the TAT is important. It is permissible to encourage subjects to give meaningful stories if they say little or are evasive. However, the examiner should not suggest to the subject any specific interpretation of a picture because the value of the test rests on spontaneous free association. Some valuable conclusions can be drawn even

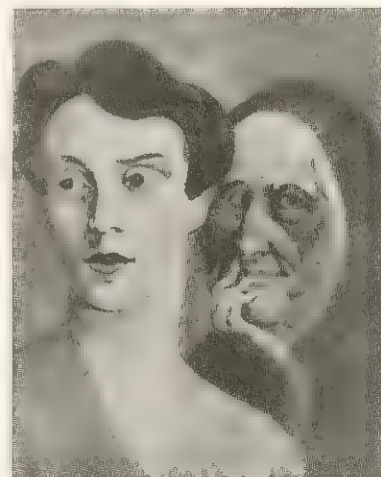


FIGURE 2. Card 12 GF of the Thematic Apperception Test. (Reprinted by permission, Harvard University Press, Cambridge, Mass.)

from brief TAT stories. As a rule, mental patients who voluntarily seek help cooperate well. The problem of inadequate cooperation, evasion, and faking is more likely to occur with normal subjects made to participate in research projects or with patients involuntarily receiving psychiatric help. It is impossible to cover the same points in every examination; however, this does not lower validity; rather it raises validity.

Included in the Murray set of pictures is a blank card; the subject has to imagine a picture first and then tell a story about it. A meaningful interpretation of the blank card demands more of the subject than does interpretation of the regular picture cards. Dynamic self-expression is reduced in blank card stories. Nearly all subjects reveal wishes for happiness and relief from tension and responsibilities in their blank card stories, manifesting the universal human desire for personal security (physical, financial, emotional) and protective affection. It is a sign of severe mood disturbance and poor prognosis to produce stories of failure, violence, sickness, and fear in response to the blank card. Stories elicited by this blank card must be analyzed in a special and different manner from the other stories.

Interpretation. The regular TAT picture stories should be divided into two main parts for the purpose of teasing out information: the verbal narrative content (the events seen, in the picture) and the formal aspects (the manner of narrating). The latter include nonverbal as well as verbal reactions: pauses, doubts, qualifications, corrections, inconsistencies, remarks that do not directly bear on the story, external pictorial elements added to the visual sensations of the picture in the subject's story, and any other signs of hesitation and inhibition.

The verbal content reveals some of the subject's drives, and the formal aspects throw light on the chances of the subject expressing the drives in overt motor behavior. The neglect or misuse of the formal aspects is one of the main reasons for the unsuccessful prediction of overt behavior. By contrast, inner attitudes—drives inferred from the verbal content of the TAT regardless of the degree of inhibition—agree well with information obtained during psychotherapy, which provides the best independent information for validation of projective test results. Changes occurring during psychotherapy are also reflected in repeat TATs.

Pictures that strongly suggest ideas pertaining to a particular drive—aggressive, competitive, sexual, personal achievement, etc.—tend to elicit reaction formations and signs of inhibition; pictures weakly suggesting a particular drive elicit less distorted and more genuine attitudes toward the drive. One explanation for this finding is that nearly all the TAT pictures inspire, in almost all subjects, themes of frustration, conflict, delinquency, and other undesirable human relationships that most people prefer to avoid or, if they cannot avoid them, prefer to deny.

Age, sex, intellectual and educational level, social

class membership, cultural and racial affiliation are among the socially relevant factors that to some degree determine the content of TAT stories. These factors contribute to the personality development, but they influence even more the frankness with which genuine drives are expressed in the test. The essential point is the degree to which an individual shares the values of his group. If he does not share its values, group norms do not help the examiner understand his TAT. One would expect women to mention nurturance and abasement more frequently, aggression and sex less frequently than men do; and indeed this is the case. With increasing age, the majority of people tend to become more depressed and more realistic about social relationships; these changes also are reflected in long term reexaminations with the TAT. Autobiographies have been successfully matched with TAT stories. Many other studies, including evaluations of intellectual and educational levels have been published demonstrating the value of TAT. There were also many failures.

Value of the TAT. The reasons for disagreement regarding the value of the TAT are basically the same as those responsible for the difference in opinion regarding other projective tests. The foremost reason seems to be the failure of investigators to duplicate exactly the studies they set out to check. Another important reason is the lack of a sufficiently comprehensive, clear, and formalized basis for the interpretation of TAT results. A frequent error is predicting overt behavior solely from the verbal anecdotal content, overlooking the indices of inhibitions that must be considered in predictions of overt behavior. Among the causes of the disagreement is the ignorance of clinical psychopathology on the part of many critics of the TAT. Any measure of potential behavior is clinically valuable. Experienced clinical psychologists are in far greater agreement on the value of this test and interpretive procedures than are other investigators. The difficulty in acquiring sufficient experience and skill for satisfactory interpretations of TAT results is considerable. It is easy to learn how to administer the test well but hard to interpret it well.

The TAT set of pictures was collected primarily for patients undergoing psychotherapy in order to enable the therapist to gain greater insight into repressed drives and not to infer from them overt behavior. The purpose was to discover what troubled the inner patient. No wonder the TAT reveals liabilities much more readily than assets. Health is less dramatic than sickness. This should be kept in mind when evaluating the degree of over-all adjustment. The tendency is to underestimate the social adjustment and to overestimate inner tension.

The TAT cannot be subjected to trenchant validation until its conceptual framework is put in order. To cite an example, male undergraduates' TAT records were evaluated as to the degree of dependency. The same students were also shown slides of large and small breasts of equal degree of attractiveness as

determined by preliminary studies. The dependent males showed preference for small breasts, and this was interpreted as contradicting a psychoanalytical theory that presumably demands that dependent males prefer large breasts. It could be argued with equal if not greater plausibility that, since dependent males are likely to have castration anxiety and be ambivalent about large maternal breasts, they may prefer small breasts and would be less defensive about them. Moreover, there is a great difference between an unconscious, or a conscious but unacceptable, wish to snuggle up with Mother and a frank admission of the wish. We cannot be sure of the genuineness of the choices, and the matter certainly requires a more thorough and subtle analysis before reaching final conclusions. Validation attempts of the TAT and other projective tests suffer from such theoretical oversimplifications and disregard of psychological complexities.

Man is not what he appears but what he has done and will do. He uses words to conceal as well as to reveal. The freedom of his activities is influenced by external reality conditions, which cannot be inferred from the test, and by inner inhibitions, some of which are disclosed by the test. The presence in the test of verbal or nonverbal indicators of inhibition and of reduced freedom of mental association or physical action means that the chance of a spontaneous and complete manifestation of a drive associated with those indicators of inhibition is reduced.

Although subjects can deliberately change their spontaneous associations to the TAT for various reasons, thus lowering its validity, the examiner can counteract these changes to a considerable degree using his experience and the rapport to allay anxiety and encourage spontaneity. The proved sensitivity of the TAT to rapport can be an asset.

With increased knowledge about a patient and greater skill in meaningfully and validly relating information from a variety of sources, the examiner finds the TAT increasingly valuable. He can then make inferences that knowledge of the TAT alone does not make possible.

Interpretation of drives. A TAT record containing exclusively benign stories contains so many reaction formations of insignificant driving power that it obscures the genuine drives. Socially approved drives in the TAT are reaction formations because of the nature of the TAT pictures, which strongly favor depressive and socially disruptive themes. Drives disapproved by society and likely to lead to retaliation are much more likely to reflect genuine action tendencies. The probability of these expressed drives affecting overt social relations is high.

Drives ascribed to same sex and same age figures are apt to appear much more frequently in the subject's manifest behavior than drives ascribed to other sex and other age figures, with one apparent exception. Prepuberty children reveal as much valid information about themselves when giving stories about pictures of animals as about pictures of human figures. The Children's Apperception Test (CAT), a test analogous to the TAT but depicting animals, was especially designed for use with children. By comparison with adults, children are more frank and less inhibited, but they are also more dependent and protected. Consequently, their need for defenses is smaller.

Stories preceded by delay—a long initial reaction

time and sometimes pauses within the stories—refer to drives about which the individual is ambivalent. Ambivalence leads to inconsistency of action regarding both the frequency and degree to which the drive is manifested. A sudden change in the process of interpretation, including the level of imagination, the mood of the stories, their complexity and inner consistency, discloses great suspiciousness of others, especially if this change persists to the end of the examination. The greater the diversity of the stories and the greater the incompatibility of drives described in different picture stories, the larger is the number of unresolved problems with which the subject struggles. This is striking when the subject is passive and underactive.

An optimistic attitude, not contradicted by references to obstacles or failure, indicates a desire to accomplish even in the face of difficulties. Emphasizing the contrasting dark and light areas of the pictures is related to alleviating states of oppressive anxiety by impulsive acting out, which is almost certain to increase the subject's difficulties in dealing with others. As a rule, any spontaneous mention of hesitation, physical weakness, mental irresolution, fear, guilt, or anxiety is a sign that the drives that are the objects of hesitation seldom affect motor behavior directly.

Proof of internalization of social norms; expressed respect for law, customs, and social order; and indications of consideration for others in the TAT stories are highly correlated with refraining from antisocial behavior, even when antisocial drives appear in the TAT record. References to remorse, shame, and punishment justify the conclusion that chances of overt delinquent behavior are greatly reduced. By contrast, stories of aggression that remain unpunished and are not criticized directly or indirectly are usually produced by people who do not mind being overtly aggressive.

Drives occurring in a number of different picture stories are a result of cognitive and emotional weakness when the stories are unimaginative or neglect to account for the specific features of each picture. On the other hand, when the same basic drive is appropriately modified and elaborated on in the stories, with meaningful interpretations of the specific features of each picture in which the drive appears, and the stories are comprehensive and of good narrative quality and do not offend the requirements of consistency and respect for physical and logical laws, it means the subject is preoccupied with the drive. Such persistence presupposes strong pressure for appropriate overt behavior.

Confused and unclear thinking reduces the ability to implement drives. Spontaneous criticism of one's own process of making up the stories or of the pictures themselves is a sign of marked obsessiveness. Such criticism is much less frequent on the TAT than on the Rorschach.

The doer looks ahead. A long view into the future is

associated with active ambition and self-confidence. The longer the prospective span in the TAT stories and the more successful the outcome of the activities described therein, the greater is the chance that the individual will openly pursue the drives of his TAT. On the other hand, looking backward and mentally living in the past is associated with retrospective TAT time spans and with limited driving power for achievement. Some schizophrenics extend the past into prehistoric periods.

Interpretation of figures. A TAT figure's sex or age is rarely misrecognized. Only several of them are vague enough to make identification difficult. A misidentification of a figure that is plain to nearly all is a sign of severe personality disturbance, associated almost always with conflict over homosexuality and with psychosis. Some Congolese as recently as 30 years ago mistook the TAT human figures for animals without being psychotic. This misinterpretation may be attributed to cultural rather than psychopathological factors.

Interpretation of symbols. There are those whose training, experience, and talent make them adept in unraveling meaning hidden in symbols. If such a skill is applied to the TAT, much more information can be extracted with all the uncertainties accompanying interpretation of symbols. As long as symbolic interpretations are treated as hypotheses and as statements alerting the observer to information from other sources that can either confirm or contradict the interpretations, there can be no serious objection to them. Information extracted from symbols should complement but not substitute for information deduced with the aid of more reliable and more valid principles.

Stories about picture 1, showing a boy looking at a violin, may symbolize any pleasurable activity, including sexual activities, although the latter are not plainly stated. The same sex and other sex, same age and other age principles can be used to classify drives as ego-syntonic and ego-disturbing.

Male undergraduates were shown slides of nude women and were then retested by an attractive and affable female psychologist. The number of frank sexual ideas did not increase by comparison with a previous TAT, but the number of symbolic sexual responses did. There was a negative correlation between increase of frank and symbolic responses. When the repeat TAT was preceded by intake of alcohol, symbolic expressions decreased in favor of plain expressions. Symbolic communication implies hesitation and delay in thought and in action.

Usefulness in diagnosis. The TAT is not helpful in differential neuropsychiatric diagnosis. Patients who manifest specific psychotic signs in the TAT display even more diagnostically pertinent symptoms in clinical behavior. The TAT is less challenging to the subject's sense of reality than are the Rorschach inkblots. Consequently, the TAT rarely elicits schizophrenic and other psychotic responses, including mental changes concomitant with brain damage. The TAT indicators of psychosis do not differ from clinical signs, except that they occur more frequently in the patient's clinical behavior and with even greater frequency in the Rorschach.

These indicators of psychosis can be classified as follows: logical ambivalence (affirming and denying the same statement within the same story though in different sentences) and other indicators of incoherence and confusion; emotional ambivalence (describing the TAT figures as both hating and loving each other, as being both cruel and affectionate with each other); withdrawal from reality into a world of magical and bizarre events; stories of violence and persecution about pictures of relaxation and peace (8 GF, 9 BM, 16, 17 GF); obvious misidentification of the sex of a figure, especially if the figure is made into a mysterious person with possibly malevolent intentions; pseudo-generalizations, such as "it shows the condition of the world, humanity struggling to get out of its misery" (18 GF, the squeezing of the throat scene); heartlessness and excessive revengefulness, such as, "this girl killed her small brother because he ate her candy" (3 BM). Paranoid schizophrenia can be recognized by references to spying and abrupt as well as marked changes in the process of interpretation.

Mild psychotics very rarely reveal anything plainly psychotic in the TAT. However, typical reaction patterns, such as depressive, obsessive, hysterical, and phobic, can be frequently inferred. As a general rule, the manner in which these patterns manifest themselves in the TAT is not basically different from that observed under other conditions.

Severe depressions are indicated by a slow pace of interpretation and long initial reaction times, minimal interpretive imagination going barely beyond mere description, no references to feelings, and either no thought of the future despite encouragement or disastrous future outcomes of described activities.

Suicidal themes are signs of a less severe depression. They seem to reflect a painful anticipation of perpetual loneliness rather than of personal death. "Death," like "suicide," should be treated as a symbol and not as a description of an anticipated real event. Suicidal attempts cannot be predicted from the TAT. Death or killing in the TAT usually means permanent separation (mainly emotional), loss of control over one's fate in life or over one's own mental processes (impulsiveness in severely inhibited individuals), and suicidal thoughts. Stories in which the characters cannot successfully communicate with each other, though they try, are also associated with suicidal thoughts and depression. When the stories are dramatic and frustration and sadness are expressed in strong emotional terms, the depression is not deep. Stories in which difficulties and obstacles are conquered and stories depicting happy endings suggest a mild depression.

The most characteristic aspect of obsessiveness is irrelevant meticulousness, arguing back and forth without being able to make a definite decision or judgment. Obsessives take excessive care not to be misunderstood. They repeat themselves and explain not only their themes but also how they happened to think of them in order to dispel any impression that

they may have arrived at their interpretations of the pictures rapidly and spontaneously without preparation. The severest degrees of obsessiveness are indicated by spontaneous and plainly stated criticism of one's own test performance and its products. This happens rarely during the TAT; it occurs much more frequently during an inkblot examination.

The essential feature of hysteria is avoidance of an anxiety-producing idea or drive that presses for outward manifestation. The hysteric represses the subjective psychomotor reaction that would normally be stimulated by the idea or drive but unconsciously overreacts in inappropriate ways that attract the attention of others. He ineffectually tries to have intense emotional relationships beyond his capacity. The desire to avoid anxiety and disappointment is so strong that it leads to a degree of psychological blindness. Mention, in the test, of the inability to see or read points to hysteria. So do clearly stated sex drives that are frustrated and frank expressions of love and hate in a setting of intense but anxiety-free activity in the TAT story. Words or phrases that imply uncertainty or impossibility are rare (no obsessiveness). Feelings or actions of TAT figures engaged in a sexual or aggressive relationship are usually described clearly with the aid of many emotionally charged adjectives.

Interpretation of child-parent relationships. One of the easiest, most highly valid, and most useful applications of the TAT concerns the subject's relations with his parents. Relations between the figures in pictures 2, 6 BM, and 7 BM as they emerge from subjects' stories can be taken, in the majority of cases, as almost literal descriptions of the subjects' relationships with their parents. The relatively small degree of disguise is remarkable. It seems that, regardless of age, people never cease to feel the impact of their parents. Very old subjects, nearly all of them parents and grandparents, identify whenever possible with a TAT child figure and interpret an older figure as a parental authority. Pictures 1, 3, 5, and 12 F also contribute pertinent information but less frequently.

When the figures in 2, 6 BM, 7 BM, and 12 F are not interpreted as mothers or fathers or if they are identified as parents but described as emotionally indifferent in their relationships, the subject is seriously maladjusted. An aggressive, hostile TAT child-parent relationship reveals gross maladjustment. When TAT child-parent relations are described as affectionate, supportive, and free of conflict, the subject is likely to be emotionally stable. On the whole, psychosomatic cases express overt aggressive hostility in their TATs—but not against maternal figures.

Signs of sexual disturbance. Rather than speaking of homosexuality, for better understanding it is preferable to speak of heterosexual inadequacy, including at least partial impotence. These remarks pertain only to males, since females are much more complex in this respect.

Inadequate heterosexuality in the adult male is indicated in the TAT by stories containing odious remarks about women and expression of affectionate attraction for men. Occasionally frank homosexual themes are produced; these disclose active homosexual experiences. In the great majority of cases it is impossible to infer overt homosexual behavior, but inadequate heterosexuality can be deduced frequently and with a high degree of validity. The general principles work well. The highly valid test signs are few and identify only a small percentage of cases. Among these themes are overt homosexual activity, men killing women, misidentification of the sex of TAT figures, definite rejection of marriage, expressions of close attachment to mother, and an obvious elaboration of feminine attitudes with a simultaneous neglect of masculine attitudes. Pictures 4, 6 BM, 7 BM, 10, 12 M, 13 MF, and 18 BM are most helpful, especially peculiarly imaginative stories about 18 BM, in which three hands are placed on a slumped man.

Free drawings. It takes little time to obtain spontaneous drawings of human figures and other objects. This is a great practical asset. The information conveyed by free drawings is limited but can be very important, especially in mental patients who have serious unresolved problems. Free drawings usually reveal attitudes that are important to the patient at the time. Enduring attitudes can also be revealed at times; this is the reason for obtaining free drawings.

The attitudes are expressed through the posture or movements of the drawn figures. The usefulness of the technique is increased when the same-figure and other-figure principles are applied to it. Much slips by the censor (superego) while drawing. Degrees of rigidity and cohesion are, as a rule, well reflected in human figures.

Technique. The drawing technique is simple and can be used by both psychiatrists and psychologists. The free drawing technique consists of handing the subject a pencil and a blank sheet of paper with the request that he draw a person, a tree, a house, an animal, or any other object. The most informative free drawings, called free because they are not copies of models, are those of human figures. "All that is good or inferior in you will appear in the corresponding parts of your figures," said Leonardo da Vinci. Free drawings are created largely from unconscious motives. One cannot help but reveal through them more than one intends to. It is a common experience that it is most difficult to change them in a specifically desired manner. What the drawings reveal most clearly are body postures and body movements. Variations in these are associated with different inner attitudes.

After the subject has made a human figure drawing, the usual procedure is to ask him to draw one of the sex opposite that of the first drawn figure. Sometimes he is asked to draw also the "most unpleasant thing you can think of," his entire family, the family as animals as occurs in fables, two people (unspecified),

a tree, or a house. There is also an incomplete drawing test by Wartegg-Kinget.

The free-drawing technique, except the drawing completion test, does not use external visual stimuli. As with the TAT blank card, the individual has to create a mental image and then place it on a blank surface. The free drawings seem to represent the wished for or feared object that preoccupies the subject at the time.

Interpretation. Being a psychomotor test, the drawings involve more effort than does describing ideas that spontaneously appear in the mind. This effort limits freedom of self-expression but favors expression of certain habitual physical attitudes.

These attitudes may be transient or lasting, as is well illustrated by preoperative and postoperative drawings of patients who underwent successful surgical operations for seriously handicapping pathology. Preoperatively, the figures they drew were distorted; postoperatively, the figures were physically normal. The feeling of personality loss and lowered energy is frequently reflected in the difference between preoperative and postoperative drawings of psychotics whose frontal lobes were operated on.

Hysterics frequently draw large eyelashes. Neurotics, worried about their reputations, pay attention to details of clothing. Psychotics and cerebral cases, having far more serious problems, show much less interest in socially important physical attributes; frequently, they even show less interest in clearly indicating the sex of the figures. These patients' interest in human relationships is weak, and their desire to live up to social standards is greatly decreased. The deindividuation of brain-damaged patients with habit deterioration is plainly shown by their crude and oversimplified drawings, with no indication of sex or age, except perhaps for more hair or high heels in the drawings of women.

Patients who feel the danger of impulsive acting out draw larger drawings than subjects who are controlled because of depression, lack of energy, or lack of maturity. As the danger of acting out increases, the drawings tend to grow in size. When the figures barely fit the paper on which they are drawn and appear bloated because of inadequate graphic differentiation of body periphery, suicidal attempts are highly probable.

Transparency—body contours showing through clothing—reveals marked personality disturbances. Dark, heavy, and irregular shading, creating the impression of a smudge, is associated with a tendency to alleviate anxiety through physical and sadistic aggression.

As a rule, free drawings give the impression of plainly divulging a great many psychological attitudes. Sound knowledge of the graphic arts and of sound graphological principles help the therapist to grasp the message of free drawings. As in the case of the other projective tests, one can evaluate drawings in two different but mutually not exclusive ways: (1) a formal attempt based on reliably identifiable graphic signs

and (2) a global inspection aided by empathic insights. In experienced hands, the latter procedure works far better at the present time. It is possible to differentiate more than 100 objective graphic signs in human figure drawings, and most of the signs can be ascertained with a fair degree of reliability. Significant differences in the average number of signs between many different subject groups have been obtained. However, considerable overlap frustrates the use of signs for diagnostic purposes in borderline individual cases.

Long continuous strokes indicate perseverance at work, usually associated with obsessiveness and fear of failure and risk taking. Long continuous lines are a good prognostic sign in psychosis. Broken lines in drawings made by children are associated with poor work habits; in children they are related to poor school achievement, but they are associated with inventiveness in adults who have high intelligence and other assets. Shaded areas consisting of short, broken, and parallel lines indicate anxiety and feelings of personal inferiority.

The stance of the figures is of paramount importance. A strong, stable stance indicates self-confidence, even if the drawings contain peculiarities. It bespeaks a good prognosis in psychosis. Some figures drawn by resigned and withdrawn schizophrenics appear to float in space, though presumably standing on the ground. The greater the deviation from the physically most stable posture—one that can be maintained with ease for a long time—the greater is the inner tension and emotional instability.

Instability is associated also with deviation from the central location of the figure on the paper. Inhibition seems to be correlated with increasing moving of the figure toward the right edge, and a tendency to impulsive acting-out is correlated with moving it toward the left edge. Pushing it down is said to suggest respect for authority figures; pushing it up is said to reveal a lack of appreciation of differences in social influence.

Crude whole figures with only some facial features, absence of crotch, omissions and distortions of body are the most valid signs of great anxiety. Depression is suggested by small size, heavy lines, scarcity of details, and a dejected facial expression. Body rigidity and emotional rigidity in drawn figures are dependable signs of deep-seated rigidity in the subject, even if his conventional behavior does not show it.

When the male and female figures differ in an easily noticeable degree in nonsexual features, the other sex figure practically always looks more anxious or disturbed in some other way. Marked differences in size indicate either depression or fear of impulsive acting out, according to whether the other sex figure is smaller or larger. Depersonalization and emotional withdrawal are sometimes clearly revealed in the other sex figures drawn by incipient schizophrenics. If different from the same sex figure, the other sex figure shows what the subject wishes not to be. When the other

sex figure looks normal and contented, while the same sex figure looks odd and anxious, schizophrenia is most probable.

The condition of the drawn tree is believed to parallel roughly the subject's vivacity. A dead tree without leaves suggests emotional emptiness. A full-blown tree with many leafy branches reflects liveliness. A weeping willow suggests weakness and inability to resist others. A tree that looks like part of a defense palisade, with spearlike branches or trunk ends, points to a tendency toward sadistic physical aggression. Sometimes preoccupation with past psychological traumata can be inferred from holes or cuts in the tree trunk. The approximate period in which the trauma occurred can be deduced from the position of the deformity. The higher in the tree the deformity, the more recent is the trauma presumed to have been; and the lower the deformity, the older the trauma is believed to be.

Drawings of houses rarely add important information. They disclose, at times, how the subject would like to live, among whom, and on what scale. The feeling of security and sociability is reflected in the type of house drawn. The houses differ in friendliness, the extremes looking like barely accessible fortresses with small and high windows or like an inviting open house in which many people engage in diverse activities.

Value of free drawings. Although free drawings of human figures and other objects do not reveal as many personality aspects or as many lasting traits as the inkblots or the TAT pictures, they are very helpful as indicators of problems, nearer the surface of consciousness, that trouble the subject at the time. This renders them invaluable as an adjunct in psychotherapy. The hand usually speaks sooner than the tongue. The value of the drawings can be raised by having the subjects tell stories about their creations.

Bender-Gestalt designs. Clinical psychologists often use these easily administered designs to aid in the diagnosis of brain damage. Sometimes the designs are also used as a personality test, but the results of such an application are of low validity or, when valid, of limited scope. They can be of value in estimating the chances of impulsive acting out.

Description. Nine of Max Wertheimer's geometric designs, greatly differing from one another, constitute the Bender-Gestalt test. The designs are presented one at a time to the subject, who is instructed to copy them on a sheet of paper. Frequently, the subject is immediately asked to copy the designs from memory after he has finished copying them from models. Thus, the Bender designs can be used as a test of both visual-motor coordination and immediate visual memory.

Value. The value of these designs as a personality test is doubtful at best. Objective scores based on measurement of deviations of the copied designs from the models do not provide more or better information about personality dynamics than a global inspection,

but they decidedly are important in the detection of brain disorders.

Although not all patients with brain damage make conspicuously deviant designs, certain identifiable peculiarities, such as rotation by 45°, marked distortion, perseveration, straight lines for dots or curves, inability to reproduce the angle between two figures constituting one design, conspicuous fragmentation, indicate brain damage with a satisfactory degree of validity, with the following qualifications. In the case of children, it is important to differentiate between a lack of skill due to immaturity and a lack of skill due to brain damage. Chronic schizophrenics with personality damage and poor prognosis sometimes copy the drawings in a strikingly deviant manner. It is necessary to guard against interpreting tremulous lines and other graphic defects caused by a transient examination fear or peripheral neurological or muscular impairment as signs of central organicity. Norms, helpful in detecting brain damage, are available. The Bender-Gestalt rarely aids in other differential diagnostic problems.

Word association and sentence completion tests.

The word association is the oldest standardized personality test. C. G. Jung was the first to use this test for the discovery of neurotic conflicts. The test is easy to administer and score and takes little time, but its results are usually meager.

Description. A number of these tests require the subject to name, sometimes to write down, the first word that enters his mind when he hears the stimulus word. For several of these tests, norms are available that consist of lists of the most frequently obtained associated words. Kent and Rosanoff provided frequency tables of responses given by various neuropsychiatric patient groups to a list of 100 words. Special lists of stimulus words can be made up for special purposes: to identify tension in special areas, severe physical illness, chronic defects, sexual frustration, etc. It is relatively easy to collect normative data.

The examiner records not only the verbal response but also the time and any signs of blocking or tension. An immediate repetition of the test, which can vary from 50 to 100 words, sometimes provides additional clues when the response words differ from those obtained during the first administration. Original responses are always worth investigating.

The sentence completion test is an elaboration of the word association technique. It consists of incomplete sentences, one word or more, which the subject is requested to complete with the first words spontaneously occurring to him as he reads the unfinished sentence. These tests can be given orally, which gives the examiner an opportunity to observe the patient, or they can be given in writing to save time. The number of test items varies greatly from one form of the test to another. All these forms share many aspects, but they differ in their attempt to tap certain psychological areas, pathology, occupational problems, political and social views, leadership qualifications, etc.

Interpretation. Many sentence completion tests have few reliable norms or none at all. The interpretation is left to the skill of the examiner. Therefore, the value of these tests depends very much on the psychological acumen of the evaluator of the tests.

Other forms do have norms. The A. R. Rohde sentence completion method provides carefully collected norms for different age and sex groups. The J. B. Rottler incomplete sentence blank was designed to get an overall picture of emotional stability. The Veterans' Administration incomplete sentences test was designed to assist in therapy planning.

The sentence completion tests provide little information if one uses only the available norms for their interpretation. They provide some useful information if interpreted by very experienced clinicians who have sound knowledge of the correlations of clinical symptoms and verbal expressions. Easy to administer and evaluate, the sentence completion test is sometimes given in the hope of getting original deviant responses.

One has to know how to read well between the lines to deduce from the word association and sentence completion tests new and valuable information. Both tests are projective tests because of the indeterminateness of the stimulus. However, the indeterminateness of these stimuli is very restricted when compared with the unstructured inkblots, which elicit a much greater variety of responses than words and unfinished sentences.

Minnesota Multiphasic Personality Inventory. Known as MMPI, the Minnesota Multiphasic Personality Inventory was introduced by Starke R. Hathaway and J. Charnley McKinley in 1942. It is the most carefully constructed and investigated inventory in use today.

The projective tests, like the Rorschach and the TAT, were prompted by a desire to penetrate deeply into the personality of the individual and were created in peacetime. The questionnaires were constructed to meet the need for quick mass examinations. The first one, Robert S. Woodworth's of 1917, and the best one, Hathaway's of 1942, originated during wartime to meet the pressing needs of the military. Questionnaires are easy to administer and require little time and effort on the part of the examiner, since the subject evaluates himself. Only the scoring of the complete MMPI takes a good deal of time, unless it is done by a computer. Much of the popularity of the test can be explained by the psychology of the examiner. He does not have to make any decisions and thus has no responsibility for the results.

Description. In its present revised form the MMPI is a paper and pencil questionnaire used more widely with mental patients than any other paper and pencil personality test. It consists of 550 questions in the form of positive and negative statements pertaining to a great many personality aspects, including general health, neurology, motility, physiological functions, habits, family, sexual attitudes, religion, political attitudes, and many psychopathological items relevant to psychiatric diagnosis and treatment. There may soon be available a shorter form of the MMPI, consisting of about 100 of the most discriminating items.

The MMPI can be administered in groups, but it is usually given individually. The subject is asked to answer each item in one of three ways: "true" if he thinks the item applies to him; "false" if he thinks it does not; or, when he cannot say whether an item is true or false, by writing the appropriate answer on the test blank.

It has been discovered that some questions that did not appear to have any relation to important psychological syndromes are actually subtle and indirect signs of pathology. Most of the items are taken from clinical psychiatry (chiefly Kraepelinian). A deliberate attempt has been made to use descriptive items. No question was included for purely theoretical reasons.

The items are combined in scales. Each scale was validated by studying various psychiatric diagnostic groups to see whether the scale items truly differentiated them. The inclusion of an item in a scale depended on the results of such an investigation. There are nine psychopathological MMPI scales: hypochondriasis, depression, hysteria, psychopathic deviation, masculinity-femininity, paranoia, psychasthenia, schizophrenia, and mania.

Usefulness in diagnosis. Since the test pertains to intimate personal matters and since in many instances the subject can predict what interpretation is likely to be placed on his response, answers to the MMPI (or any questionnaire) are seldom completely frank, either because of conscious fear or unconscious defense against anxiety. The directness of the questions violates the principle of anxiety alleviation, which seems to be a condition of a frank and valid psychological self-evaluation. For this reason, the MMPI is not a dependable aid in neuropsychiatric diagnoses, especially in borderline cases, when a diagnostic aid is most helpful.

In general, the MMPI profiles formed by the scores of the nine scales agree more or less satisfactorily with clinical conclusions concerning the kind and degree of mental symptoms in about two out of three individual cases. In about one out of five cases the MMPI significantly exaggerates the psychopathology of an individual, if information from other sources serves as a criterion for judgment. Admissions of difficulties are not necessarily more valid than assertions of well-being.

Validity of the test. The assumption of the MMPI is that the accuracy of the subject's self-ratings is not a condition of the test's validity. The authors believe that the value of the test rests on what the patient says, not on the truth value of what he says. For example, it is clinically true that hysterics exaggerate their troubles to gain sympathy, but rating the MMPI statement "I think a great many people exaggerate their troubles in order to gain the sympathy and help of others" as true is scored as evidence of health, since most subjects who are not mental patients do not deny it. By contrast, when the statement about exaggeration of troubles is rated as false, points are added

to the hysterical scale because most hysterics rate it that way, denying the statement. What the patient does and what he thinks he does do not always coincide.

Statements are made in the first person singular in the belief that this encourages self-identification and self-references. However, this use of the first person instead of the third person is incompatible with the anxiety-alleviating principle.

Auxiliary scales have been introduced in order to permit identification of unreliable MMPI test records. One of them is the lie scale. It consists of items that, when answered candidly, imply a socially undesirable attitude. "Do you ever tell a lie?" is a lie scale item. The vast majority of people do tell some lies. Denying this by answering the question with "no" results in adding some points to the overly virtuous individual's lie scale. Another question of this type inquires whether the subject's table manners are as good when he eats in the privacy of his house as when he eats with others. If someone gives incredible responses to too many such questions, his MMPI is suspect. He is too good to be true; he tries too hard to make a good impression.

Another auxiliary scale consists of the number of "no" responses. A large number of denials tends to invalidate the test; it reveals an attitude of extreme guardedness. On the other hand, too small a number of "no" answers may indicate too great a suggestibility or lack of judgment, which also renders the test undependable.

The third scale, the K scale, was designed to discriminate between faking good at one pole and faking bad at the other pole of the bipolar scale. The chief aim of the K scale is to clarify the meaning of a borderline scale result by ascertaining whether the subject tended to exaggerate his strength or his weakness.

Many mental patients manage to produce normal MMPI profiles; that is, the peaks of all scales are within the middle range of T scores, between 30 and 70. But only 10 to 15 per cent of mental patients can *deliberately* simulate a normal profile. Those who fail in this attempt succeed only in making their MMPI look more abnormal. This shows that the lack of frankness and the pseudonormality can be a function of unconscious defenses against anxiety as well as a deliberate effort of self-concealment. The test gives better results when the subject feels it is to his advantage to be frank and to admit weaknesses; it is usually unreliable when he feels it is not to his advantage to be trustful and guileless.

As the subject's understanding of the content and intent of the MMPI questions increases, his capacity to modify his spontaneous answers to the questions in anticipation of the conclusions the examiner will draw from them also increases. This is true even of psychotics. Mild and intellectually average or superior schizophrenics evaluate themselves, as a rule, more normal than the normals. One difficulty of the test is that the number of deviant responses is relatively small, and, as a rule, subjects appear more stable in the MMPI than they actually are.

It may be that the MMPI has reached its highest level of perfection and cannot be improved upon. The paper and pencil personality inventories have definite

limitations even when they are as sophisticated in structure as the MMPI.

Interpretation. The majority of all mental patients produce MMPI profiles in which the D (depression) and Pt (psychasthenia) scales have the highest peaks and the T scores exceed 70 on both of them. This is to be expected, since anxiety and depression are the most frequent mental symptoms and since the existence of both tends to be associated with obsessive-compulsive tendencies; without the latter, symptoms would not persist. Phobias, forms of obsessiveness, are suggested by the Pt being the highest peak scale, provided it scores above 70. Profiles with Pt and Hy (hysteria) as the highest peaks point to psychoneurosis.

When both Pa (paranoia) and Sc (schizophrenia) score highest and when the T scores are above 70, the probability of schizophrenia is high. However, when only Sc scores above 70, the diagnosis is not certain. This is not surprising, since early or mild schizophrenics have all kinds of symptoms; schizoid withdrawal and reserve need not be their outstanding feature. There are schizophrenics with well developed hysterias, depressions, or marked anxiety states. This explains, in part, why the MMPI is a poor diagnostic aid but a better tool for the detection and measurement of psychopathological reaction patterns.

Although relatively little is known about the Ma (mania) scale, studies have shown that there is some positive correlation between Ma scores on the one hand and sociability and activity on the other. T scores of over 70 on both Sc and Ma may signify catatonia. High scores on both Ma and Pd (psychopathic deviation) are associated with delinquent behavior, impulsiveness, immaturity, rebelliousness, hostile aggressiveness, and low frustration tolerance.

Patients with high scores on the three scales of D, Hy, and Hs (hypochondriasis) are conspicuously ill with various psychosomatic symptoms. They are inclined to be resigned and passive. They lack assertiveness. They are irritable but dependent, tense, timid, and worrisome. When there is a high score on Pt as well as on D, Hy, and Hs, the patient is likely to be a severe alcoholic, especially a male subject. Such patients are very demanding and very frustrated in the pursuit of gratification of their demands.

Pt is the anxiety and tension scale that modifies the other scales because it is associated with alertness to potential, overwhelming, and unknown danger. Though disturbing, anxiety intensifies interest in reality. Patients with high scores on Sc and Pa alone are, on the whole, sicker than those who, in addition to these two, have a high score also on the Pt scale. Many patients with high Pt and D scores have good work records on routine jobs that do not call for initiative, self-expression, courage, or sense of responsibility for others. When the scores on Pt, D, and Mf (masculinity-femininity) are all high, the individual

is likely to be inhibited, nondelinquent, effeminate, and neurotic.

Patients with high scores on Pa and Pd are very different. They tend to be moody, assaultive, and heavily alcoholic. They make more frequent suicidal attempts as a group than patients with other MMPI profiles. The MMPI discriminates rather well between depressed and nondepressed psychotics, which is important in the case of potential suicides.

Factor analysis of personality. Although the statistical procedure known as factor analysis can be applied to any matrix of correlational coefficients, by far the greatest majority of factor analytic studies in psychology are done with personality questionnaires. Raymond Cattell has made the most extensive, systematic use of factor analysis and produced the 16 Personality Factors questionnaire in 1950.

Factor analysis has as its aim the discovery of the minimal number of statistical factors with the lowest possible correlations among them that would account for the obtained correlational coefficients. Factors, then, are a mathematical summary, the content of which depends on the summarized data. When the correlated tests, the subjects, or the complexity of the tests varies, the factors change. Some of the correlations are not high enough to trust the system of the questionnaire factors.

Drawbacks. A questionable assumption of psychological factor analysis is that positive correlations between test variables are due to a common source trait (factor) in the subjects' personalities. Another assumption is that traits correlated in one individual are correlated also in other persons. Because of the diversity of personality structures, this is frequently not the case, thus destroying the universality of factors. If they are not universal, the prerequisites of their applicability must be determined. The acquisition of such knowledge would be a formidable task. Lack of universality greatly decreases the usefulness of the factors and dampens the desire to go through the lengthy procedures of factor analysis.

The allure of factor analysis is the promise of objectivity and precision. This promise is spurious. For, once the factors are mathematically derived, they must be assigned a meaning; otherwise, they would remain meaningless. The meaning given is at best the result of a calculated guess regarding the common significance of the test items that mathematically constitute the factor. Without wild guessing, one cannot extract from factor analysis more than one puts into it; Cattell's factors suffer from all the weaknesses of personality questionnaires. In the process of assigning meaning to factors, the gate is opened to unreliable subjectivity, which the laborious and copious statistical calculations were designed to remove. Examples of the two-dimensional factors are "enthusiasm versus melancholia," "cyclothymia versus schizothymia," and "will control versus character stability."

The same arguments apply a fortiori to other factor analytic studies based on personality questionnaires, whether they pertain to inner mental attitudes, overt conduct, neuropsychiatric diagnoses, prognosis, or other aspects of normal and abnormal personality.

Suggested Cross References

For information regarding other psychologic tests see Benton's section (Section 12.2) on psychological tests for organic brain damage in this chapter as well as Anastasi's section (Section 39.3) on psychological tests for children in Area H, on child psychiatry. The clinical syndromes mentioned in this section, such as

schizophrenia, homosexuality, and depression, are covered in detail in Area F, on the psychiatric disorders. Concepts of perception and cognition which are fundamental to the projective and intelligence tests described in this section are discussed in Sections 3.1 and 3.2, respectively, in Area B, on the basic behavioral sciences. Test findings characteristic of specific psychiatric disorders such as schizophrenia, depression, mental retardation, and organic brain disorders are covered in Area F. A summary of information on psychological tests used in psychiatry is presented in the chart by Fensterheim in this chapter.

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12.2 PSYCHOLOGICAL TESTS FOR BRAIN DAMAGE

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As the primary integrative mechanism of the total human organism, the central nervous system (CNS) mediates mental processes, complex behavioral reac-

tions, and somatic and vegetative responses. Consequently, disease or injury at the higher levels of the CNS is likely to be reflected in disturbances in mentation, feeling, and conduct. It is this fundamental fact that makes behavioral assessment a necessary part of clinical neurological evaluation, particularly when the question of disease involving the cerebral hemispheres has been raised. Such behavioral assessment can be accomplished in various ways: by direct observation of the patient's behavior in a natural setting, from the description by informants of aspects of the patient's present and past conduct, by questioning and observation during the interview, and by tests. All these approaches have proved to be useful in aiding diagnostic inference.

The method of tests differs from the other approaches in a number of respects. A test is essentially an attempt to elicit a specific type of behavior under relatively controlled stimulus conditions. This control is achieved by presenting a defined task or stimulus complex (for example, arithmetic problems, material for memorization, inkblots) in a defined manner to every patient. Moreover, the task or stimulus complex is of such a nature as to evoke behavior that is relatively easy to describe in objective or quantitative terms. Because of their relatively objective and quantitative nature, psychological tests are often conceived of as laboratory procedures, comparable to serology, electroencephalography, and radiology procedures, with respect to their role in neuropsychiatric diagnosis. This perspective emphasizes the distinctive contribution these methods can make, as contrasted with the more global forms of behavioral evaluation; that is, they provide findings characterized by a degree of precision and objectivity that cannot be obtained through the use of the other methods.

Furthermore, psychological tests, when considered as laboratory procedures, are seen in their proper role as aids to or components of the total clinicodiagnostic process. Nevertheless, it is important for the clinician to appreciate the fundamental difference between serology or electroencephalography procedures and neuropsychological tests. The former deal with infrabehavioral events, the latter with behavioral events. Classes of phenomena not otherwise open to analysis are disclosed through the use of the infrabehavioral methods. In contrast, neuropsychological tests deal with overt behavior, a class of phenomena already available, actually or potentially, for global clinical evaluation. It should be noted that the majority of psychological tests represent attempts to objectify and quantify impressions already gained from general clinical observation.

Thus, to a considerable degree, the aspects of behavior sampled by clinical observation and by neuropsychological tests are the same (for example, speed of response, level of comprehension, use of language), but the tests assess these aspects of behavior with greater reliability and precision. The tests go on to

sample other aspects of behavior, such as visual memory and psychomotor skill, that are not readily elicitable in the general examination. Hence, the employment of neuropsychological tests serves both to validate the impressionistic findings of the general clinical examination and to provide additional information about other aspects of intellect and personality.

It is a truism that behavior has multiple determinants and that the same behavioral deviation may be produced by factors of a diverse nature. Hence, when behavioral deficits that raise the question of cerebral dysfunction are observed in a patient, it is necessary to consider other possible determinants of defective performance before the inference of cerebral disease is made. Among these are: (1) lack of adequate cooperation and effort on the part of hostile, asocial, or paranoid patients; (2) lack of mental energy in patients who are depressed or seriously depleted by systemic extracerebral disease; (3) inattention and concentration difficulty associated with preoccupation or intense anxiety; (4) simulation or exaggeration of mental incompetence, particularly when questions of compensation for injuries received or a pension are involved; and (5) poor comprehension and task adjustment on the part of culturally handicapped patients.

Survey of Neuropsychological Tests

General intelligence. The clinical observation that patients with cerebral disease may show an over-all behavioral inefficiency and be unable to meet the diverse intellectual demands associated with the responsibilities of daily life dates back many centuries. The observation is expressed in the global concepts of dementia and deterioration. The normal counterpart of these pathological concepts is the concept of general intelligence, which is equally global in nature. The application of this concept in clinical practice assumes that there is a sufficient degree of positive correlation among various intellectual abilities to warrant the conclusion that a single general ability is a significant component in performance on diverse intellectual tasks—verbal skills, mathematical abilities, abstract reasoning, and the like. Granted this assumption, it is justifiable to derive a single score from a battery of mental tests and to use this score as an index of general intelligence. This is what is done when an intelligence test battery such as the Wechsler Adult Intelligence Scale (WAIS), which consists of 10 subtests, is administered and the patient's scores on the various subtests are combined into a total score, which yields an I.Q. (See Table I.)

Obtained I.Q. versus expected I.Q. In the United States, the WAIS is by far the most widely used test battery for assessing general intelligence in adult subjects. In its clinical application, a number of procedures have been used to evaluate the possibility of a decline in general intelligence that may be ascribed to the presence of cerebral disease. The most direct ap-

TABLE I

Tests for Assessing Brain Damage

Category	Sub Categories	Remarks
General scales	Wechsler Adult Intelligence Scale (WAIS) Stanford-Binet Wechsler Intelligence Scale for Children (WISC)	Given the availability of adequate normative standards in relation to the patient's educational and cultural background, a performance significantly below expectations should raise the question of cerebral damage. This generalization applies to both adults and children.
Reasoning and problem solving	Abstractions (Shipley) Progressive matrices (Raven) Proverbs (Gorham) Perceptual mazes (Elithorn) Object and color-sorting tests (Goldstein and Scheerer)	Performance level is closely related to educational background and premorbid intellectual level. In general, the clinical application of these tests is more useful in the case of educated patients. If specific language and perceptual defect can be ruled out as determinants of defective performance, failure suggests frontal lobe involvement or diffuse cerebral disease.
Memory and orientation	Immediate auditory memory—repetition of digits Immediate auditory memory—reversal of digits Immediate visual memory (Benton, Graham-Kendall) Recent auditory memory—words or stories Recent visual memory—words or pictures Temporal orientation (Benton, Van Allen and Fogel)	For complete assessment, a number of memory tasks (auditory versus visual, verbal versus non-verbal, immediate versus recent) should be given. Minor defects in temporal orientation may be elicited and suggest weakness in recent memory.
Visuoperceptive and visuoconstructive	Identification of hidden figures (Teuber-Weinstein-Rudel) Identification of fragmented figures (Street-testalt) Block design construction (Kohs, Goldstein-Scheerer, Wechsler) Stick arranging (Goldstein-Scheerer) Copying designs (L. Bender, Benton visual retention) Three-dimensional block construction (Benton-Fogel) Inkblot interpretation (Rorschach, Holtzman) Perceptual mazes (Elithorn) Responsiveness to double visual stimulation (M. B. Bender)	These types of task are relatively sensitive indicators of the presence of cerebral disease. Analysis of qualitative features of performance and comparison of performance level with the status of language and reasoning abilities often provide indications with regard to locus of the lesion.
Somatoperceptual	Tactile recognition (Parker, Ross) Finger recognition (Benton) Right-left orientation (Benton) Responsiveness to double tactile stimulation (M. B. Bender)	Frequently useful indicators of the presence and locus of cerebral disease.
Language	Token test (De Renzi-Vignolo) Abstractions (Shipley) Proverbs (Gorham) Word fluency (Benton-Spreen-Fogel) Illinois test of psycholinguistic abilities (Kirk-McCarthy)	Test performance is dependent on educational background, and it is essential that clinical interpretation allow for this and other possibly significant factors. In adult patients, defective performance (particularly in relation to other abilities) suggests dysfunction of the cerebral hemisphere that is dominant for language. In children, defective performance does not have this localizing significance but does raise the question of the presence of cerebral damage.
Attention, concentration, and motor abilities	Continuous performance test (Rosvold) Visual vigilance (McDonald-Burns) Reaction time (Blackburn-Benton-Joynt) Motor impersistence (Garfield) Imitations of actions (Bergès-Lézine)	Valuable behavioral indicators of the presence (and sometimes locus) of cerebral disease that deserve more extensive clinical application.

proach is to compare a patient's obtained age-corrected I.Q. score with the age-corrected I.Q. score that may be expected in view of his educational background, cultural level, and occupational history. A negative discrepancy, that is, obtained I.Q. below expected I.Q., beyond empirically established normal limits may be interpreted as indicating a possibility of the presence of cerebral disease. This procedure has been shown to have considerable clinical utility. However, it also has serious limitations since, as is well known, many patients with unquestionable cerebral disease do not show an over-all decline in general intelligence of sufficient severity to be reflected in a significant lowering of the WAIS I.Q. score. Consequently, this procedure may be expected to yield a fair proportion of false negative results.

A variant of this procedure is to compare obtained and expected I.Q. scores on the WAIS performance scale, which consists, for the most part, of nonverbal and relatively novel tasks. This has proved to be fully as useful as the comparison of full scale I.Q. scores.

Sensitive versus insensitive tasks. Since it has been found, at least in nonaphasic patients, that certain types of performance tend to be more seriously affected by cerebral damage than others, a second approach consists of comparing performance level on presumably less sensitive tasks with that on more sensitive tasks. Thus, verbal scale I.Q. is compared with performance scale I.Q., or performance on a set of insensitive tests (for example, information, picture completion) is compared with performance on a set of sensitive tests (for example, arithmetic, block designs). Although widely employed by clinical psychologists, these procedures, which rely on a discrepancy score or a deterioration ratio within the test battery itself, have been found to possess only relatively modest clinical utility.

Impaired performances. A third approach would be to focus attention on those subtest performances (block designs, arithmetic, digit symbol) that clinical experience indicates are most frequently and severely impaired in patients with cerebral disease. This is a rational procedure, but full exploitation of its clinical value depends on the availability of valid and precise normative standards of performance in relation to age, educational background, and sex. In a given clinical setting, the establishment of such standards may require the development of local norms, since test performance patterns may vary in different parts of the country and among different cultural groups.

Reasoning and problem solving. Impairment in the capacity for abstract reasoning and reduction in behavioral flexibility when confronted with an unfamiliar situation are well known behavioral characteristics of the brain-damaged patient. Both types of deficit are important components of Kurt Goldstein's concept that the fundamental behavioral change resulting from cerebral disease is "impairment of the abstract attitude."

A relatively large number of special tests designed to measure each of these capacities have been devised. Among those that have shown clinical usefulness are the Shipley abstractions, Raven's progressive matrices, the Gorham proverbs test, the Porteus mazes, the Elithorn perceptual mazes, and the Goldstein-Scheerer sorting tests.

Defective performance by brain-damaged patients on such tests is frequent enough, but it is important to determine the *basis* for a given patient's failure. Language skills play a role in performance on some tests, and other tests make demands on visuo-perceptive capacity. Hence, it is essential to rule out language and perceptual handicaps as determinants of a defective performance before making the inference that it indicates impaired reasoning or problem-solving ability.

The tests mentioned have proved to be particularly valuable for disclosing behavioral deficit in the neurologically negative patient with frontal lobe or beginning diffuse cerebral disease who shows no specific sensory, perceptual, language, or motor impairments and who, on initial encounter, may appear to have a functional psychiatric disorder. Conversely, these tests are practically useless for the specific purpose of inferring brain disease when applied to unintelligent or uneducated subjects or to individuals suffering from psychosis.

Memory and orientation. Impairment in certain types of memory, most notably short term and recent memory, is a prominent behavioral deficit in brain-damaged patients and is often the first sign of beginning cerebral disease and of old age. For this reason, procedures for the assessment of memory functions have always found a prominent place in the mental status examination and in psychological test batteries.

Memory. This catch-all term covers the retention of all types of material over different periods of time, involving diverse forms of response. Empirical studies have shown that a subject's performance may vary significantly as a function of a number of factors, such as the sensory modality involved (auditory versus visual), the type of material to be remembered (verbal versus nonverbal), or the form of response required (recognition versus reproduction). For this reason, the neuropsychological examiner is more inclined to give specific memory tests and to evaluate them separately than to utilize an omnibus battery, such as the Wechsler Memory Scale, which provides for a brief assessment of a large variety of performances and which yields a single score in the form of a memory quotient. However, this type of instrument has some usefulness as a screening device, despite the fact that it does not adequately measure such memory functions as visual retention and also despite the fact that combining the separate scores into a single total score is a dubious procedure.

Immediate memory. A differentiation between im-

mediate memory, recent memory, and remote memory is often made, and this distinction proves meaningful from a clinical standpoint. For example, it is a common observation that patients with a Korsakoff syndrome, showing a pervasive and severe impairment in recent memory, may be able to perform well within normal limits on tasks involving the immediate repetition of digits or sentences and may show preserved memory for events in the remote past.

Immediate memory may be defined as the reproduction, recognition, or recall of perceived material within a period of not more than 10 seconds after presentation. It is most often assessed by digit repetition and reversal (auditory) tests and memory for designs (visual) tests. Both have been found to discriminate significantly between brain-damaged and control subjects, but the visual task is the more sensitive indicator.

The precise reason for this difference in discriminating power is not known. The relatively novel nature of the task of drawing designs from memory may be an important factor here, or perhaps the difference in sensory modality is the crucial factor. A comparative study of the discriminative efficiency of auditory and visual digit span tasks would be of interest in this regard and might provide information of clinical utility.

In any case, both an auditory-verbal task such as digit span (or memory for words or sentences) and a nonverbal visual task such as memory for designs (or faces) should be given to assess a patient's immediate memory. Despite the fact that group studies show a significant positive correlation between performances on the two types of tasks, dissociation (that is, adequate performance on the one and defective performance on the other) is not rare and may be of clinical interest. Patients with lesions of the right hemisphere are likely to show significant defect on visual nonverbal tasks while performing on a normal level on auditory verbal tasks. Conversely, patients with left hemisphere disease, including those who are not aphasic, are likely to show deficit on the auditory verbal tests with variable performance on the visual nonverbal tasks.

Recent memory. This refers to the reproduction, recognition, or recall of perceived material after a given period of time (10 seconds or longer) has elapsed following the initial presentation. It is typically assessed by measuring the patient's memory for a story read to him, for items in a display of words or pictures or abstract forms, or for such learned material as lists of words or pictures. This type of task provides one of the more sensitive indicators of the presence of cerebral disease. However, since quality of performance is closely dependent on level of effort and attention, the examiner must carefully consider other possible determinants before interpreting failure on these tasks as a sign of brain damage.

Memory for remote events and orientation for per-

son or place. These are rarely disturbed in the brain-damaged patient who is not psychotic or severely demented.

Temporal orientation. Minor defects in temporal orientation are not at all rare. These are often overlooked by the clinical examiner because of his tendency to regard slight inaccuracy in giving the day of the week or of the month as being inconsequential. But, in point of fact, objective assessment based on empirically derived normative standards has shown that 20 to 25 per cent of nonpsychotic patients with cerebral disease are likely to show significant inferiority with respect to precision of temporal orientation.

Perceptual and perceptuomotor performances. Many brain-damaged patients, when examined by means of appropriate techniques, show defective analysis of complex perceptual situations and/or inability to translate their perceptions into appropriate motor action. Unless the impairment is of a gross nature (as in visual-object agnosia or dressing dyspraxia) or interferes with a specific occupational skill (such as typesetting or assembling a machine), these deficits are not likely to be the subject of spontaneous complaints. Nevertheless, objective testing discloses a remarkably high incidence of impaired performance on visuoanalytic, visuospatial, and visuoconstructive tasks in brain-damaged patients, particularly in those with disease involving the right hemisphere. The impairment also extends to tactile and auditory perceptual task performances.

Many tests have been devised to measure these capacities; only a few of them can be mentioned here. Higher level visuoperceptive capacity may be assessed by means of tests involving the recognition of hidden figures and fragmented figures. Visuoconstructive capacity may be assessed by tests calling for block design construction, stick arranging, copying designs (for example, Bender-Gestalt, see Figure 1), and three-dimensional block model construction. Defective capacity for visual analysis and synthesis is also brought out in performance on the Rorschach test by poor percepts (*F*-), failure to see movement (low *M*), and paucity of response (low *R*).

Performance on the Elithorn perceptual mazes often discloses the same type of impairment. Patients with apparently intact stereognostic capacity, as evidenced by their accurate recognition of palpated objects in the neurological examination, often show defects in tactile recognition when subjected to more demanding test procedures. Defects in auditory discrimination and recognition may also be manifested. Somatoperceptual defects, such as impairment in finger localization or in the identification of the right and left side of one's body, are sometimes revealed by appropriate testing. Elementary perceptual integration within the visual and tactile modalities can be assessed by application of the method of double simultaneous sensory stimulation.

The application of these perceptual and perceptuo-motor tests in the detection of the presence of cerebral disease has proved quite rewarding and possesses certain advantages. Although not culture-free (no behavioral performances are), these tests are generally less dependent on educational level and cultural background than many of the more intellectual tasks. Many of the tests are relatively sensitive indicators of the presence of cerebral disease. Finally, they often provide suggestions with regard to the probable *locus* of the cerebral lesion and thus may help to offer a focus for further neurological exploration.

Language functions. Gross impairment in language functions in the form of frank aphasia can scarcely be overlooked by the psychiatrist, although the less experienced examiner may sometimes misinterpret some types of defect as signs of dementia or psychosis. On the other hand, it is quite likely that less severe disturbances of language expression and comprehension may go unrecognized for the simple reason that the interview or the application of a few simple tests for aphasia fails to bring them out.

Relatively minor defects in the use of the instrument of language may be valid indicators of the presence of disease of the dominant hemisphere. These defects are often the first signs of a developing aphasic disorder. Higher level language tests have been successfully used to indicate the presence of such a sub-clinical or latent aphasia. A number of instruments can be used for this purpose. The token test of De-Renzi and Vignolo brings subtle as well as gross disturbances in the comprehension of oral language into sharp relief. The Shipley abstractions make demands on verbal reasoning that the patient with latent aphasia is unable to meet; understanding of the meaning of proverbs is likely to be poor. Verbal-ideational impoverishment is shown by defective performance on word fluency tests.

Performance on all these tests is heavily dependent on educational background, and clinical interpretation must allow for this variable, and for other possibly significant factors, such as age and sex. When these corrections are made, these tests provide valuable information that can aid in diagnosis. The sensitivity of performance level to the presence of disease of the dominant hemisphere negates the assumption that verbal abilities remain intact in nonaphasic patients with brain damage while nonverbal skills decline. The seeming disparity is a question of what tests are used to assess verbal abilities.

Speed and flexibility of response. It is a common clinical observation that some brain-damaged patients are quite slow in responding to diverse stimuli and have notable difficulty in modifying their behavior to meet the changing demands of a shifting situation. Objective quantitative methods of assessment not only confirm these observations in such patients but also disclose the same response retardation and behavioral rigidity in many others who may appear,

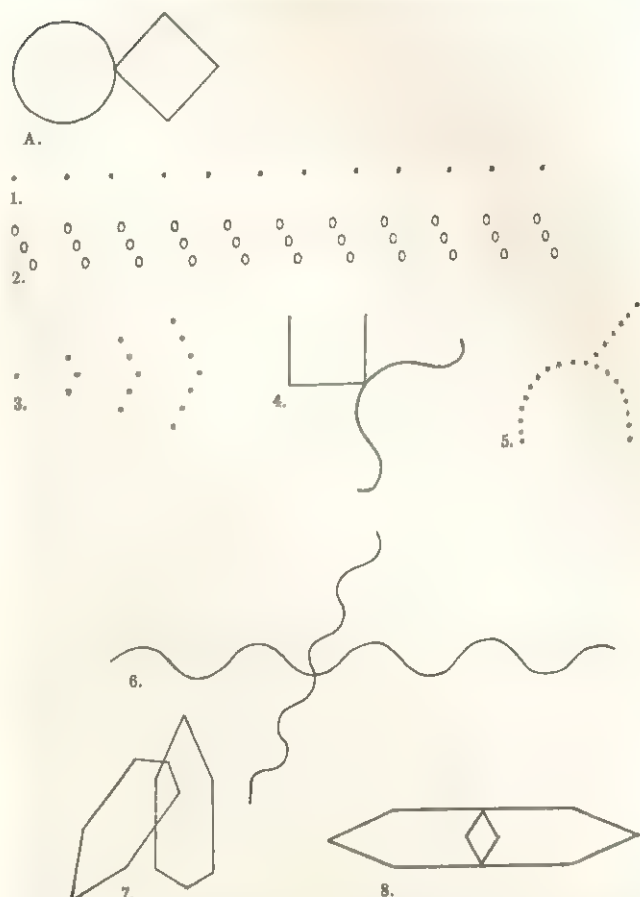


FIGURE 1. Test figures from the Bender Visual Motor Gestalt Test, adapted from Wertheimer. (From Bender, L. *A Visual Motor Gestalt Test and Its Clinical Use*. Research Monograph no. 3. American Orthopsychiatric Association, New York, 1938.)

on clinical ground, to be unremarkable in these respects.

Reaction time studies have shown that both simple and choice visual reactions are significantly retarded in 40 to 45 per cent of nonpsychotic, brain-damaged patients. Moreover, patients with unilateral cerebral disease show clear retardation, even when the ipsilateral hand (on the unaffected side of the body) is used to effect the response. These results indicate that reaction time is a fairly sensitive indicator of over-all cerebral integrity and that retardation in reaction time reflects the presence of a cerebral lesion *regardless* of its locus. It may be noted that comparison of the reaction times of the right and left hands often provides an indication of the probable hemispheric locus of a focal lesion. This method deserves more extensive application as a diagnostic procedure, particularly when the question of differentiation between neurosis and cerebral disease is involved.

A variant of the simple reaction time experiment, in which the patient must react to successive presentations of different stimuli instead of to successive presentations of the same stimulus, provides an opportunity to measure behavioral flexibility on a basic sensori-

motor level. Excessive slowness in response to a stimulus that has been preceded by a stimulus in another sense modality (cross-modal retardation effect) is exhibited by both schizophrenic and nonpsychotic brain-damaged patients. Neurotic patients do not show this marked susceptibility to the cross-modal retardation effect.

Other measures of behavioral flexibility are provided by tasks in which the patient must modify his approach to a problem in accordance with changing requirements—color-form sorting, object sorting, and concept formation tests. The last type of test has been found to be particularly valuable in identifying patients with frontal lobe disease.

Attention and concentration. The capacity to sustain a maximal level of attention over a period of time is sometimes impaired in brain-damaged patients and is reflected by oscillation in performance level on a continuous or repeated activity. There is some evidence that this instability in performance is related to electroencephalographic abnormality and that the occurrence of inexplicable declines in performance is related temporally to the appearance of certain types of abnormal electrical activity. For example, Prechtl and associates were able to show that episodes of response retardation in a continuous performance task in epileptic patients coincided with the occurrence of diffuse flattening of the EEG.

A variety of tests have been devised to assess vigilance and capacity for sustained attention. Simple reaction time provides a convenient measure of variability and speed of simple responses and is possibly as discriminative and informative as assessments of performance on more complex and lengthy tasks. While the patient's median reaction time can be utilized as an index of speed, the standard deviation of his reaction times provides an index of variability that can be conceptualized as reflecting limitations in capacity for sustaining maximal attention. Intraindividual variability in both simple and choice reaction time has been shown to be significantly higher in brain-damaged patients than in matched controls. Among the more recent tests that have been developed for measuring attention and concentration is the continuous performance test of Rosvold et al., which has been shown to discriminate reasonably well between brain-damaged patients (both adults and children) and controls. Another test is a vigilance task, involving the detection of visual signals, developed by McDonald and Burns; it also discriminates significantly between brain-damaged patients and controls.

The clinical utility of these tests of attention and vigilance has not been adequately determined, and whether they deserve a place in the armamentarium of the clinical examiner is still an open question. Study along these lines will have to take into account the possible effects of drugs and of deviations in mood. Tests in this area seem to warrant further exploration, particularly since they furnish a type of task that in-

cludes the possibility of establishing a temporal correlation between performance and specified neural events.

Behavioral Indices of Brain Damage in Children

For various reasons, it is very popular today to make the diagnostic inference of brain damage to explain entirely or in part the deviant behavior of many children. In the majority of cases, the inference is made on the basis of behavioral observation (for example, hyperactivity, distractibility, motor awkwardness, destructiveness) and is *not* substantiated by infrabehavioral clinical or laboratory findings. The clinical psychologist is then called on to validate the diagnostic impression by means of tests. Since, to a considerable degree, his tests assess the same behavior as that on which the clinical diagnosis was based, the chances of confirming the diagnosis are rather high. The circular nature of this process and the fact that at no point has an independent, infrabehavioral criterion of brain damage played a role are obvious.

The clinical impression of brain damage most often rests on observation of the symptom complex of overactivity, restlessness, impulsivity, irritability, and unpredictability. Although the reality of this symptom complex with its significant relation to the presence of brain damage is undeniable, this is by no means *the* characteristic behavioral picture of brain damage in children. The behavioral consequences, if any, of early brain damage may take many forms, of which the hyperkinetic impulse disorder is only one. In fact, the latter is not a particularly frequent behavioral picture among children with unquestionable cerebral disease (tumor, trauma, degenerative disease). Furthermore, one must be prepared for the possibility, clearly indicated by animal studies, that early brain damage may result in very little or no behavioral deficit and that, when such deficit does appear, it is always less severe than that caused by a comparable cerebral lesion in adults. Thus, there is reason to believe that there are many brain-damaged children who are not identified by current methods of behavioral assessment.

These preliminary remarks are not intended to foster an attitude of nihilistic skepticism. They are made because they bear directly on the judicious use of test results by the psychiatrist when the question of brain damage in a child has been raised. The clinical psychologist may report (indeed, is likely to report) signs of brain damage in various test performances. Or he may report a normal profile of test performances. Whichever the case may be, it is important for the referring physician to be aware of the complexities of the situation so that he is in a position to place the test results in proper perspective.

In the following survey, emphasis is focused on the use of tests to infer brain damage in the nondefective child (that is, a child with an I.Q. of 80 or higher) of school age.

General intelligence. As in adults, general intelligence in children is measured by over-all performance level on an omnibus test battery. The most frequently used batteries are the Wechsler Intelligence Scale for Children (WISC) and the revised Stanford-Binet. A low level of general intelligence is probably the most constant behavioral result of brain damage in children. The failure in intellectual development may, or may not, be severe enough to place the child in the category of mental retardation. When the child is not retarded, his intelligence level still tends to be below expectations, based on the intelligence levels of his parents and siblings and taking into account his socioeconomic status. The identified nondefective, brain-damaged child from an average family is likely to have an I.Q. in the 80's, instead of the expected 100 to 110. The identified nondefective brain-damaged child from a superior family may have a higher I.Q., perhaps even as high as 120, but an appreciable difference in level between him and his siblings is usually found.

In contrast to the findings in nonaphasic adults with cerebral disease, the performance scale of the WISC does not seem to be more sensitive than the verbal scale to the effects of brain damage. This is understandable when one considers that in the adult such tests as information, vocabulary, and comprehension measure knowledge and skills acquired in the remote past, whereas in the child they are indices of the rate of acquisition of these skills.

As with all tests, the procedure of comparing observed with expected I.Q. in the nondefective child suspected of suffering from brain damage no doubt produces its share of false negatives, and special test methods should be utilized. With respect to the problem of possible false positives, if the clinician is not willing to accept a significant discrepancy between observed and expected I.Q. as evidence of brain damage, he should be prepared to explain the discrepancy on other grounds. This simple, straightforward approach to the behavioral diagnosis of brain damage in children deserves more widespread clinical application than is now accorded it.

Perceptual and perceptuomotor performances. These tasks constitute the favored procedure among clinical psychologists for disclosing behavioral deficit related to brain damage. Their application is based on the long standing observation that many brain-damaged children with adequate verbal skills show strikingly defective visuoperceptive and visuomotor performances.

The test most frequently employed is copying of designs, either from a model or from memory. Typically, about 25 per cent of brain-damaged school children of adequate verbal intelligence are found to perform defectively, that is, on a level exceeded by 95 per cent of normal children of comparable verbal intelligence. The task discriminates between brain-damaged children and those suffering from presum-

ably psychogenic emotional disturbance. Another type of perceptuomotor task that has been investigated is path tracing, as in the trail-making test.

Tasks involving the recognition of hidden figures, that is, figures imbedded in masking background, and the detection of patterns have also been utilized to probe visuoperceptive capacity and have disclosed inferior performance in brain-damaged children as compared with normal controls. Capacity for elementary perceptual integration within and across sensory modalities can be evaluated by double simultaneous stimulation and intersensory matching techniques; their application has yielded results of clinical interest.

Defective finger recognition and right-left orientation, often conceptualized as reflecting a disturbance in the body schema, are shown by some nondefective children with brain damage. Tests for these capacities deserve a place in any detailed examination directed toward the question of brain damage in a child of school age.

Language functions. Diagnostic evaluation of the child suspected of having brain damage has typically depended largely on assessment of his perceptual and perceptuomotor performances, but there is reason to believe that the status of his language abilities may be an equally sensitive indicator. It is not uncommon to find very poor development of language functions as compared with nonverbal skills in high grade mental retardates, and there remains the question as to whether this particular pattern of performance may not be the reason why many of these children are labeled retarded rather than brain-damaged. There is considerable evidence that aphasic children, those who show a gross maldevelopment of oral language abilities as compared with general mental level, suffer from brain damage. Moreover, a number of studies have raised the question of whether prenatal brain injury may not be a causative factor in at least some cases of developmental dyslexia. The finding of an excessively high incidence of electroencephalographic abnormality in dyslexic children points to the same conclusion.

All these considerations suggest that a careful analysis of language skills should be a part of the psychodiagnostic work-up in children suspected of having brain damage. The Illinois test for psycholinguistic abilities is an appropriate instrument for this purpose. Unless explainable in terms of cultural handicap, sensory deficit, or personality disturbance, observed deficit in this area should raise the question of brain damage.

Attention and concentration. It is commonly reported by parents and teachers that a brain-damaged child will show inexplicable inconsistency in behavior, now performing at one level, then at another. This everyday observation has been amply confirmed by analyses of performance on a variety of tests that require, either deliberately or incidentally, sustained

attention and concentration. For diagnostic purposes, the Continuous Performance Test can be utilized with older school children as well as adults to probe this capacity. Variability in simple reaction time provides a rational measure in younger children that can be applied clinically if appropriate normative standards are available as a basis for evaluating performance.

Motor performances. Motor awkwardness and inability to carry out movement sequences on command or by imitation are not uncommonly seen in brain-damaged children. Some of them show a virtual ideomotor apraxia and/or dressing dyspraxia. A variety of tests are available for the assessment of manual dexterity, for example, manipulations with tweezers, paper cutting, and peg placing. The new imitation of actions tests of Bergès and Lézine promise to be useful for the evaluation of higher level praxis and would have even greater utility if an American standardization and revision were undertaken.

Motor impersistence—inability to sustain an action initiated on command, such as keeping the eyes closed or maintaining central fixation during confrontation testing of visual fields—is seen in a small proportion of adult patients with cerebral disease. However, it is shown with remarkably high frequency by nondefective, brain-damaged children. Many mental defectives also show excessive motor impersistence. Clinical studies of this rather singular disability suggest that it may well prove to be an extremely valuable symptom of brain damage in the younger school age child.

Suggested Cross References

Several sections in Area B, on basic behavioral science, deal with concepts that underlie the use of psychological tests in the assessment of organic brain damage. Basic concepts of intelligence and language are discussed in Martin Deutsch's section (Section 3.2) and perception and memory are covered by Cynthia Deutsch (Section 3.1) and E. Roy John (Section 2.10), respectively. The clinical disorders to which the tests are applicable are discussed in detail in Area D, on neurology; in Area F, on the psychiatric disorders; and in Area H, on child psychiatry. Of special relevance are the sections on organic brain syndromes in children by Laufer (Section 42.3) and on dyslexia and other disorders of language functions by de Hirsch (Section 40.4). For a discussion of the assessment of brain damage by means of the psychiatric examination, see Section 11.2 by Sands in the previous chapter. Solomon discusses the neurological examination (Section 10.1) in the chapter on neurology.

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This table is intended to provide a quick survey of some commonly used clinical psychology instruments. They are grouped into measuring devices, which provide scores and normative standards; behavior samples, which allow qualitative observa-

tions within given areas of psychological functioning; and projective techniques. More detailed information concerning these instruments may be found in the *Mental Measurements Yearbooks*.

Instrument	Description	Comments
MEASURING DEVICES		
Benton Visual Retention Test	An individually administered test designed to measure visual memory, used for subjects 8 years of age and older.	This is one of a class of instruments used to investigate memory functions. It is most useful in differential diagnosis and in the evaluation of brain damage.
Cattell Infant Intelligence Scale	A downward extension of the Stanford-Binet test to cover ages 3 to 30 months.	This test has little predictive value for future intellectual level, particularly in the early ages. However, it does yield a good description of current functioning and is useful for the early diagnosis of mental retardation and brain damage.
Gesell Developmental Schedule	A scale based on behavioral observations, to measure development in different areas from the age of 4 weeks to 6 years.	Although the scale yields poor predictions for later developmental quotients, particularly during the early ages, it does yield a satisfactory picture of current functions. Clinically, it is most useful as a supplement to other data or when successive measurements are taken over a period of time.
Minnesota Multiphasic Personality Inventory	A questionnaire-type of personality test for ages 16 years and over. May be administered individually or in groups. Yields 14 scores in scales representing diagnostic categories (such as hysteria, schizophrenia) and test-taking behavior (such as lying).	Besides the scales noted in the test manual, other scales, such as ego strength, have been reported in the literature. Although the administration and scoring of this test are quite simple, the interpretation of the score profiles may become rather complex and requires considerable experience.
Stanford-Binet Intelligence Scale, Form L-M, 1960	An individually administered age scale intelligence test designed to range from 2 years up. This is a revision based on the 1937 Forms L and M. It yields a mental age and a deviation I.Q.	This scale presents a wide variety of items and item difficulty. It is organized by item difficulty (i.e., age level). The choice between this scale and the WISC is often a matter of the preference of the individual clinician, with the Stanford-Binet usually being the most helpful at the lower age levels and at the extremes of intelligence.
Wechsler Adult Intelligence Scale (WAIS)	An individually administered intelligence test for ages 16 years and over. It yields scores for 11 subtests as well as verbal, performance, and full scale I.Q.s.	The items of this scale are organized according to the task presented, with a separate score for each type of task. Besides yielding information concerning the intellectual and cognitive functions, analysis of the pattern of subtest scores and qualitative examination of the protocol may yield information concerning the impact of psychopathology in these areas.
Wechsler Intelligence Scale for Children (WISC)	A downward extension of an earlier form of the WAIS to cover the ages below 16 years. Yields scores similar to the WAIS (one additional optional test) but with subtest scores based on chronological age; covers ages to 16 years.	As with the WAIS, the scale is often used for more than the determination of level of intelligence. The grouping of items by type of task involved makes it easier for the clinician in actual practice to use it as an instrument to investigate the impact of pathology in the intellectual and cognitive areas.
Vineland Social Maturity Scale	An individual interview schedule aimed at determining rate of development. An age scale, it covers from birth to maturity. It yields a development quotient (D.Q.), which is the ratio of developmental age to chronological age.	This scale is simpler to administer and to score than is the Gesell scale, but it is based on reports rather than on direct observation. It does furnish a helpful picture of current developmental status, and it is strongest when used to supplement other data or to provide successive measures over time.

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Instrument	Description	Comments
BEHAVIOR SAMPLES		
Bender-Gestalt Test	An elicitation of visual-motor behavior by having the patient copy a set of geometric designs. Various modifications of administration may be introduced, such as having the designs redrawn from memory.	Although several scoring systems have been developed for this test, it is usually used qualitatively. Deficits in this area are often associated with brain damage, and the test is most used for differential diagnosis of brain damage. It may also be used to investigate developmental and intellectual levels in children and the characteristics of ego functions in adults. A number of clinicians use the instrument as a projective technique.
Examining for aphasia (Eisenson)	A systematic survey of the ability to receive and to express meaning through different modalities. It includes the aphasias, agnosias, and apraxias.	This instrument provides for behavior samples in various areas of language and symbolic function and at several levels within each area. As a quick survey, it is extremely useful where brain damage is suspected. However, further examination is usually necessary for treatment planning.
Goldstein-Scheerer Tests of Abstract and Concrete Thinking	A battery of five tests (cube test, color sorting, object sorting, color form sorting, stick test) to examine the ability to attain and to maintain the abstract attitude.	These tests afford opportunities to observe the patient attempting to solve problems that require abstraction and shifts in abstractions. Although other thought disorders, such as schizophrenic thinking, may be elicited, concrete thinking tends to be highlighted. The tests are most used for the diagnosis and the evaluation of brain damage.
Concept Formation Test (Kasanin and Hanfman)	A complex problem of grouping the Vigotsky Blocks is presented. Clues given and explanations of groupings are questioned.	The attempts to solve the complex problem provides opportunity to observe the patient's modes of thinking. The test is particularly useful in revealing patterns of schizophrenic thinking.
PROJECTIVE TECHNIQUES		
Blacky Pictures	A series of 11 cartoons about a dog (Blacky) and his/her family. The patient makes up stories, answers more structured questions, and indicates like-dislike for the pictures.	The stimulus pictures depict different stages of psychosexual development. Its major use is with children, but it can be used with adults. Some writers suggest the following sequence: Blacky with younger children, CAT with older children and adolescents; TAT with adults. This, however, is very much at the discretion of the individual clinician.
Draw A Person	The basic instruction is simply to draw a person, then to draw a person of the opposite sex. Many elaborations exist, including interviews about figures drawn.	This is one of a number of drawing projective techniques, including the drawing of a house, tree, person; of the family; of animals. The figure drawings, in general, may be interpreted as yielding data concerning self-concept, perception of significant figures, problem and conflict areas, mood, affect, and anxiety.
Rorschach	A series of 10 symmetrical inkblots. The patient tells what he sees in each. This is followed by an inquiry concerning the responses. Different sets of stimulus cards are available, but the original Rorschach plates are by far the most frequently used.	This is the most useful single instrument of the clinical psychologist. Through analysis of perception, cognition, and content, information concerning almost every aspect of psychological organization may be revealed.
Sentence Completion Test	Incomplete sentences are completed by patient (e.g., "My mother—"). Sentences may be aimed at specific potential conflict areas. Standard forms, such as the one by Rotter, are available.	This technique may be used at different levels from the prediction of overt behavior to the uncovering of deep personality dynamics. It yields data concerning conflict areas and emotional attitudes. This technique has the advantage of flexibility, for the skilled clinician may devise incomplete sentences tailored for a specific patient.
Thematic Apperception Test (TAT)	Patient makes up stories about stimulus pictures. Some pictures are specially designed for girls, boys, women, or men. Other sets of stimulus cards for special groups are available, such as the Children's Apperception Test (CAT), which uses pictures of animals.	This test helps to furnish the content of the patient's inner life. It may be said with some truth that the Rorschach furnishes the skeleton on which to hang the flesh and blood of the TAT. It yields data concerning, among other things, needs, pressures, self-concept, motives, fantasies, attitudes, and feelings.

12.3 SOCIAL SERVICE INFORMATION

C. KNIGHT ALDRICH, M.D.

A satisfactory psychiatric diagnosis usually requires more information than can be obtained from the direct psychiatric, psychological, or physical evaluation of the patient. It requires an evaluation, to the extent possible, of the total setting of the illness, including the environment and the people who are and have been significant in the patient's life. Family members are the usual sources of this kind of information. They can also provide an alternative, if not necessarily a more objective, view of the symptoms and the course of the illness, of the patient's personality and its development, and of the character of his interpersonal relationships and his adaptation. The social worker's contacts are not limited to relatives but may include other community resources when indicated, such as social agencies, clergy, and, usually in collaboration with the psychiatrist, the family physician or other medical resources.

Role of Social Worker

Although in most cases the psychiatrist can interview the relatives, the social worker's participation has distinct advantages. He offers the relatives a professional member of the psychiatric team who is primarily concerned with them and with whatever problems have developed in their lives as a result of the patient's illness; the psychiatrist, on the other hand, is primarily concerned with the patient and his problems. Furthermore, and particularly important with adolescent patients, the social worker's participation makes it unnecessary for the psychiatrist to communicate directly with the relatives; therefore, he does not appear to be relaying the patient's confidences back home. However, this advantage is lost if the psychiatrist uses the social worker as an intermediary for the transmission of information the patient has considered confidential, for the patient usually finds out what has transpired.

The social worker participates in the diagnostic assessment in most psychiatric training centers, and the psychiatric resident learns to rely on the social worker for several aspects of the work-up. He may be unprepared, therefore, for the situation that prevails in private practice. There, particularly in out-patient practice, he must usually do his own intake and secure his own social history. It is important, therefore, for the resident to learn about the technique as well as about the results of social work interviewing in his training years.

Participation of Social Worker

Goals. The social worker was originally concerned primarily with the mechanics of disposition—whether the discharged patient would have a place to live and enough to live on. To obtain this information usually required a knowledge of the family relationships, and, as the usefulness of this knowledge in diagnosis became apparent, the social worker began to interview relatives at the beginning of the patient's clinic or hospital experience.

Some of the information obtained from interviews with family members simply supplements information provided by the patient, and some—the history of a child's early development, for example—is inaccessible to the patient. If the family provides material the patient could have provided but has withheld because of fear or mistrust of the psychiatrist, it must be managed with considerable care. If the patient discovers that his relatives have revealed material he wishes to withhold, he will resent what he considers their betrayal, regardless of their benevolent motivation. If he discovers that the psychiatrist has secured from other sources evidence he was trying to conceal, his fear or mistrust of the psychiatrist will be increased. The psychiatrist may even decide, after weighing the advantages and disadvantages of filling in the information gap, that more is to be gained by waiting until the patient has developed enough trust to vouchsafe the information on his own. The goal of the social worker's interview, therefore, is not primarily to ferret out every possible fact in a patient's background but to take the kind of history that will contribute to the collaborative effort of the professional team in the way best calculated to strengthen diagnosis, treatment, and eventual disposition.

Value. In child guidance clinics, particularly in cases of young children, most of the preliminary information necessary for a tentative diagnosis is obtained from parents, and the social worker's intake interview is usually the first contact between the clinic and the family. Information obtained at intake may also be valuable for purposes of screening, to determine whether clinic treatment is appropriate for the patient and family or whether a referral to another type of care is indicated. The intake process has been so successful in children's clinics that it has been adapted to adult psychiatric clinics for purposes of screening, preliminary history taking, and explanation of the purpose and mechanics of treatment.

Although a social history is helpful in the understanding of almost any psychiatric illness, it is perhaps more essential in the understanding of childhood conditions, psychoses, character disorders, and marital problems than it is in the understanding of psychoneuroses or psychophysiological disorders.

When hospitalization is a possible plan, a home visit in advance provides valuable information concerning family dynamics and helps the patient make the transition from home to hospital. The social

worker customarily makes visits of this kind, although in some settings one of the psychiatric nurses who will be closely involved in the care of the patient is assigned this responsibility.

The psychiatric diagnosis may not be finally established before treatment begins. In some cases it is an on-going process, subject to constant modification and refinement as treatment progresses and new information becomes available. The social worker usually continues to see the relatives at intervals throughout the period of the patient's treatment.

Group interviews. As psychiatrists have become more concerned with understanding the patterns of interaction among family members as well as the histories of individual family members, they have become more interested in observing families in action. Interviews with the patient and his spouse or with the patient and his parents can give valuable clues about family interaction that are helpful not only in diagnosis but in treatment. When a reluctant family sees that both psychiatrist and social worker participate in the diagnostic interview, they may be more easily persuaded to participate later in active treatment. Furthermore, the casework material that is elicited in a family interview can be more effectively understood by the social worker if he has directly observed the interaction than if he hears about it later from the psychiatrist.

Suggested Cross References

The effects of the environment on behavior are further discussed in Area I, on community psychiatry. For more information regarding the importance of a patient's family on his functioning, see Fleck's section on psychiatry and the family (Section 4.3) in Area B, on the basic behavioral sciences.

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12.4 THE MEDICAL EXAMINATION IN PSYCHIATRIC ASSESSMENT

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When Dr. Robert Felix retired from the office of president of the American Psychiatric Association in May, 1962, he asked psychiatrists to remember how to use a stethoscope. The then director of the Na-

tional Institute of Mental Health was evidently making a plea to his colleagues in psychiatry to remember that they are physicians first and psychiatrists later. His remarks might also be taken to imply that the medical aspects of psychiatry are of major importance.

The well-trained psychiatrist is always aware of the possibility of structural illness in his patient. Any good psychiatric service includes a medical examination as a routine procedure. The same need is present in office practice if the patient is seen before a medical examination has been done.

In dealing with any patient, the psychiatrist can observe him in two ways: (1) the objective way—measuring his blood pressure—and (2) the subjective way—noting what he reports from introspection and trying to understand his display of emotion. The person who asks for help has the need to be understood both subjectively and objectively. The medical examination simply stresses the objective part of the psychiatrist's effort to arrive at a comprehensive diagnosis.

The Medical Examination

Several basic points regarding the medical examination itself are important: (1) Who should do it? (2) When should it be done? (3) How thorough should it be?

Who should do it? Many feel that the psychiatrist should avoid doing the examination if he intends to establish a psychotherapeutic relationship with the patient. They believe that the examination may introduce problems that could disturb this relationship. For example, the neurotic or psychotic patient may well misinterpret a rectal or vaginal examination as a sexual attack. For this reason and because the psychiatrist may have lost some of his medical skills in the process of his specialization, he may well decide to refer the patient routinely to a competent internist. After explaining the need for such expert help, it may be best to leave the choice of physician to the patient.

Of course, if the patient has been referred by a physician or a medical institution, the psychiatrist ought to inquire about the previous findings. This gives him the opportunity to establish a working relationship with the referring doctors, if one has not already been established, and to assess the medical examination in the light of his own findings.

When should it be done? The timing of the medical examination is important. It should be done as soon as possible after the initial psychiatric interview. In the case of the severely depressed patient, it is important to adopt appropriate and effective treatment as soon as possible in order to prevent the possible tragic consequences of delay. With the threat of suicide, treatment in most cases should not be delayed because of possible physical disease.

How thorough should it be? Occasionally, there may be strenuous objections to the medical examina-

tion on the part of the patient due to an irrational fear of physicians or prejudice against them. These feelings must be understood and respected. The presenting emotional symptom may be due to a disease that the patient is unconsciously attempting to hide from himself by denying its existence. After the psychiatrist establishes an empathic relationship with his patient, this reluctance can be tactfully discussed and cooperation for the examination secured. Exhaustive physical tests and special investigations should be performed only when strong indications are present, since they are in themselves a cause of doubt and despondency.

Differential Diagnosis

The accomplished physician in every field is aware that the central nervous system can react to either emotional stress or physical stress by producing similar symptoms. These symptoms can be physiological, psychological, or both. The difficulties in diagnosis arise when a systemic disease in its early stages produces predominant emotional symptoms. Such symptoms may be anxiety, depression, fatigue, lethargy, headache, irritability, dizziness, poor or excessive appetite, drowsiness, or insomnia. The psychiatrist, with his basic medical background as well as his psychiatric skills, is in a unique position to evaluate the findings of the medical examination and to formulate an integrated assessment of the patient.

Behavioral symptoms are often attributed to a psychogenic disorder when in fact they are due to an unrecognized systemic disease. Such a mistaken diagnosis is actually more apt to happen in these days, when the term "psychosomatic" is so popular and comes so readily to the mind of both doctors and laymen. It must be remembered that these behavioral signs and symptoms are manifested or elicited in infectious, toxic, metabolic, degenerative, neoplastic, and nutritional disorders and in some of the anemias.

Any illness that is difficult to identify or understand has a good chance of being labeled as solely psychiatric, particularly if the patient has some obvious emotional disturbance. However, diagnosis in both physical and mental disorders should be made not by exclusion but by positive findings. Trouble in differential diagnosis can result from an "either or" concept: Is the psyche at fault or the soma? In every case, both are involved in varying degrees, and psychopathology and tissue pathology may be present in the same individual. As an example, we note the high incidence of tuberculosis in alcoholism and in schizophrenia.

Exaggeration of personality traits. Personality traits that were present before are often exaggerated in the presence of somatic illness, and the choice of presenting symptom by the patient may be a clue to the underlying personality as well as to the illness. The following case illustrates this.

A 22-year-old single girl, a senior in a well-known woman's college, was seen first by her family physician and then by a psychiatrist. She had an attentive, quick, eager appearance. She had very labile emotions, given to laughing and crying easily. She had been a good student but lately had found it hard to concentrate. At times she seemed anxious and depressed, but at other times she appeared gay and energetic, attending parties and dancing into the early hours. Her appetite was good at all times and often ravenous.

The doctor who saw her initially made the diagnosis of emotional instability and suggested the possibility of the onset of a manic-depressive state. In taking her history, he had not inquired into her sensitivity to heat or cold or about any recent weight loss. He recorded a heart rate of 110 and a blood pressure of 140/70 but attributed this to nervousness. No mention was made of the size of her thyroid. The therapist to whom she was referred saw her three times weekly for 4 months.

After her weight had gone down from 112 pounds to 94 pounds, the psychiatrist's basic medical training asserted itself, and he became suspicious of an underlying thyrotoxicosis. He voiced his suspicion to the referring physician, who then sent her to an internist for a diagnosis. She was found to have an enlarged thyroid, and tests confirmed the presence of thyrotoxicosis.

The psychiatrist's dynamic formulation was that the patient had a conflict; she feared losing her mother and her mother's approval, and then she rebelled against these fears by acting out. It was postulated that she herself was afraid of becoming a mother and accepting a female role.

In order for this correct dynamic formulation to be complete and lead to rational treatment, it had to account for the physiological intervening variable, which was crucial in determining the clinical picture: the overactive thyroid. The key to the complete diagnosis was the discovery of enlargement of the thyroid by careful medical examination and confirmation by laboratory tests. Treatment by radioactive iodine eventually restored the patient to her former state of health and enabled her to complete her college career. Perhaps further psychotherapy was needed, but she did not seek it.

Depression-producing diseases. The insidious onset of malignant, metabolic, or degenerative diseases often results in depression. This has been noted as an early manifestation in a variety of illnesses, particularly those involving the liver. Clinicians have often seen depression in hepatitis and early cirrhosis of the liver. Carcinoma of the pancreas has, on occasion, been particularly hard to diagnose, for psychiatric manifestations tend to cloud the picture in a condition that is so often difficult to diagnose anyway because of the lack of objective signs early in the illness. Adding to the difficulty is the fact that a patient often tends to relate his vague symptoms to psychological factors, especially if he has a prior history of depression.

A 62-year-old married dentist with a good practice became depressed after the death of a favorite child, a married daughter, from carcinoma of the breast. His period of mourning seemed endless. He lost interest in his practice, seemed to lose interest in his wife and remaining daughter, and complained of severe headaches and back pain of gradually increasing severity.

He was examined over the course of 2 years by his family physician, two neurologists, and an orthopedist and was finally referred to a psychiatrist after a thorough work-up in a reputable hospital failed to reveal any structural lesions to account for his symptoms.

His wife was very unhappy because of the change in her husband from an energetic, happy man to a sad, pain-ridden,

apathetic invalid. She was not satisfied with the treatment he had received and finally had him see another internist. The new physician had treated a patient who had depression, backache in the lower dorsal region, and a complete change in personality; that patient had turned out to have a nonobstructing carcinoma of the head of the pancreas.

As a result, the dentist was again admitted to a hospital. The correct diagnosis all too soon became evident. He had lost 30 pounds. He had both abdominal and back pain plus jaundice. An exploratory laparotomy revealed carcinoma of the head of the pancreas with widespread metastases to the liver.

Tests directed toward pancreatic function, examination of duodenal content, and liver scanning for metastases might have made for earlier diagnosis if the possibility of carcinoma of the pancreas had been entertained, thus sparing the patient much unnecessary expenditure of time and money and the shame of regarding himself as a neurotic. The errors made in diagnosis in this case were excusable. Severe depressions in this age group are common, especially in reaction to an object loss. Depressions with somatic symptoms frequently occur. It is the combination of depression plus persistent back pain in the lower dorsal or upper lumbar region that might have aroused the suspicion that there was a lesion in the pancreas and led to its diagnosis.

It may be noted that, in many instances involving disease in an early stage, a routine physical checkup will fail to reveal the pathology. The psychiatrist must remain alert to the possibility of underlying organic illness, especially if psychiatric considerations make an exclusive psychogenic diagnosis unlikely.

Psychosis-producing disease. Toxic psychosis associated with pancreatitis has been studied in alcoholics by Schuster and Iber. The question was whether the symptoms of delirium tremens were due to alcohol withdrawal or to an accompanying illness. Inasmuch as the clinical syndrome of acute hallucinatory psychosis exhibited by 53 per cent of a group of 30 patients with pancreatitis was indistinguishable from delirium tremens, this group was compared with a second group of alcoholics with pneumonia. Only 4 per cent of this group evidenced psychosis, in spite of the fact that fever was higher and the acute illness more severe. The results not only emphasize the frequent occurrence of psychosis in connection with pancreatitis but also suggest that the psychosis is not the result of a nonspecific stress coupled with a background of alcoholism but rather arises from a specific somatic (probably biochemical) disorder in the pancreas. It is postulated that depression may arise from a similar, as yet undetermined, biochemical change in that organ.

Fatigue-producing diseases. Fatigue, which is so often due to psychogenic factors, merits thorough medical investigation. A frequent complaint, fatigue is best defined as a sense of weariness or a lack of feeling of well-being. Other terms with similar connotations are listlessness, lack of energy, lassitude, and weakness. An attempt should be made to distinguish between fatigue and true muscle weakness or asthenia.

The majority of patients who complain of fatigue have no demonstrable abnormality on physical or laboratory examination. There are frequently associ-

ated symptoms of nervousness, irritability, and depression. The fatigue accompanying depression is usually present in the morning and represents a lack of motivation to get going for the day. There is often emotional conflict present in the home or place of employment. These patients are often classified as having reactive depressions or anxiety reactions. Some are called hysterical.

Chronic infectious diseases are the most frequent somatic causes of fatigue. Fatigue is a common complaint early in tuberculosis, subacute bacterial endocarditis, disseminated lupus erythematosus, infectious mononucleosis, infectious hepatitis, chronic pyelonephritis, and brucellosis. Early recognition may be difficult; it is helpful to remember that in these diseases the weariness appears after exertion and usually in the afternoon or evening.

Anemic states are also common causes of fatigue, and the hemoglobin level correlates with the severity of the symptom.

Metabolic causes include hypopituitarism due to the secondary effect on the thyroid and adrenal. Addison's disease and primary hypothyroidism are also causes. Less commonly, hyperfunction of the adrenal, as in Cushing's disease, will cause the feeling. Diabetes mellitus may present fatigue as one of the complaints.

Toxic causes of fatigue are associated with psychological and physical dependency on alcohol, barbiturates, opium and its derivatives, and the large variety of sedatives now widely misused and abused. Bromism, now rare, was once a common cause. Uremic states may also present themselves as fatigue.

The following case, in which fatigue was a prominent symptom, illustrates how a psychiatrist dealt correctly with this problem.

A 26-year-old married secretary came to a psychiatrist because of complaints of fatigue, nervousness, insomnia, depression, and a loss of sexual interest, which plagued her husband more than it did the patient. The psychiatrist referred her to an internist for a thorough medical examination, which involved a painstaking medical history, physical examination, and routine laboratory tests, including a red blood count, hemoglobin, and hematocrit.

The internist determined that she was suffering from an anemia due to intermittent blood loss from bleeding hemorrhoids. For some reason, the patient had paid scant attention to her bowel movements and the occasional discoloration by bright blood. She recalled these symptoms only when specifically questioned about them. Her hemoglobin was found to be 7 gm., and her hematocrit was 30. Surgery and administration of iron for several months renewed her vitality and her interest in work and love.

Suggested Cross References

The behavioral manifestations of organic illness that were mentioned in this section are similar or identical to psychopathological phenomena of psychological origin. These are described in detail in Linn's chapter on psychiatric symptoms (Chapter 13). Sands' section on the psychiatric examination (Section 11.2)

contains a discussion of the methods used to elicit such symptoms.

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Chapter 13

Clinical Manifestations of Psychiatric Disorders

13.1 • • •

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The signs and symptoms of illness, properly collated, form a basis for diagnosis, prognosis, prevention, and treatment.

It used to be said that the best diagnosis is one based on knowledge of etiology. The cure of malaria, for example, depends on chemical destruction of the causative protozoa, and prevention of the disease depends on the elimination of the vector, the anopheles mosquito. On closer scrutiny, even this simple example reveals complexities. South American Indians cured malaria with cinchona bark long before they knew what caused it. To complicate this matter, patients with sickle cell anemia develop immunity to malaria.

Or, consider another example. The tubercle bacillus is surely the cause of active tuberculosis in some, and yet, with the formation of a harmless fibrotic nodule, it can provide lasting immunity in others. Thus, the boundary line between active disease on the one hand and healthy adaptations on the other is not always easily identified. There is, in effect, a continuum between the patient with active disease on the one hand and the healthy, though infected, individual on the other.

The life process in health and disease consists of an ongoing series of adaptations. Depending on their effectiveness, an individual may be healthy and functioning with unimpaired efficiency, or he may be mortally affected by stress, or he may display a number of intermediate reactive patterns representing disease states that are, in effect, the continuations of life in the face of handicaps. Thus, a symptom or even a complex disease process in its entirety may be viewed as a reaction pattern having adaptational significance.

The clinical manifestations of psychiatric disorder are the outcome of complex interacting forces—biological, sociocultural, and psychological (see Figure 1).

Clinical manifestations of psychiatric disorder are essentially expressions of a breakdown in adaptational process. Adaptation from a psychiatric point of view refers to a series of changes that occur within the individual, as a result of which he fulfills his wishes and needs in relation to his personal satisfactions and the realities of his environment. Breakdowns in this process are expressed primarily as abnormalities of thought, feeling, and behavior.

The fact that these abnormalities are the outgrowth of several factors acting in concert has been expressed in the past by such concepts as psychosocial and psychobiological. To express the thesis embodied in Figure 1, one should say that the clinical manifestations of psychiatric disorders are in all instances biopsychosocial. The weight of the biological, psychological, and sociological factors differs from case to case and may vary from day to day in the same case. An accurate prognosis and a rational treatment plan depend on a consideration of all these factors.)

This multifactorial point of view is not embodied in the fixed nosological entities of traditional clinical psychiatry. This section, however, is concerned with each symptom as an adaptation, from essentially normal behavior through a variety of abnormal behavior patterns. It will explore how the patient thinks, feels, and acts; the degree to which he is alert and oriented; how well he observes and remembers. It will discuss his personal eccentricities and the ways he relates to other people in his family, at work, at play, and in the community.

For an understanding of symptom formation, certain additional concepts are useful. For example, there are primary symptoms and secondary symptoms. In schizophrenia, a primary symptom is an irrational fear of others, with withdrawal of interest and activity from the outer world. To reduce his fear further, the patient elaborates a series of rationalizations about the surrounding world; these rationalizations constitute the secondary symptoms of schizophrenia. These become his delusions and hallucinations. As a result of secondary symptom formation, the patient

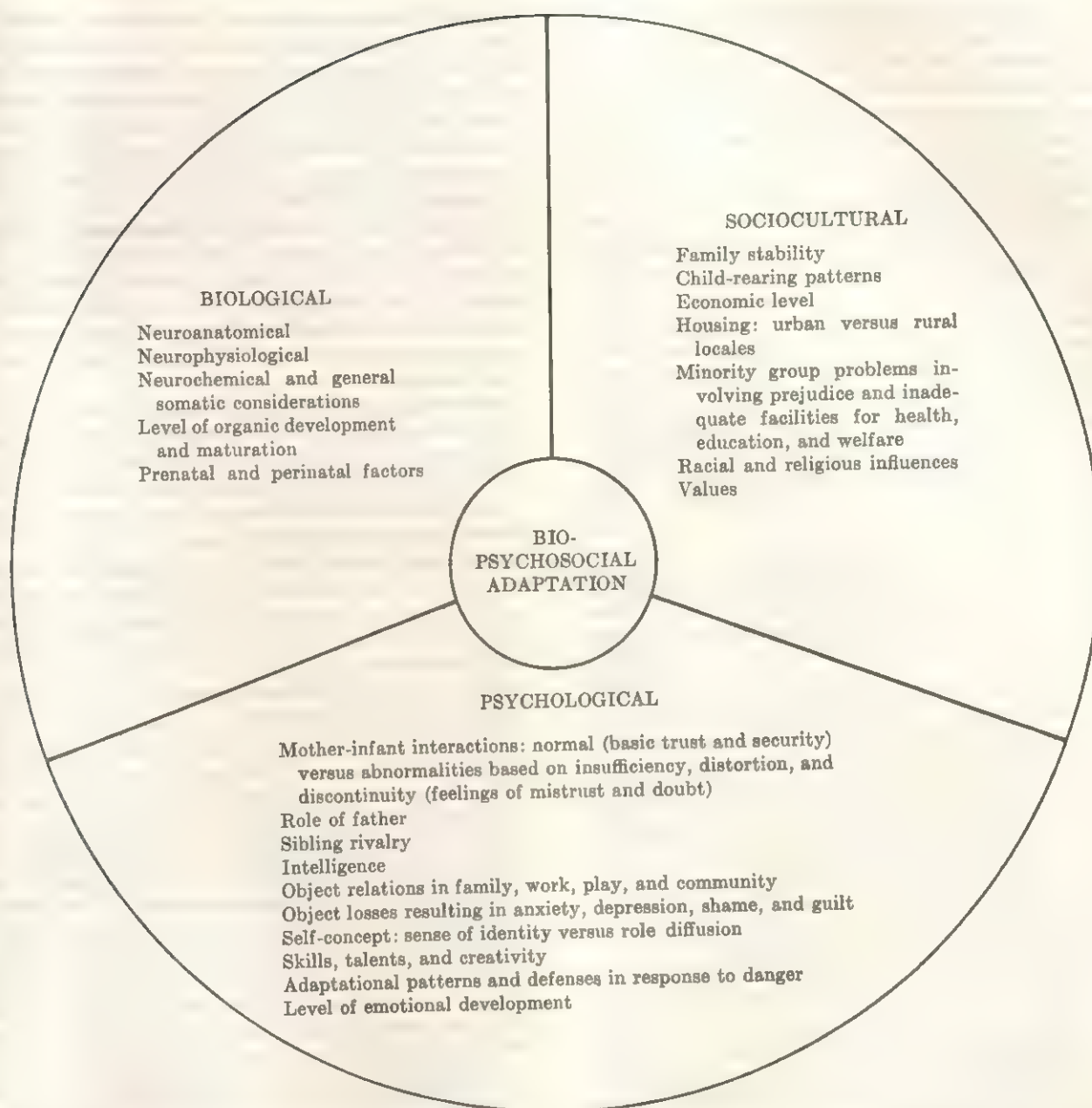


FIGURE 1. Biological, sociocultural, and psychological forces. All these forces interact and affect the psychiatric health of the individual. (Modified after Richmond, J. B., and Lustman, S. L. *J. Med. Educ.*, 29: 23, 1954.)

becomes less fearful of the world, albeit a world that is delusionally distorted.

There are also principal symptoms and accessory symptoms. In a depressed patient, a principal symptom is sadness, with loss of appetite. The accessory symptom may be a peripheral neuropathy based on nutritional deficiency.

There are deficit symptoms and release symptoms. For example, cortical injury may result in a circumscribed aphasic language disorder, which is a deficit symptom. However, if the cortical injury is severe enough, there may be widespread personality changes, which may be interpreted as release phenomena.

Disturbances in Thinking

Normal thought. Thought, or the cognitive experience, includes the processes of judgment, comprehension, memory, and reasoning. It is to be distinguished from conation, which reflects the will or the basic strivings of an individual, as demonstrated by his motoric action and behavior. Normal rational thinking consists of a goal-directed flow of ideas, symbols, and associations initiated by a problem or task and leading to a reality-oriented conclusion.

An individual's flow of ideas becomes available for clinical scrutiny when it is verbalized in speech or

writing. When, in the verbal communication of one's thoughts, a logical sequence of words, sentences, and ideas is followed, the associations are normal. Progression of thought involves the rate and manner of associations and is described as the stream of thought or stream of talk. In thinking, the communicator may be reacting to specific external stimuli or to his physical state, which is a source of internal stimuli. His reaction, in turn, modifies the effect of external stimuli. Or he may be reacting to certain conceptual goals that influence what he says and what he consciously omits.

Normally, the attentive listener is able to follow logically the verbal and ideational sequences of speech. In actuality, a perfectly logical associative flow is rarely observed. Much more commonly, speech sequences are interrupted by the forgetting of a familiar name or fact, a slip of the tongue, a period of relative incoherence during which the thread of the thought is momentarily lost, or a digression that is irrelevant to the main topic.

These lapses from logic (*parapraxes*), which are part of normal thinking, were described by Freud in the *Psychopathology of Everyday Life* as follows: "Slips of the tongue are the best examples of conflicts between strivings for discharge and opposing forces. Some tendency that has been warded off either definitely by repression or by a wish not to express it here and now finds a distorted expression counter to the opposing conscious will." The essence of the *parapraxis*, then, is that it constitutes a compromise or the solution of a problem arising from conflicting psychological drives.

A slip of the tongue (*lapsus linguae*) as an expression of intrapsychic conflict is illustrated by the following. A newspaper editor involved in a feud with the local law enforcement agency stated that in an article that "Mr. X is a *defective* in the police force." An outraged response from Mr. X called forth a brief apology in the next day's paper with the statement, "What I meant to say was that Mr. X is a detective in our police *farce*."

Dreaming represents another normal setting in which lapses from logical thought and expression occur. Although dreams often seem bizarre, meaningless, and illogical, Freud demonstrated that a characteristic organization or pattern of thinking can be identified within the dream. He used the term *primary process* to signify that this pattern of thinking is primary, in the chronological sense that it occurs first in the developmental process. In the primary process, there is a tendency to concreteness, condensation of separate psychological items into one, displacement of feelings from one item to another, and a disregard for time sequences, so that items that are past and items that are present are treated as if they were occurring simultaneously. There is also a considerable use of metaphor and symbolism; that is, one object or idea unconsciously comes to stand for another. According to psychoanalytic theory, all these departures from logical thinking avoid painful feelings and fulfill forbidden pleasures.

Free association may be cited as an example of an artificially induced disturbance in association. In psychoanalytic psychotherapy the patient is requested to

express spontaneously every thought that enters his mind without selection. In effect, he is encouraged to suspend the demands of logic and reality, at least on a purely verbal level, for the duration of the psychotherapeutic session. By this device the normal associative stream is deliberately disrupted and the flow of associations assumes qualities of unpredictability, strangeness, and disconnection with reality.

Disturbances of thought or association. The flow of thought may become seemingly haphazard, purposeless, illogical, confused, incorrect, abrupt, and bizarre. This phenomenon is most conspicuous in schizophrenia. In fact, Bleuler regarded disturbance in association as one of the fundamental symptoms of that disease.

Disturbances in form of thinking. Under this category are included all deviations from rational, logical, goal-directed thinking. Many terms have been used to describe mental activity that deviates from the laws of logic and experience and that fails to take the facts of reality into consideration.

The term *dereism*, or *dereistic thinking*, emphasizes the disconnections that have taken place between the patient's mental processes and his ongoing actual experiences. The mental processes do not follow reality, logic, or experience.

The term *autism* connotes that the forces that distort the flow of associations are derived from within the patient and are in the nature of day-dreams, fantasies, delusions, and hallucinations. Bleuler first coined the term *autism* and later *dereism*, and he used them interchangeably. *Autism* can occur as a character trait, referring to individuals who are bashful, shy, retiring, shut in, inaccessible, or introverted. In its extreme form, *autism* constitutes one of the primary symptoms of schizophrenia. There are two main characteristics of autistic thinking. First, it is less subject to correction by reality than is normal thinking; second, it is much less likely to be followed by action than is normal thinking because it gratifies pathological needs having no relationship to reality.

Early infantile autism is related to *autism* in general by its prevailing quality of extreme withdrawal and absorption with inner thoughts. More specifically, it refers to a form of childhood schizophrenia that is characterized by profound withdrawal and lack of contact from the first years of life, an obsessive demand for sameness in the environment, personalized use of language that is ineffective for communication, and a preference for relationships with inanimate objects. Kanner, who introduced the term, regarded it as a form of behavior resulting from the mother's inability to create a climate of emotional warmth.

Disturbances in stream of thought. Certain abnormalities may be observed in the manner and rate of associative processes.

Neologism refers to the coinage of new words, usually by condensing several other words, each of which have special meaning for the patient. These may occur

within the limits of normal conversation. When used with great frequency in an essentially humorless context, they are characteristic of schizophrenia.

Word salad is a type of speech in which neologisms or incoherent words or phrases that lack logical meaning are used exclusively and in sequence. It is heard most frequently in severe forms of schizophrenia.

Blocking consists of sudden cessations in the flow of thought or speech in the midst of a sentence. Commonly, the patient is unable to explain the reason for the interruption, which is usually due to unconscious emotional factors. When, with conscious effort, the patient endeavors to continue the thought, new ideas may crop up, which neither the patient nor the observer can bring into any connection with the previous stream of thought. The blanking out of the flow of thought, the effort to renew it, and the inability to account for the interruption create an unpleasant feeling within the patient. Blocking is also known as thought deprivation. Although the phenomenon occurs intermittently in normal individuals and in a variety of diagnostic categories, it occurs most often among schizophrenic patients.

The withdrawal from object relations is the first step in the schizophrenic process. As a consequence of withdrawal, the flow of speech may be slowed up or interrupted intermittently in response to inner thoughts and feelings that the patient does not or cannot reveal to the examiner. As he recedes psychologically ever more deeply from the real world, he loses his capacity for abstraction, and his language becomes more concrete. Its logical structure assumes increasingly the patterns of thinking characteristic of childhood or hypothesized for primitive man (archaic speech). He is apt to speak in highly personal symbolism, unintelligible to the examiner or perhaps recognizable only because he uses universal symbols that are understandable cross-culturally. The logical lapses in the associative stream encountered in normal speech as a transient phenomenon may occur more frequently or even constantly in the speech of the schizophrenic patient.

The retreat from the real world is presumed to take place because the world has become objectionable and painful to the patient. As he withdraws his interest (cathexis, libido) from the real world, he may express feelings of emptiness, meaninglessness, and boredom. Having, in a sense, lost the world, he may feel that the world no longer exists (world destruction fantasies), and these ideas may contribute to the flow of his associations.

Alongside the primary drive to withdraw from the real world, there is present in every schizophrenic patient some degree of drive to recontact the world. The latter forms the basis for the secondary or restitutional symptoms of schizophrenia, for example, delusions and hallucinations. The patient now speaks rapidly and animatedly, even though the flow of his speech remains essentially unintelligible to the untrained listener. Thus, the speed of the association stream tends to be reduced during the preliminary stage of withdrawal in schizophrenia and to be speeded up during the restitutional phase, when the schizophrenic is making efforts to recontact the world. However, even in this phase, the intrusion of auditory and visual hallucinations may be abrupt and intermittent. These hallucinations are responsible for the seemingly haphazard and unpredictable nature of the thought disturbance.

Magical thinking, in psychiatry, refers to the belief that specific thoughts, verbalizations, associations, gestures, or postures can in some mystical manner

lead to the fulfillment of certain unreal wishes or to the warding off of certain evils. This type of thinking may occur normally in dreams and in superstitions that are appropriate to a given sociocultural setting. Very young children are particularly prone to this form of thinking as a consequence of their limited understanding of causality. It is a prominent feature in the thinking of obsessive-compulsive patients. It achieves its most extreme expression in the schizophrenic patient.

In his attempt to mollify a threatening world, the schizophrenic patient may use certain words or gestures to control the evil forces. For example, schizophrenic patients may at times believe they are carrying out the most significant work in the universe when actually they are standing rigidly in catatonic stupor.

Intellectualization may be described as a state of brooding or anxious pondering about abstract, theoretical, or philosophical issues. It is a flight into intellectual concepts and words that are emotionally neutral in order to avoid objectionable feelings or impulses. It is commonly used by adolescents in reaction to the powerful sexual impulses that characteristically emerge at this time. It is also seen in obsessive-compulsive neurosis and as a trait of character in certain individuals.

For example, a patient may torment himself with questions like: "What existed before the creation of the world?" "Why is God a man?" "How is immaculate conception possible?" Such questions, couched in religious terms, often conceal thinly disguised sexual issues.

Circumstantiality is a disorder of associations in which too many associated ideas come into consciousness because of too little selective suppression. The circumstantial patient eventually reaches his goal after many digressions. Circumstantiality is to be distinguished from tangential thinking, in which the goal is never reached. In circumstantiality, excessive detail is employed to describe simple events, at times to an absurd or bizarre degree. It may occur as a character trait. Its extreme forms occur in schizophrenia and organic brain disease. Like intellectualization, it often represents a way of avoiding objectionable impulses and feelings.

For example, in response to the question, "Why did you come to the clinic?" a patient responded: "When I got up this morning, I showered and dressed. I was angry at my landlord for not fixing the faucet in my bathroom. I tried to get him on the phone. He wouldn't talk to me. I'll call my lawyer. You see, my rent is supposed to be paid by the Department of Welfare, but they're so nasty. [But why did you come to the clinic?] I'm coming to that, Doctor. You see, they don't care about an upright citizen. I did so much for my community. No one can say I wasn't a hard worker, etc." After repeated questioning, she finally stated she was worried about being constipated.

For the psychiatrist whose task it is to collect much data in little time, the circumstantial patient presents a special problem. A direct verbal assault on this mechanism of defense is apt to be frustrating and futile. It is more fruitful to recognize the underlying anxiety and to relieve it with appropriate psychotherapeutic measures.

A cardiologist complained that many patients exhausted him with trivial details about minor noncardiac complaints whenever he queried them about their heart conditions. He found this behavior particularly exasperating, since he was unable to influence it by cajolery or stern remonstrations. It was explained to him that these patients are fearful and are seeking to postpone as long as possible confronting what they fear most, namely, the possibility of cardiac invalidism or death. By prefacing his crisp inquiry about the patient's cardiac symptoms with a few words of reassurance, he found that such patients very quickly became more cooperative.

Stereotypy is the constant repetition of any speech or action. When this expresses itself as the continuous reiteration of a specific phrase, it is called verbig-eration. It may also occur in the form of writing a given word or phrase over and over again, and it is most often seen in schizophrenia.

Perseveration is the involuntary and morbid repetition of a specific word or idea, which persists in spite of the patient's efforts to move on to a new idea. It occurs particularly following injury to the speech centers of the brain.

For example, a patient with a left hemiplegia following a stroke named a key correctly but then called every other object presented to her during that period of examination a key.

When a patient gives an answer that is in harmony with and appropriate to the question, his answer is said to be relevant. If it is out of harmony, it is said to be irrelevant.

Incoherence is the result of disorderly thinking; thoughts do not follow in logical sequence. Under such circumstances the patient's verbalizations cannot be understood by the listener. A milder manifestation of incoherence is known as scattering.

The rate or speed of verbal production may be accelerated or slowed down. Volubility, or logorhea, is copious speech that may occur more or less within the limits of normal and that is coherent and logical.

Pressure of speech is voluble speech that is difficult for the listener to interrupt. It usually occurs in the context of psychoneurosis as a device for warding off anxiety-provoking questions or as a device for clinging in settings of depression. It may also be a precursor of flight of ideas.

Flight of ideas is a nearly continuous, high speed, flow of speech; the patient leaps rapidly from one topic to another, each topic being more or less meaningfully related to the preceding topic or to adventitious environmental stimuli, but progression of thought is illogical, and the goal is never reached. It is characteristic of acute manic states; hence it is most common in the manic phase of manic-depressive psychosis. The speed and cleverness with which the manic patient leaps from one idea to another can be dazzling. From a qualitative point of view, the manic patient's associations are not strange or absurd. In fact, the connections with identifiable events in the environment are often understandable and even amusing. Puns and witticisms are common.

Clang associations represent a pattern of associa-

tive disturbance in which the mere sound of a word rather than its meaning touches off a new train of thought. It occurs most often in the course of flight of ideas. It may result in a series of punning and rhyming nonsensical associations.

The flight of ideas of a manic patient must be differentiated from the disturbance of association displayed in the rapid speech of a schizophrenic patient in a state of catatonic excitement. The shifts in schizophrenic talk are confused by the indiscriminate overinclusion of material belonging to both shared social contexts and private fantasy contexts. It is the fact that the schizophrenic patient draws largely on an autistic reservoir for his ideas and verbal symbols that makes his productions so strange, as contrasted to those of the manic patient.

In spite of these qualitative differences between the associative stream of the manic patient and the catatonic-excited schizophrenic patient, the absence of a direction or goal for the associative stream is apparent and outstanding in both instances. Both represent a form of flight from the pain of some intolerable external reality, even though one draws on an inner and essentially inaccessible reservoir and the other on an outer and socially evident reservoir for the specific words and ideas that make up the associative flow.

For example, for all the appearance of joy and inner freedom that the manic patient displays, the careful observer can detect the sham. With firm reality-testing intervention, he can break through the mask, even if only for a moment, and reduce the manic patient to sobriety and even to tears.

Furthermore, in almost all clinical instances the differentiation between dependence on so-called inner versus outer resources for the associative flow is not a sharp one. More frequently, the sources of material are mixed, and a differential diagnosis is impossible. Such disorders are called schizo-affective.

In depressed states the flow of association is slowed up, not intermittently in response to hallucinatory or delusional intrusions, as in blocking, but as an ongoing consequence of sadness. The patient thinks and speaks slowly and with great effort. In contrast to the manic patient, he is relatively unresponsive to his environment, and the range of his thoughts is sharply limited. Patients in whom the stream of associations is slowed up or shows retardation may complain of difficulty in thinking. This may be due to difficulty in concentrating on one topic because attention is obsessively preempted by another topic or because the actual flow of associations is sluggish. This difficulty is to be differentiated from mutism, where for conscious or unconscious reasons there is a refusal to speak.

Foreign language patients who are depressed or frightened fall back on their mother tongue and seem incapable of speaking English. As such patients improve, they often surprise their physicians with the amount that they do understand and with the degree to which they can make themselves understood.

It is not enough simply to know a foreign patient's language to establish contact with him. It is also necessary to help him overcome his distrust of the foreign examiner. As this is achieved psychotherapeutically, the patient usually prefers to communicate in the prevailing language of the community.

Brain-injured patients characteristically display

slowing of speech and difficulty with speech, as in aphasia.

Aphasia is a general term for all disturbances of language and communication due to brain lesions but not as the result of faulty innervation of the speech muscles, involvement of the organs of articulation, or general mental or intellectual deficiency. Aphasia results in an inability to pronounce words and names and to indicate the use of common objects. The aphasic disorder occurs following lesions that are essentially localized in the speech centers in the dominant temporal lobe. Aphasias can be divided into motor (or expressive) forms and sensory (or receptive) forms. In the former, understanding is intact, but speech is lost; in the latter, comprehension and object use are lost. Speech impairments due to aphasia typically combine both motor and sensory elements. The difficulties may be on a purely verbal level and involve a disability in the formulation of individual words.

Nominal (amnesic) aphasia represents a difficulty in finding the right name for an object, even though the patient retains the ability to use the object and to describe what it is used for, often through various circumlocutions. It is closely related to the familiar experience within the limits of normal behavior of not being able to recall the name of a person or object at a time when one is able to describe many details concerning the object or person in question. In its mildest forms it may be seen in fatigue, anxiety, and alcoholic intoxication. It is more marked in senile dementia and in brain lesions involving the temporal lobe of the dominant hemisphere.

Syntactical aphasia is the inability to arrange words in proper sequence. The subject is usually aware that the word arrangement is wrong, even though he is helpless to correct it.

Semantic aphasia is the inability to recognize the full significance of words. It is related to a loss in the capacity for abstract thinking.

Jargon aphasia is a type of aphasia in which speech is reduced to a limited group of unintelligible neologisms, which the subject uses in a stereotyped fashion.

In aphasic disorders, the patient is usually alert. He is self-conscious about his errors and for this reason is often reluctant to speak. This is particularly true of patients whose premorbid personality included a great concern for orderliness and an inability to tolerate imperfections. Such aphasic patients tend to be depressed and withdrawn.

Catastrophic behavior is the term used by Goldstein to characterize the acute reactions of agitation, panic, and intensification of neurological defect that brain-injured patients show when they are pushed into performing simple tasks they can no longer do. Perseveration, mentioned earlier, is a device for warding off catastrophic behavior by clinging to a specific response with which the patient feels comfortable.

Disturbances in content of thought. Here again, the flow of ideas becomes available for clinical scru-

tiny only when verbalized in speech or in writing. And yet, certain types of thought content are essentially nonverbal.

Nonverbal thought content is encountered primarily in certain states of ecstasy or mysticism. In otherwise normal individuals, these feelings may occur fleetingly during the induction phase of general anesthesia. They may be chemically induced in addicts. They may also occur transiently in schizophrenia. In each instance the patient emphasizes that his thoughts are essentially inexpressible.

With the appearance of language in the developmental process, thought content of increasing complexity makes its appearance.

From a developmental point of view, concrete thinking, which involves specific objects or creatures, things, and phenomena, as distinguished from qualities or other attributes one can ascribe only to classes of objects, creatures, etc., appears first in early childhood. The capacity for abstract thinking, characterized by symbols that cannot be directly perceived through the senses, develops later, but probably earlier than was previously suspected. However, considerable verbal skill is needed to communicate abstract ideas; therefore, in their overt expressions at least, abstract thinking does not appear definitely until adolescence; it appears increasingly thereafter as verbal skills are developed.

In schizophrenia, verbal production often tends toward concreteness. Psychological tests devised to measure abstract thinking, such as the ability to interpret standard proverbs, show impairment in many schizophrenic patients. Goldstein emphasized the role of impaired abstract thinking in the language impairments of brain-injured patients.

A fantasy is a mental representation of a scene or occurrence that is recognized as unreal but is either expected or hoped for. There are two types of fantasy: creative fantasy, which prepares for some later action, and day-dreaming fantasy, which is the refuge for wishes that cannot be fulfilled.

Creative fantasy may start in inspirational moments that are deeply rooted in unconscious factors. However, it is then elaborated systematically and is translated into a realistic program of action.

The day-dream as a refuge for wishes that cannot be fulfilled is an almost self-explanatory category. It tends to be diminished with psychological and biological maturation. Increasingly, day-dreaming is replaced by direct sexual satisfaction with an appropriate love object and by sublimation at work and at play. Sublimation is the substitution of satisfying guilt-free and anxiety-free activities for those that previously generated guilt and anxiety.

To some extent day-dreaming persists within normal limits throughout life. However, in autistic characters and in borderline psychotic states, day-dreaming may preempt so much time and energy that it seriously impairs the individual's capacity for normal relationships and responsibilities.

Pseudologia fantastica differs from normal day-dreaming in that the subject believes in the reality of his fantasies intermittently and for long enough intervals of time to act on them.

Patients displaying this symptom are often referred to as pathological liars. They often outrage the moral sensibilities of the victims of their fantasies and commonly provoke punitive responses. These responses are reinforced by the fact that

the patient acknowledges the falsehood of his statements when confronted with conflicting evidence. However, these patients have a compulsive need to act out these fantasies repeatedly. This is apparently a response to a pathological need for self-deception, with a resistance to correction. It is often difficult to ascertain whether the untruths are expressed with unconscious intent to deceive or as part of a pathological and even delusional distortion of reality.

The imposter is a type of pathological liar who seeks to gain some advantage by imposing on others various lies about his attainments, social position, or worldly possessions.

The imposter is obviously suffering from a severe identity problem. He is attempting to foist a false identity on society, but perhaps of greater significance is his need to reject his real identity for unconscious neurotic reasons. Such individuals are often quite gifted and are often capable of success in the real world, but an unconscious fear of success causes them to mispend their talents. They tend to be self-defeating in their dramatizations and usually end up with humiliation and punishment.

A **phobia** is an exaggerated and invariably pathological dread of some specific type of stimulus or situation. Table I presents a list of the most common types. Many other phobias have been described, and they are probably limitless in number.

The basic mechanism involved in a phobia is a reaction of anxiety in a setting in which a person would normally experience sexual excitement or rage. Various disturbances in thought content represent efforts to diminish this anxiety. At times the associative connections seem relatively direct. A forbidden wish to suck, bite, or devour, for example, may result in a fear of eating specific foods or a fear of eating in specific places. A fear of loss of control of violent impulses may lead to a fear of all scenes of violence. A fear of being cut or stabbed may lead to a fear of contact with sharp instruments. In other instances the associative connections have become obscured. A

fear of walking on the street (agoraphobia), for example, may be based on unconscious prostitution fantasies. The sexual excitement and the fear of punishment connected with the latter may result in palpitation and breathlessness, which then presents clinically as a cardiac neurosis. Most often, the phobia for which the patient seeks treatment is like the manifest content of a dream. Behind the expressed fear is a chain of other fears. And entwined in the very fears supposed to guard against forbidden impulses are thoughts, feelings, and actions that secretly fulfill those very forbidden impulses (return of the repressed).

For example, a pretty young married woman, mother of a daughter aged five, became pregnant. She was aborted illegally at her husband's behest. When the abortionist let her see the bottle containing the curetted fetal tissue, she experienced a sharp pain in her eyes. Thereafter, she was afraid to go out into the street because of a fear that a foreign body would fly into her eyes. Psychoanalysis showed that this was a displacement from below upward. That is, her eye fear concealed a fear that she would be impregnated as a result of prostitution fantasies. The latter were the result of rage against her husband (whom, incidentally, she identified with her punitive mother) for not permitting her to have a baby. When she did venture out into the street (and she did so very often), she would experience a foreign body sensation in her eye, which would send her flying in a panic to her family doctor, who lived nearby. The family doctor's search for the foreign body was regularly associated with much fluttering of eyelashes, fearful breathing and struggling, all of which resulted in her seducing her doctor into sexual play, consisting mostly of kissing and caressing. Since she unconsciously identified her family doctor with her father, this sex play represented a revival of her childhood attachment to her overly demonstrative father. As a result, it aroused much guilt and anxiety, as well as sexual excitement.

An **obsession** is the pathological presence of a persistent and irresistible thought, feeling, or impulse that cannot be eliminated from consciousness by any logical effort. Obsessions may be experienced within normal limits as transitory thoughts that do not interfere substantially with the adequate performance of one's mental functions and that can be minimized or eliminated by actively concentrating on other objects. Obsessions as symptoms of obsessive-compulsive neurosis, on the other hand, control and plague the individual more or less constantly, compelling him to carry out specific ritualized or stereotyped acts, known as compulsions, in order to minimize their distressing effects. There are intellectual obsessions, in which the individual is constantly preoccupied with one or more pseudophilosophical questions. There are also obsessive fears and doubts that overlap the phobias.

Whereas the phobic or hysteric patient dramatizes fantasies in the form of relatively simple fears and bodily sensations, the fantasies of the obsessional neurotic are converted into defenses that are largely verbal, intellectual, and complex. Words and thoughts are invested with unrealistic power. An inadvertent thought or comment, it is imagined, may cause great harm to a loved one or punishment to one's self. By the same token, a given verbal formula may ward off danger to self and to others. Since words are so powerful, it becomes necessary to choose one's words carefully. And for the obsessional neurotic, no matter how carefully he chooses his words, he is never sure that he chose carefully enough, and so he repeats himself with verbal formulae of ever increasing complexity. Behind this preoccupation with seemingly magical but actually trivial words is concealed an intrapsychic struggle involving erotic and ag-

TABLE I
Phobias*

Phobia	Dread of	Phobia	Dread of
Acro-	High places	Nycto-	Darkness, night
Agora-	Open places	Patho- (noso-)	Disease, suffering
Algo-	Pain	Peccato-	Sinning
Astra- (as- trapo-)	Thunder and lightning	Phono-	Speaking aloud
Claustro-	Closed (confined) places	Photo-	Strong light
Copro-	Excreta	Sito-	Eating
Hemato-	Sight of blood	Tapho-	Being buried alive
Hydro-	Water	Thanato-	Death
Lalo- (glosso-)	Speaking	Toxo-	Being poisoned
Myso-	Dirt, contamination	Xeno-	Strangers
Necro-	Dead bodies	Zoo-	Animals

* Modified from Warren, H. C. *Dictionary of Psychology*. Houghton Mifflin, New York, 1934.

gressive impulses in every conceivable combination of activity and passivity, of masculinity and femininity, of piety and blasphemy, of obedience and rebellion. Such verbal gymnastics demand a great mastery of language. The latter, in turn, requires considerable intelligence. Conversely, whenever verbal skills are limited because of limitations of intelligence or education, obsessional defenses usually do not appear.

It is not at all rare for patients with phobias and obsessions to function in an outwardly normal fashion and to maintain full awareness of the irrational nature of their thoughts; that is, the symptoms are ego-alien or ego-dystonic (repugnant to the ego of the patient), and he has insight into the irrational nature of his thoughts. The ego-alien attitude toward symptoms combined with the capacity to maintain a fairly full range of real object relations are characteristic of the psychoneuroses. However, ego-syntonic symptoms, that is, acceptable to the ego, can occur within the framework of psychoneurosis, particularly in the types in which the differential diagnosis between psychoneurosis and psychosis is difficult to make. Whether one measures the degree to which real object relations are retained or the degree to which symptoms are ego-alien, there is a continuum between normal, psychoneurosis, and psychosis.

A patient may seem to retain a completely ego-alien attitude toward phobic or obsessive symptoms but be so withdrawn from the world of real objects that a psychotic diagnosis is warranted. The fact that such psychotic patients present essentially psychoneurotic symptoms has led to the diagnostic description pseudoneurotic schizophrenia. Similarly, there is a continuum in the degree to which symptoms are experienced as ego-alien. Day-dreams and phobias within the limits of psychoneurosis may shift over into the category of psychosis, with hallucinations and delusions, by a simple increase in the intensity of the experience.

When thought content centers around a particular idea and is associated with a strong affective tone, it is said to be dominated by a trend or preoccupation. Such excessively charged ideas are said to be overdetermined in that they are caused by the confluence of multiple conflicts and drives, all of which carry great affective weight and meaning.

A preoccupation or an overdetermined idea may lead to an obsession. At other times it may become the basis for an idea of reference if projection occurs, as when a person attributes to neutral remarks and incidents direct references to himself. Projections form the basis of paranoid or oversuspicious thinking. This form of thinking may occur more or less within normal limits in early childhood, when the youngster is self-centered and insecure. When a shy but essentially normal person enters into a social situation, he may experience a series of self-observing, self-criticizing thoughts, which he succeeds in brushing aside in favor of the social satisfactions open to him. Such thoughts, if intensified to the point of paralyzing discomfort but recognized as ego-alien, may then be described as neurotic hypersensitivity. The latter expresses itself as extreme shyness and in autistic tendencies.

A delusion is a false belief that arises without appropriate external stimulation and that is maintained more or less unshakably and fixedly in the face of reason. Furthermore, the belief held is not one ordinarily shared by other members of the patient's socio-cultural and educational group. For example, it is not a commonly believed superstition or a religious or po-

litical conviction. Delusions are pathognomonic of the psychoses. They occur most frequently in schizophrenia, but they can be observed in all psychotic states, including those of organic origin. A delusion represents an autoplasmic response, whereby one adapts by altering the intrapsychic milieu, as opposed to the alloplasmic response of the reality-oriented individual, who adapts by altering his environment.

Freud's well known Schreber case is an example of projection. Freud observed that homosexual impulses, which were unacceptable to Schreber, underwent a series of transformations. Schreber first declared that he did not really love his homosexual object but hated him. In a still further development of his thought disturbance, Schreber declared that he did not hate his love object but rather that he himself was the object of that hatred. Thus, the unconsciously loved homosexual object emerged finally into consciousness as Schreber's persecutor.

The following case illustrates ideas of reference and paranoid delusions. A married man, aged 58, with a life history of dependable, conscientious work as a bookkeeper, became sleepless, anxious, and unable to concentrate. He developed the belief that his vision was failing because of poisons secretly placed in his food by former neighbors. He found a misprint in a newspaper that he felt was placed there by the editor to shame him publicly. Admitted to the psychiatric service of a general hospital, he said that cars passing up and down the street contained agents who were spying on him. He believed that the electric light bulbs in his room were emanating a purifying radiation to counteract syphilitic germs, which he was supposedly breathing into the atmosphere, although a physical examination was negative for syphilis. He was diagnosed as having involutional psychosis with paranoid and depressive features.

In some delusional states, persecutory feelings arise within the patient's body, as intestinal movements or the sensation of the stool in the rectum. Preoccupation with body feelings may result in a variety of somatic delusions that, in the schizophrenic, are characterized by a quality of strangeness. They differ in this respect from the localized somatic symptoms of hysterics and the generalized physical complaints of hypochondriacs.

In other delusional states, sexual feelings are attributed to a distantly located influencing machine operated by a persecutor. The patient may claim that this machine compels him to see pictures, forces certain thoughts and feelings on him, or abruptly drains off all thoughts and feelings. He may attribute to the machine erections, cutaneous eruptions, etc. The delusion of the influencing machine appears as a relatively late elaboration in schizophrenic thinking and seems to originate in the patient's need for causality. The description of the influencing machine by psychotic patients necessarily draws on the cultural and technological sophistication of the patient.

Pathological jealousy may occur in marital settings in which a spouse has unconscious extramarital sexual impulses, either heterosexual or homosexual, which are then projected onto the marital partner and emerge clinically as delusions of infidelity.

Litigiousness is a pathological tendency to take legal action because of suspected and imagined persecution. When these imagined persecutions reach de-

lusional proportions, we speak of delusions of persecution. Legal action may be brought against a surgeon, for example, because of delusional misconceptions the patient harbors about a surgical procedure. Relatives of a hospitalized patient may have litigious attitudes toward the professional staff of the hospital because of their own hostility toward the patient, which is then projected onto the staff. ("It is not I who wants to be rid of this patient. The doctors and nurses have these feelings.")

The thought content encountered clinically is determined, among other things, by the patient's mood. The ecstatic states referred to earlier may be associated with delusions of grandeur, which means a delusional exaggerated idea of one's importance. The male patient may express the idea that he is the Saviour or a latter day saint; the female patient may believe she is the Virgin Mary and is about to give birth to the Baby Jesus. The delusions of grandeur may result in identifications with political or military figures of great power. The salvation of the world is the basic delusional goal. Often this grandiose goal is to compensate for feelings of inadequacy. In manic states there may be inappropriate delusions of great wealth that result in crippling financial expenditures.

A shift of mood from elation to depression may result in the delusion of having committed an unpardonable sin. This is usually associated with guilt and may result in a delusion of self-accusation, characterized by intense remorse. In place of the delusions of saving the world, there may appear the end of the world fantasy. The patient may believe that the salvation of the world depends on his own death, and he may destroy himself or seriously mutilate himself to save the world. (In less bizarre terms, the depressed patient may feel that the world would be better off without him and have suicidal impulses or ideation on an altruistic basis.) In contrast to the delusion of great wealth, there may be, in the depressed state, a delusion of poverty. The complaint, "I am poor," is characteristic of depression, almost independently of the patient's true economic condition. In addition to feelings of guilt, worthlessness, and poverty, the patient may express a loss of interest in all previously satisfying spheres of activity. He may lose his appetite for food, family, sex, work, and play. Loss of appetite for food may be the result of delusions of poisoning, as a result of which he doesn't eat, to the point of losing much weight. Paradoxically, some patients invest the process of *not* eating with intense emotional satisfaction, as a result of which they lapse into an anorexia nervosa which, on occasion, may lead to death by starvation in spite of an apparent continued interest in other aspects of life.

In considering the disorders of thought content, one must take into account the *intent* of the verbal production as well as the content. As a result primarily of depression and anxiety, many patients have a desperate need for the company and attention of the

therapist. In return for his attention, these patients are motivated to say almost anything calculated to engage his interest. Is the therapist interested in dreams? Then the patient will dwell on dreams. Is he interested in infantile sexuality, in orality, in the castration complex? In each instance, the patient tunes in on the therapist's special interest. He responds to subtle cues almost telepathically. Such patients often seem to prove almost any theory that the therapist cherishes (doctrinal compliance). For the beginner in psychotherapy, the flood of associations provided by such patients can be an endless source of interest and yet prove, in the long run, to be of questionable psychotherapeutic value. It often takes great clinical skill to differentiate between content offered essentially for purposes of clinging and content that can be used to increase self-understanding and motivate clinical change.

Just as the content of associations may be rendered interesting by a patient who wished to please the therapist, so may the content be rendered boring or irritating by a fearful patient who wishes to keep the therapist at a safe distance. The beginner in psychotherapy may fail to understand the unpleasant feelings that such a patient arouses in him and may reject him, erroneously, as an "uninteresting" case. Whether the intent is to draw the therapist closer or to repel him, the actual content of the verbal productions in such instances is of secondary importance.

A patient who has withdrawn from normal object relations will often express this withdrawal by an unusual choice of words in his conversation. The flow of associations may be coherent and relevant, and the actual word choice correct from the point of view of dictionary meaning, yet an overtone of stiltedness, based on too personalized a vocabulary, may provide a subtle clue to clinically significant psychopathology. For example, when asked the function of the heart, a schizophrenic patient answered, "It invigorates the blood by putting red and white corpuscles in the blood stream." When asked how yeast causes dough to rise, another schizophrenic patient answered: "Something takes place in the bacteriological context. When heat is applied, molecules become active and cause it to rise."

When a patient seems slow witted and dull, there may be an emptiness of content based on mental deficiency. Where this is suspected, confirmation by formal psychological testing is mandatory.

Disturbance in thought content in brain-injured patients.

To understand the disturbances of association and thought content seen in patients with widespread (as contrasted to focal) organic brain disease, one must turn to certain theoretical considerations.

Most hospitalized patients suffering from a serious physical impairment of any kind wish to be well and wish to go home. Most such patients accept the realities of the illness and the necessary for hospitalization and make an adaptation based on premorbid personality.

The patient with widespread brain injury presents a different

picture. In many ways he acts like a person in a waking dream. Is there a wish to be out of the hospital? Then the patient speaks and acts as if he were not in a hospital. Is there a wish to be well? Then, for these brain-injured patients, wishing makes it so, and they display the syndrome of anosognosia, the denial that physical illness is present. A blind person insists that he can see, and a paralyzed patient says that he can walk. Some patients deny the major illness and ascribe the need for hospitalization to a trivial illness or to a previous illness from which the patient has long since recovered. A patient who has just had a craniotomy, for example, may insist that all he had was a tonsillectomy or an appendectomy. On occasion, a patient admits that he cannot move a paralyzed leg but rationalizes this as the result of fatigue or laziness. A patient with a paralyzed limb may disown the incapacitated extremity by saying that it belongs to someone else or that a paralyzed arm is lying on a bedside table "like a set of false teeth." When questioned about their own illness, some anosognosic patients respond by discussing the illness of some other member of the family; others (still paralyzed) agree that they had a hemiplegia in the past but are fully recovered at this time. Blind patients give detailed descriptions of objects they are "looking" at; others alter the name of the hospital in a way to deny its medical function or to move it closer to home or business. They fill in memory gaps with extensive confabulations, the common denominator of which is the absence of physical disability.

In reduplication the patient acknowledges that he is in a hospital but insists that it is a good hospital compared with one with the identical name nearby. A patient may acknowledge that a right arm is paralyzed but insist that there is an extra right arm that is not paralyzed. The anosognosic patient may be mute and unresponsive when questioned by a physician and yet speak freely to a relative.

Anosognosic patients may show a language disorder called paraphasia, the use of word substitutes. In paraphasia, responses to questions are not particularly slowed up as they are in aphasia. The paraphasic abnormality occurs much more frequently in relation to hospital (or disease-connected) words. When a word is produced, it is usually a neologism or an inappropriate word that tends to deny illness. For example, a clinical thermometer is called a "gradient"; a wheelchair is a "chaise." At times, anosognosic patients speak of themselves in the third person. In response to a query about surgery already performed, a patient answered, "He did not have an operation." A paralyzed limb may be referred to as "he," "she," or "it," as if to disclaim possession of the sick part. A question about a personal disability may be followed by a detailed discussion of an illness suffered by some other member of the family. The patient may launch willingly into a discussion of some minor ailment while steadfastly refusing to discuss the major reason for hospitalization.

Other language patterns seen in anosognosic patients include intellectualization and the liberal use of clichés as facile platitudes available to the patient with the expenditure of little thought or energy. Characteristic of anosognosic patients is the fact that they do not alter their basic errors in spite of repeated corrections by the examiner.

In purely quantitative terms, the success with which the brain-damaged patient succeeds in denying his illness is determined to some degree by the extent of the brain disease. In acute reversible brain disease, the period of maximal brain damage is associated with equanimity or euphoria. In the euphoric stage, even the patient's speech may resemble that of a mild hypomanic reaction. However, the humor (*Witzelsucht*) is characteristically shallow, and the range of ideas is sharply circumscribed. It is a type of facetiousness with a tendency to punning. In intermediate stages of brain damage, the flow of associations tends to show a paranoid trend, although again with a relatively limited ideational content. With further improvement in brain function, the entire capacity for denial of illness may dissolve. At this point a depressive reaction, not en-

tirely inappropriate to the clinical realities, may emerge. The slowed up flow of associations then reflects this affective state.

When a barbiturate, such as Amobarbital sodium, is injected intravenously into a depressed and no longer anosognosic brain-injured patient so that he shows nystagmus and slurring of speech, all the previously noted association patterns characteristic of denial of illness can be temporarily reestablished. This fact has formed the basis for a presumptive test of organic brain disease.

The manic and paranoid states seen in brain-injured patients have a certain stability that resist correction. However, during the transitions from one level of somatopsychic organization to another, there are intervening stages during which terror predominates and the flow of associations is maximally disorganized. The picture seen then is one of delirium and in many ways is comparable to the withdrawal reaction seen whenever a patient who has maintained some form of psychosocial adaptation with the help of a drug is suddenly called upon to readapt to his environment without the help of the drug.

It is thus possible to see in a single patient all the clinical manifestations that at one time or another have been associated with organic brain disease. The basic and fixed element in the clinical picture is the premorbid personality of the patient. The variables derive from the location, extent, and severity of the brain lesion.

Since the fact of brain damage impairs the availability of language and ideas, anosognosic patients tend to lack verbal and ideational complexity in their associations. Nevertheless, the delusional fulfillment of the wish to be well draws into its train wishful fulfillments from other layers in the emotional development, exactly as take place in a dream. The content of the clinical picture becomes more complicated as a consequence, but the wish to be well remains.

Disturbances in judgment. Judgment, from a psychiatric point of view, is the mental act of comparing or evaluating alternatives within the framework of a given set of values for the purpose of deciding on a course of action. The comparison may be in terms of magnitude, rightness, goodness, beauty, or economic worth. If the course of action decided on is consonant with reality as measured by mature adult standards, the judgment is intact, good, or normal. If, on the other hand, the course of action is inconsistent with reality, the judgment is impaired, poor, or abnormal.

The capacity to decide whether or not to take action depends on the capacity to think, that is, to anticipate the future in the imagination. This, in turn, depends on the capacity to bring before the mind once again something that has been previously perceived, to reproduce an object in the imagination without requiring the actual presence of the object. The imagined or internalized representation of an object is not always a faithful one. It may be modified by omissions or changed as a result of merging elements. Reality testing determines how far such distortions have gone.

The thought process involved in reality testing takes time. Freud described thinking as "experimental action." It begins with a tentative sampling of data from the outer world; these data are then compared with data from the reservoir of stored memories. This process culminates in a decision, which puts an end to the postponement of action. *Thus, the controlled postponement of action is the essence of judgment.* The person with good judgment looks before he leaps. But judgment leads from thought to action. Reality testing makes it possible to try out actively and in small dosage an experience that may be traumatic if permitted to happen passively and in unknown dosage.

The ability to recognize, love, and fear reality begins long before speech is learned. The infant becomes aware of reality as represented by the human face at approximately 3 months of

age. The infant reacts reflexively to the sight of the human face with a smile. At about 8 months of age, the infant begins to compare and evaluate human faces. He learns to differentiate the face of the mother from all others. The infant reacts with love to her face and with fear and anger to others. Psychoanalytically, it is hypothesized that the infant takes in her face with its eyes and eagerly swallows her food. It turns away from others and expels the food offered by these strangers as bad objects. These simple nonverbal relationships provide the model for the process of judgment—paying attention, comparing, evaluating, decision making, and action.

Speech initiates a decisive step in the development of reality testing and judgment. Words permit more precise communication and more precise anticipations of trial actions.

Thus far, the issues are quite clear. The function of judgment then depends on maturation of the mental apparatus. Intelligence and education are required for the inculcation of values.

Intelligence has been defined as the capacity to meet a novel situation by improvising a novel adaptive response. This capacity is composed of three factors: abstract intelligence, which is the capacity to understand and manage abstract ideas and symbols; mechanical intelligence, which is the capacity to understand, invent, and manage mechanisms; and social intelligence, which is the capacity to act reasonably and wisely in human relations and social affairs.

For good judgment to prevail, the sensory apparatus must be capable of accurate perception and discrimination. Memory must provide a reservoir of data as a basis for comparison. The motor apparatus must have the skills to carry out decisions and the inhibitory mechanisms for postponing action. Thus, a developmental process is automatically implied in the very concept of judgment. Although rudimentary manifestations of judgment can be found in infancy and early childhood, judgment develops steadily with biopsychosocial maturation. It is maximal in the fully alert, emotionally mature adult. It is impaired in all circumstances associated with regression.

If judgment is a mental function calculated to insure reality-oriented action, then mental states that avoid painful reality are inevitably associated with impairment of judgment. These may occur transiently in relation to parapraxes. A suspension of logical judgment is characteristic of dreams. Impaired judgment is a regular accompaniment of all psychotic states.

Adolescents display impaired judgment for many reasons. Through lack of education and experience, they may fail to recognize which situations or ideas merit attention. Adolescence, with its characteristic intensification of intrapsychic conflict, may be associated one moment with excellent reality testing based on adult goals and aspirations and a moment later with impaired reality testing based on persistent, unmastered infantile longings. Undeveloped values and self-discipline may precipitate ill advised actions. Thus, judgment in the adolescent is notoriously uneven and unpredictable.

Estimates of judgment may be based on responses to test questions or standard hypothetical situations. For example, a mentally defective subject with a long history of delinquency and fire-setting was asked, "What would you do if you found a stamped, addressed, and sealed envelope in the street?" He answered, "I would put it in the mailbox if it didn't have anything in it for me." Wechsler has observed

that a significantly higher score in the performance scale over that in the verbal scale of the Wechsler Adult Intelligence Scale is suggestive of the character disorders associated with impairment of judgment.

Disorders of Consciousness

Consciousness has been defined as the distinguishing feature of mental life. It is synonymous with the quality of being aware and of having knowledge. Thus, it is a faculty of perception that draws on information from the outer world directly through the sense organs and indirectly through stored memory traces. Implicit in the concept of full consciousness is the capacity to understand this information and to use it effectively to influence the relationship of the self to the environment. Consciousness may be said to have a sensory component or degree of receptive awareness, which is measured as cognitive intensity, and a motor component or degree of kinesthetic readiness to initiate and execute a voluntary act, which is conative intensity.

Levels of consciousness. Consciousness exists on a continuum, with maximum alertness at one extreme and absolute unconsciousness or coma on the other; in between are confusion, clouding of consciousness, delirium, and stupor.

In confusion there is disorientation as to time, place, and person and a feeling of bewilderment. It is often accompanied by an impairment of consciousness and is encountered both in organic states and functional disorders.

In clouding of consciousness there is a disturbance in perception, attention, and thought, and a subsequent amnesia.

Delirium is a psychic state characterized by disorientation in all spheres, confusion, clouding of consciousness, and bewilderment in association with anxiety, fear, illusions, and hallucinations. It is the result of an infection, tumor, hemorrhage, or toxic-metabolic disorder and is classically associated with acute brain syndromes.

Stupor is a state of relative nonresponsiveness to the environment. It differs from the total insensibility of coma in purely quantitative terms. Stupor can occur as a lesser stage of impaired consciousness in all the conditions causing coma. However, there are, in addition, psychogenic stupors, in which the patient is motionless, mute, and more or less nonresponsive to powerful stimuli but without organic brain disease or impairment of reflexes. In catatonic stupor, for example, the patient is aware of his surroundings but is intensely preoccupied. He is able to give a relatively full description of the happenings in his environment in retrospective accounts after the catatonic stupor has subsided. Patients who exhibit the basic symptoms of manic-depressive psychosis may present a picture of stupor instead of depression. Because of the reportedly better prognosis in these cases, these patients are said to exhibit benign stupor.

Coma is the term describing the most profound degree of unconsciousness, in which there is no detectable evidence of responsiveness. At its deepest levels, even reflex responses to painful stimuli and to breathing obstructions are abolished. Function is reduced to the mere vegetative persistence of circulation and respiration. Coma may be the result of diffuse inflammatory brain disease (encephalitis), vascular disease (intracranial hemorrhage, thrombosis, or embolism), brain tumor, poisoning, or factors of toxic-metabolic origin.

Coma vigil is a coma in which the eyes remain open. This condition may occur in a variety of acute organic brain disorders, particularly when the diencephalon is affected. On occasion, patients in coma vigil follow the human face with their eyes when they are responsive to no other stimuli. In such instances, tracking movements of the eyes can be elicited by means of a two-dimensional pictorial representation of the face as well as the actual face itself.

This curious phenomenon seems to represent a regression to a stage in development during the 1st year of life, when the infant fixes his gaze on the face of the mother during feeding.

Attention. Attention is an aspect of consciousness that relates to the amount of effort exerted in focusing on certain portions of an experience so that they become relatively more vivid. One may speak of primary attention, which is passive, involuntary, automatic, instinctive, or reflexive, and secondary attention, which is active or voluntary.

Attention in both its primary and secondary aspects may fluctuate in intensity from moment to moment in acute brain disorders, such as subdural hematoma and impending diabetic coma. Attention may remain basically alert and vigilant yet shift swiftly from topic to topic. In distractibility an individual's attention is too easily drawn away from a given content by extraneous or distracting stimuli. Although a certain amount of distractibility is normally present, it occurs in its extreme form in the manic state. Distracting stimuli may arise not only from the outer environment but from inner fantasies as well. The latter are present in the psychoneuroses and may play an important role in learning disability. They are also outstanding features in schizophrenia.

Attention span is measured by the length of time that an individual can apply himself to a given task. It is, in a sense, the reciprocal of distractibility. Attentiveness is the process of paying attention.

Selective inattention is a term used to describe an aspect of attentiveness in which the subject blocks out those data of consciousness that generate anxiety, guilt, and other unpleasant feelings. It is synonymous with the psychological defense mechanism known as denial. Blunting of attention is an extreme form of inattention in which responses to noxious stimuli are reduced.

Apperception. Apperception, or comprehension,

implies the clear and correct recognition of the meaning of the data of perception. When a mental image is clearly perceived but is falsely interpreted or understood, one speaks of abnormal apperception. This may occur in psychoneurosis in relation to severe anxiety, in psychotic states as a result of delusions, and in organic brain disease with sensory aphasia.

Suggestibility. Suggestibility exists when a patient responds compliantly with unusual readiness. Suggestibility is seen in psychoneurosis, especially in conversion reaction, and plays an important role in hypnosis. In psychosis it can be seen in automatic obedience, echolalia, echopraxia, and cerea flexibilitas. If the patient has a good and trusting relationship with an individual, this increases his suggestibility. Suggestion is the process of influencing a patient to accept uncritically an attitude or idea.

Negative suggestibility, in which the patient does the opposite of what is suggested, is seen normally in children and in catatonic schizophrenia as negativism, which means the perverse resistance to suggestions or advice.

Suggestion plays an important role in communicated insanity (*folie à deux*), a psychotic reaction in which two closely related and associated individuals simultaneously show the same symptoms and one member seems to have influenced the other. It may also affect three members of a family; then it is called *folie à trois*.

Hypnosis. This is an artificially induced disturbance of consciousness that may superficially resemble sleep but is physiologically distinct from it. It is characterized by heightened suggestibility. As a result, a variety of sensory, motor, and memory abnormalities may be induced by the hypnotist.

Hypnoid state. This was hypothesized by Freud to be an alteration of consciousness that occurs characteristically in hysteria during periods of emotional stress. It is characterized by heightened suggestibility and provides a basis for hysterical somatic symptom formation, feelings of depersonalization and derealization, and fugue states.

Startle reaction. This is a reflex response to an unexpected stimulus of great intensity. It is associated with a sudden increase in the level of consciousness and a diffuse motor response involving flexion movements of the trunk and extremities (hence, in German, *Zusammenschrecken* reflex). It occurs in normal individuals. It may be elicited more readily and with a greater motor excursion in acute anxiety neurosis, such as occurs following a traumatic battlefield experience during wartime.

Effects of pharmacological agents. Various pharmacological agents affect the level of consciousness. Most sedative and hypnotic agents act on the central nervous system diffusely. In small amounts, they reduce perceptual acuity and motor skills. In larger amounts, they produce, in succession, somnolence, sleep, stupor, coma, and death.

Reduction of the level of consciousness by means of sedative and hypnotic medication is induced for the relief of mental or physical suffering. Some of the medications of the phenothiazine series act selectively on the central nervous system so as to reduce the affective experience of suffering without simultaneously reducing the over-all level of sensorimotor efficiency.

It has been hypothesized that the phenothiazines and some other psychopharmacological agents selectively diminish the activity within the multisynaptic short circuits of the reticular activating system (RAS), thus leaving the functions of the cerebral cortex essentially unimpaired. This is in contrast to the barbiturates and other sedative medications, which diminish central nervous system activity diffusely, including the cerebral cortex and the long pathways.

Sleep. Sleep is a complex state of altered consciousness consisting of at least four separate stages of varying depth, sensory and motor activity, and responsiveness.

In clinical descriptive terms, sleep has many variants. It may be deep, continuous, and refreshing. It may be light, intermittent, and exhausting. It may seem dreamless or filled with dreams. When dreams appear, they may be good dreams or bad dreams.

There is relative unresponsiveness to stimuli in sleep, the degree of unresponsiveness depending on the stage of sleep, the amount of fatigue, the state of mind of the subject (whether troubled or at ease), the intensity and quality of the stimulus. For example, a mother may sleep deeply, unmindful of loud noises all about her, and yet awaken at once at the first soft cry of her baby. Among the strange expressions of consciousness in sleep is the commonly experienced ability to wake up at a specific time in the morning.

Sleep occupies most of the 24 hours of the day at birth and is interrupted only briefly because of hunger or physical discomfort. The period of sleep gradually shortens until it occupies 7 to 8 hours in the normal adult and becomes still shorter with advancing age. Normal sleep requirements vary widely from as little as 4 hours a night in exceptional instances at one extreme to 10 hours or more at the other.

Insomnia is a pathological inability to sleep. In catatonic or manic excitement, the patient may remain uninterruptedly sleepless for 20 or more hours at a time. These reactions of extreme excitement may terminate with fatal exhaustion, which is at times associated with hyperthermia.

Early morning insomnia is a sleep disturbance occurring characteristically in depressions. In these instances the patient falls asleep readily enough but awakens in a few hours, bathed in anguished perspiration. This sleep pattern is commonly associated with anorexia, weight loss, feelings of sadness, and suicidal ideation.

Inability to fall asleep is a form of insomnia more characteristic of the psychoneuroses. In these instances the patient is often afraid to fall asleep be-

cause of nightmares. Patients with traumatic neuroses induced by battlefield experiences often are afraid to fall asleep because of the severity of their nightmares.

Pavor nocturnus is a type of sleep disturbance encountered in early childhood in which the child is usually found sitting up in bed screaming in terror, in the grip of a nightmare of hallucinatory intensity. In the course of the episode the youngster may seem to be reacting to frightening people or animals and acts as if unaware of the presence of reassuring parents. The episode is brief and self-limited, and the youngster spontaneously drops off to sleep after it. Often the child has no recollection of the episode the next morning. On the other hand, these episodes may become the basis of a fear of falling asleep.

Hypersomnia is often seen in depressive reactions occurring in psychoneurotics. In these instances sleep is a retreat from painful encounters with the real world.

Reversal of sleep habit is a common accompaniment of hypersomnia. In these instances the patient tends to sleep soundly through the early morning hours, wakes up gradually in the early afternoon, and achieves full wakefulness at a time when most people are going to bed.

Drowsiness is a state of consciousness that intervenes normally between sleep and waking and is characterized by a general slowing up of the thought processes, with a tendency to concreteness in thinking, diminished perception, and clumsiness in motor responses.

Somnolence is abnormal drowsiness. It occurs in a variety of toxic, metabolic, and inflammatory disorders of the brain and with brain tumors that press on the floor of the third ventricle.

Epileptic and convulsive disorders. The essence of epilepsy from the standpoint of diagnosis is the periodic appearance of a recurring pattern of short-lived disturbances of consciousness. The convulsive disorders are discussed in detail elsewhere, but it seems appropriate to include a brief review of the epileptic disturbances of consciousness in this section.

Petit mal and **grand mal** seizures are characteristically associated with full loss of consciousness in the midst of the attack. In petit mal, consciousness blinks on and off, as it were, for intervals lasting between 1 and 40 seconds each. These individual attacks are not associated with a preattack warning and are not followed by characteristic subjective or objective sequelae. EEG records in the midst of such attacks invariably reveal a spike and wave pattern having a frequency of approximately three of these complexes per second. The attacks may occur as often as 100 times in a single day or as occasional, isolated attacks days or weeks apart.

The disturbances of consciousness associated with grand mal epilepsy are much more complicated. The actual muscular movements are typically preceded by an **aura**, which in itself may consist of a variety of

clouded states of general awareness, including feelings of unreality and depersonalization. Commonly, these feeling states are not only vividly experienced but often remembered by the patient. Such preconvulsive alterations of consciousness may last for hours or even days before the actual seizure and may give the patient an opportunity to get to a place of safety. During the actual convulsion, loss of consciousness is complete, and amnesia for the events during the actual seizure is also complete. After the grand mal seizure, patients display an obtunded state of consciousness, which varies in duration from a few minutes to a period of hours. During this time, the EEG may show diffuse, symmetrical slow wave activity. Amnesia for the postseizure period may be complete or interspersed with fragmentary islands of recall. This period has been called the postictal twilight state.

Twilight states or dream states of consciousness can occur as independent phenomena apart from grand mal seizures. They are characterized by circumscribed periods of intellectual dulling, disturbance in consciousness, confusion, and disorientation. Brief auditory and visual hallucinatory symptoms and schizophrenic-like psychotic reactions have been described within the complex of the epileptic disorders. Generally, there is an amnesia for actions during this period. Characteristically, all these seizure patterns are associated with electroencephalographic abnormalities, which coincide in duration with the duration of the abnormality in the state of consciousness. Similar dream states are encountered in dissociative reactions, but with normal electroencephalograms.

The reticular activating system acts as an arousing mechanism that increases alertness when stimulated. Sensory stimulation serves a 2-fold function: it brings information from the environment, thus providing specific data concerning reality; and it arouses and alerts the organism through collateral pathways to the RAS.

Corticofugal pathways also send collaterals to the RAS, thereby placing the latter under the control of sensory stimuli from without and cerebral cortical elaboration from within. Stimulation of the RAS facilitates both the general sensory inflow and the lower motor outflow. Inhibition of the RAS inhibits sensory inflow and lower motor outflow. In this way, the RAS can be said to affect both the cognitive and conative aspects of consciousness.

Disturbances of Orientation

Orientation may be defined as the ability to recognize one's surroundings and their temporal and spatial relationships to oneself or to appreciate one's relations to the social environment. The capacity for orientation involves the following categories: (1) **Time:** knowledge of the hour, day of the week, date, month, season, year. (2) **Place:** name of present location, the address, one's home address, the distance between present location and home address, reason for being in this place at this time. Inquiries in this area may reveal pathological denial of physical illness and the existence of other types of delusional systems. (3) **Person:** identity of self and others in the immedi-

ate environment. This includes not only a knowledge of names but also an appreciation of the role of each in that setting.)

The capacity for orientation depends, in the main, on three factors: (1) the availability of perceptual data from the outer world, (2) the availability of the stored data of recent memory, and (3) a commitment to the demands of reality, which is part of the emotional equipment of the mature adult.

One may speak of a specific drive to seek out and maintain accurate orientation as a psychological quality characterizing the mature adult. Normally, the inability to establish one's bearings generates anxiety and appropriate orientation-seeking behavior. A normal person, for example, awakening in strange surroundings after a deep sleep may have a brief period of bewilderment, during which he scans his environment for clues, draws on his stored memory for recent events, and, finally, with a sense of relief, orients himself correctly. If he awakens from a particularly vivid dream characterized by a deep sense of the reality of the events in the dream, he may have a similar brief struggle to reestablish his orientation. If a patient wakes up from a coma, he may not be able to marshal sufficient data to orient himself. He may suffer from anxiety and bewilderment and respond to specific inquiries concerning orientation with panic and requests for information or by admitting that he does not know the answers to the questions.

In a variety of settings, individuals abdicate their firm commitment to reality. Adults in normal recreational settings, for example, deliberately cultivate flight from reality as part of the recreational process. In the theatre, surrender to the make believe of the play may be so complete that it takes a period of active struggle to reestablish contact with the real world when the performance is over. Alcohol and other common central nervous system inhibitory substances encourage, and temporarily make possible, flights from reality and facilitate rapprochement with the world of make believe.

The phenomenon of the imaginary companion may be cited as an example of flight from reality that takes place within the limits of normal. It has been commonly observed that an essentially normal child will create an imaginary companion for himself and will endow this product of his fantasy with qualities of reality. He gives the companion a name, a definite personality, and even an imaginary family. This phenomenon is seen most often when the subject is an only child or is for any reason shut off from real playmates. In general, the imaginary companion is so created by the child that it has everything the child desires but lacks. Thus, at this stage of development the child is able to enter into transient but easily reversible breaks with reality.

Patients with diffuse organic brain disease provide a paradigm for understanding the phenomena of dis-

orientation. For many years the incorrect orientation answers of brain-injured patients were too briefly dismissed with "The patient is confused," or "The patient shows memory impairment." On close observation, orderly patterns can often be discerned within the over-all picture of disorientation. In addition, what is sometimes described as an inability to remember is in actual fact a consistently repeated pattern of *misremembering*.

Disorientation for time. Hospitalized patients without organic brain disease very commonly lose track of the date, the day of the week, and even the month. Thus, correct answers may be expressive of an alert and intact sensorium, but errors in these categories are not diagnostic of organic brain disease. An error in the year, on the other hand, is of diagnostic significance. It is in relation to the year that one commonly encounters a persistent pattern of *misremembering*.

A patient may give the year as 1958, and, even though he is corrected repeatedly, on each subsequent questioning he persists in stating that the year is 1958. Thus he "remembers" quite dependably the wrong year. To characterize this as a simple lapse of memory is to miss the point that the patient is remembering what he *wishes* to remember; that is, he is responding to a wish or to a feeling that he is living in a year that was, perhaps, the last time that he was in good health. The incorrect response, "The year is 1958," expresses a wish to be well rather than a simple failure of memory.

Errors for the time of day are not significant as evidence of organic brain disease unless the error crosses a mealtime. Brain-injured patients commonly show errors for time of day if awakened from a nap, thinking, for example, that lunch or supper is actually breakfast.

A patient cited by Weinstein and Kahn always gave the time of day as 7 P.M., "because that is when my daughter comes to visit me." This patient deliberately avoided contact with a clearly visible wall clock in the process of denying the correct time.

In giving their personal history, many patients condense incidents in time that should actually be separated.

A patient may report the birth of a younger sibling and the occurrence of an operation, such as a tonsillectomy, as taking place the same year when, in fact, the younger sibling was born when the patient was age 3 and the operation took place at age 6. In some such instances, it is possible to demonstrate that guilt over sibling rivalry on the one hand and the childish misinterpretation of an operative procedure as a punitive act on the other, although temporally separated, are condensed as a retrospective temporal falsification so that crime and punishment become fused in memory as a single event (see *paramnesia*).

Neurotic problems involving rebellious attitudes or a need to avoid painful reality may result in patterns of persistent tardiness. The affective state also plays a role in temporal orientation. During moods of elation, time seems to move quickly, whereas depressive moods are associated with a feeling that time is dragging.

Some anxious patients are unable to tolerate free time and have a need to fill all the temporal nooks and crannies of the day with prearranged activities. Such patients often suffer from a fear of loss of impulse control and defend themselves against acting out by overscheduling themselves. On the other hand, some patients, with a fear of their own passivity, will complain that they are too tightly scheduled. The outer controlling elements are experienced as potentially dangerous forces capable of overwhelming the victim. Such patients are incapable of tolerating authority and may present particular problems in relation to school and military service, where punctuality is a *sine qua non* for successful performance.

Disorientation for place. The brain-injured patient in a general hospital may express the wish to be well by insisting that he is not in a hospital but in his home. When one such patient was asked to explain the presence of the doctors and nurses who were all around her, she answered, "These people have taken over my home and have made it over to look like a hospital, but it is really my home." Other patients will give the name of the institution correctly but will characterize it as a hotel, a restaurant, a convalescent home. That is, in various ways they will deny the gravity of the illness by denying that they are in a hospital. On occasion, the patient will give the name of the hospital correctly but will place the hospital close to home, saying, "I live a block away," or "I live across the street," when, in fact, home may be miles away. At times the patient will locate himself in another hospital in which he was treated many years ago for a relatively minor illness from which he recovered. In this spatial dislocation he is expressing a *déjà vu*. He says, in effect, "I've been here before, and I went home in good health." Temporal disorientation commonly accompanies this pattern of spatial disorientation. In duplication or reduplicative *paramnesia* patients will give the name and location of the hospital correctly but insist that another "bad" hospital with the same name is located nearby.

These meaningful alterations, which are so clear in the case of the patient with diffuse brain disease, provide the clue for the disorientations in place encountered without organic brain disease. Schizophrenic patients may be disoriented for place in less predictable ways but always meaningfully in terms of their delusions.

For example, a schizophrenic patient asserted that he was in a prison elaborately disguised to look like a hospital with a staff of jailers disguised as doctors and nurses who were all engaged in a charade to elicit incriminating facts about the patient and his family. He made a severe suicidal attempt because he believed that only upon his death would the jailers spare the lives of his loved ones.

Disorientation for person. A married female patient displaying disorientation for person may give her maiden name and will insist that she is not married. Such denials often express elements of marital disharmony from which the patient wishes to take flight. It may also be associated with temporal disorientation representing regression to a time preceding the onset of illness.

Anosognosic patients may misidentify in a manner to confirm the denial of illness. The doctor in a white coat may be identified as a fish peddler and the place of their encounter the Fulton Fish Market. Some physical or characterological trait in a doctor or nurse may be the basis for a persistent misidentification of this person as a friend from the past who has no connection with illness. The doctor may be identified under such circumstances as a former teacher or an insurance salesman.

The tendency to divide the world into good and bad elements and then to create delusional systems that, in effect, embody this split resulted in a delusion expressed by a woman with one son named William. She claimed she had two sons, one named Bill, who was a good son, and one named Willie, who was bad. This duplication may involve not only the entire person but part of a person. For instance, a hemiplegic patient may insist that he has two left arms, one good left arm and one bad left arm.

Many times, patterns of disorientation in reversible brain disease will persist after the acute brain disease has subsided. Or it may clear up only to recur in a setting of emotional stress.

The concept of self may be so chaotic that the vulnerable individual tends to be highly suggestible and to identify with any dominant person he is with. He may incorporate specific mannerisms of speech and dress and self-destructive patterns of behavior, such as narcotic addiction. This instability of self-concept is particularly conspicuous in teen-aged girls. For this reason, they are vulnerable to mass hysterical behavior, as television audiences know from watching their responses to currently popular public performers. The chaotic concept of self is what Erikson referred to as the identity crisis. Confronted with an essentially insoluble dilemma concerning one's role in life, many teenagers go beyond experimental introjections and identifications and take flight into psychosis.

A teen-aged girl could not decide whether to be a successful writer and civic-spirited citizen like her father or a beautiful narcissistic woman like her mother. The patient had a prominent nose, which caused her to resemble her father. A plastic surgeon modified her nose, achieved an excellent cosmetic result, and succeeded in emphasizing delicate feminine features, which resembled her mother. Post-operatively, she went into an acute schizophrenic state, characterized by delusions that she was a sought after beauty who had a great mission to save the world as a second Florence Nightingale.

Disorientations in all spheres tend to parallel and support each other. Through secondary elaboration, an inner consistency is achieved, like the consistency that often characterizes a dream. There is an expansion and embellishment of certain details to make for this consistency. If the time precedes the onset of the patient's illness, then the place is apt to be consistent with that time. The people are similarly misidentified, and the reason for everyone being together at that time and in that place is rationalized by

complex delusional systems. When the disorientations in the delusional system are logically organized so that they have a "rational" inner consistency, the delusional system has been systematized. Systematized delusions are more resistant to correction and tend to carry a more serious prognosis.

Disturbances of Memory

Memory is based on three essential processes: (1) registration, the ability to establish a record of an experience in the central nervous system; (2) retention, the persistence or permanence of a registered experience; and (3) recall, the ability to arouse and report in consciousness a previously registered experience.

A good memory involves the capacity to register data swiftly and accurately, the capacity to retain these data for long periods of time, and the capacity to recall them promptly in relation to reality-oriented goals.

During the process of registration, there must be a physiologically intact alert central nervous system. There must also be a sufficient number of repetitions of exposure to the data to stabilize the memory trace. An actor who needs many repetitions to memorize a script is called a slow study. At the other extreme are gifted individuals who in a single exposure can master a dramatic script, a musical score, or a school lesson.

Emotions associated with the learning process play a crucial role in determining the permanence of memories. In infancy and early childhood, the entire learning process is tied up with satisfactions based on the relief of biological needs by loving parents. Thus, in early childhood, there is a brain maximally receptive to learning in purely biological terms, there are attentive adults who are prepared to provide the repetitions necessary for learning, and there is a pattern of reward based on the loving responses of the parents as teachers. For all these reasons, it is no accident that the first language learned is called the mother tongue and that the mother tongue is normally the first language that returns on recovery from brain injury in patients who knew more than one language prior to the injury.

Although a good memory is one of the factors in the complex of mental capacities that make up intelligence, phenomenal feats of memory are occasionally encountered in settings of apparent mental retardation. The latter usually involve rote memory, the capacity to retain and reproduce data verbatim, without reference to meaning. In logical memory, on the other hand, problem-solving in relation to a reality-oriented goal is paramount.

In addition to quantitative there are also qualitative differences in memory. Some persons are particularly well endowed with visual memory and can recall images with virtual hallucinatory intensity. Such subjects are called eidetic individuals, and the reproduced memories are called eidetic images. This eidetic capacity tends to occur in childhood and subside with age, so that it is rare after adolescence. Memory for music, mathematics, muscular movements such as those involved in the performing arts, spatial relationships, and emotional feelings may be cited as examples of nonverbal memory. Verbal memories depend on the development of verbal skills.

Disturbances in registration. (Registration depends on the level of consciousness. Anything that diminishes consciousness, such as alcoholism or concussion, interferes with registration.) A prizefighter may go on for several rounds to win a fight after a dazing blow to the head and yet have no recoverable memory for the events following the blow. A circumscribed memory loss of this kind occurring during the time following an acute brain injury is called anterograde amnesia. An alcoholic may behave in a socially acceptable manner for an entire evening and yet have no recoverable memory for the events of that evening. Disturbed states of consciousness lasting for weeks and months associated with encephalitis, subarachnoid hemorrhage, and severe brain trauma may be followed by a permanent inability to recall the events experienced during that period. In all of these instances, the subsequent defect in recall starts with primary defects involving registration and retention.

There are conditions in which registration seems to be impaired because the patient appears to be totally nonreactive. This occurs in catatonic schizophrenia and in severe panic states. However, when the brain is intact from an organic point of view but perceived experiences are repressed or denied for purely emotional reasons, registration is normal. In these instances, seemingly nonobserved events can be recalled subsequently, either directly or with the use of specific techniques for eliciting forgotten or repressed memories, such as hypnosis or narcoanalysis.

Disturbances in retention. In the establishment of lasting memories, there is a preliminary learning stage during which the memory trace is unstable. The memory curve or the curve of forgetting is a graphic representation of the relative amounts of memorized material that can be recalled after various intervals of time. For individuals with good memories, the memory traces are quickly established, and the curve of forgetting is prolonged and may extend over the entire lifetime of the individual. In some instances of organic brain disease, the curve of forgetting is accelerated. (In Korsakoff psychosis, memory for recently acquired facts may decay in a matter of seconds, without any residual capacity for recall.)

Retention is a property of nerve tissues in general. Nerve cells and their processes may be compared to tape recorders that retain at least a partial record of the impulses that have passed along them. There is an enormous capacity for units of information and for specificity of records of this kind in the brain.

It has been hypothesized that the registration stage of memory depends on the formation of ribonucleic acid (RNA) within the nerve cells and their processes and that specific memories derive their individuality from specific modifications in the RNA molecule. According to this hypothesis, each such RNA molecule is the storage device for the memory system and, at the same time, a template or stencil that can run off duplicates of the molecule as part of the mechanism of recall.

It has also been hypothesized that in the aging brain the basic supply of RNA is diminished and that this is the specific organic deficit underlying the proverbial weakness of memory in the aged. Indeed, it has been suggested that additional

RNA, parenterally supplied, can reverse the memory defects of senility.

Disturbances in recall. Recall is, in the long run, the most important aspect of memory, since it is only in the examination of the process of recall that we acquire evidence that memory is intact or impaired.

Amnesia. Amnesia is the partial or total inability to recall past experiences. The events of infancy and early childhood up to the 5th year are commonly forgotten as part of the normal childhood amnesia.

According to psychoanalytic theory, an important basis for childhood amnesia is the need to control and repress various infantile wishes that are forbidden by parents. As infantile fears of punishment are relieved during psychoanalysis, many of the events of childhood amnesia are increasingly subject to voluntary recall.

(From a theoretical point of view, a relatively sharp distinction can be made between the amnesias based on organic brain disease and those disturbances of purely emotional origin. The latter fulfill specific emotional needs and tend to subside when these are no longer operative. The amnesias of organic brain disease involve disturbances in registration and retention and are essentially nonrecoverable. Most often they affect the recall of recent events and leave the memory for remote events relatively intact. This is described as retrograde amnesia. Thus, in retrograde amnesia, there is amnesia for a period prior to a traumatic event. Such an amnesia may be psychological as well as organic in origin. If the brain disease is organic and progressive, impairment in recall worsens. The amnesias of emotional origin either improve with treatment or remain stationary,

The sharp distinction between amnesias of organic and emotional origins is made for purposes of description and clarification. Most amnesias seen in relation to organic brain disease are, in fact, mixed amnesias in which organic deficits and emotional interference with recall both play a role.

Hysterical amnesia is a loss of memory for a particular period of past life or for certain situations associated with great fear, rage, or shameful humiliation. This form of amnesia is highly selective and systematized to fulfill the patient's specific emotional needs (see hysterical fugue state).

The rule of Pitres states that, in a person who knew more than one language prior to a brain insult, the first language that returns is the mother tongue.

E. E. Krapf cites a case of polyglot aphasia that illustrates the negative role emotion can play during the period of recovery. A brain-injured young man grew up in a Spanish-speaking country, but his mother tongue was English. In this case the mother-child relationship was a highly disturbed one, and the patient grew up with the image of his mother as a menacing figure. As memory for language returned in this brain-injured boy, he clearly preferred Spanish. Reduction in comprehension of English was especially noticeable during his mother's visits.

Halpern cites another case of polyglot aphasia. In this case, on recovery from a severe head injury, a Hebrew-speaking man whose mother tongue was English followed the rule of Pitres and used English first. However, on return from the hospital

to his Hebrew-speaking wife and children, he went into a severe depression when he found he could not communicate with them. During the following days, his mastery of Hebrew returned, and thereafter his fluency in Hebrew returned more rapidly than his recovery of English.

The brain-injured patient who is highly motivated may succeed in overcoming organically determined impairments of recall by a variety of mnemonic devices. For example, in response to a request to name an abstract word or concept, he may start with a concrete visual image that is charged with highly personal significance. In his search for the correct word he may then go on to make writing movements with his head. Finally, after much effort exerted over this tortuous path, he arrives at the abstract word for which he is searching. Thus, in order to discover subtle memory defects in brain-injured patients, it is necessary to inquire into the mechanism of remembering as well as the actual content of what is remembered.

In contrast to the aphasic impairments of recall, which are highly circumscribed and involve specific words or actions, is the impairment of recall associated with the hysterical fugue state (dissociative reaction). This is a form of amnesia that sets in following a severe emotional trauma. A terrifying experience on the battlefield or a momentary loss of impulse control that nearly leads to the murder of a loved one may be followed by a complete loss of memory concerning all personal identifying data. Following the precipitating psychological trauma, the patient enters into a period of actual physical flight, which takes place in a state of panic. When the victim comes to, he finds himself far removed from his accustomed habitat and unable to identify his surroundings, his reason for being there, or anything about his past. This form of amnesia is associated with a flattening of affect characteristic of hysteria. Usually, the lost memory is readily recoverable with hypnosis, narcoanalysis, or strong suggestion, particularly when offered in a setting that promises extended relief or actual physical separation from the traumatic life situation.

The dramatic extremes embodied in hysterical fugue states provide the model for more circumscribed example of functional forgetting. Many psychologically traumatic experiences in early childhood are forgotten. What Freud referred to as *repression* in relation to these early childhood traumata is indistinguishable from forgetting in general. Such circumscribed amnesias may be the basis for a chronic state of psychological stress. According to psychoanalytic theory, these forgotten traumata threaten constantly to erupt into consciousness.

Symptom formation, to some degree, has its origin in the ongoing need to keep these memories out of consciousness or to distort and disguise them if they do return. In a sense, the neurotic patient can be said to suffer from memories he is forgetting with only partial success, and in this way the psychopathology of memory is related to the psychopathology of the emotions.

Since nothing registered in the intact brain is ever really lost, in the functional diseases only the capacity for recall is

impaired. In psychoanalytically oriented psychotherapy, the recall of forgotten traumata is facilitated by a systematic attack on the defenses.

Paramnesia. Paramnesia is a distortion of recall usually associated with the inclusion of false details or wrong temporal relationships.

Distortions in recall are encountered in normal individuals. The witness's errors in the courtroom are examples of this. There is in everyone a readiness to distort recall whenever accurate recall impinges on some painful reality. The presence of diffuse organic brain disease has the effect of facilitating and fixating this universally present tendency toward paramnesia.

Fausse reconnaissance, or false recognition, is the feeling of certainty that one is recalling accurately something that is patently inaccurate.

In retrospective falsification, a type of paramnesia sometimes called illusions of memory, false details, meanings, and recollections of a real memory are created in response to emotional needs. A patient may recall a true past event but distort it in accordance with a present need to support a symptom.

In confabulation, there is an unconscious filling in of gaps in memory by imagined experiences that the patient believes, although they have no basis in fact. These recollections change from moment to moment and are easily induced by suggestion. This phenomenon is most characteristic in Korsakoff psychosis.

Pseudoreminiscence incorporates both confabulation and retrospective falsification.

Déjà vu is an illusion of recognition in which a new situation is incorrectly regarded as a repetition of a previous memory. It can occur in normal individuals, particularly in settings generating anxiety. It is more common in psychoneurotic states and occurs occasionally in the aura of an epileptic seizure. In *jamais vu* there is a false feeling of unfamiliarity with a real situation that one has experienced.

Related to *déjà vu* are *déjà entendu*, in which a comment never heard before is incorrectly regarded as a repetition of a previous conversation, and *déjà pensé*, in which a thought never entertained before is incorrectly regarded as a repetition of a previous thought.

Although the causes of these related phenomena are not known, psychoanalytic evidence suggests that they share with screen memories and day-dreaming the function of psychological defense. Implicit in the feeling "I have experienced this before" is the reassuring further thought "and I have survived in spite of my fears." In short, *déjà vu* is a device to control the intensity of anticipatory anxiety.

The familiar type of nightmare known as the examination dream seems to serve the same function as *déjà vu*. Such dreams occur typically before a school examination or some other life trial. In the dream, the subject is asked to answer examination questions concerning a subject he never studied. In spite of the manifest anxiety in such dreams, the content typically deals with a test that was successfully passed some time ago. As such, it serves to reassure the dreamer that he will pass this test as well.

Hypermnnesia. Hypermnnesia is an exaggerated degree of retention and recall. It can be elicited at times in a hypnotic trance. It is seen in certain prodigies, obsessive-compulsive neurosis, paranoia, and mania.

A screen memory consists of fragments of childhood recollection that break through the barrier of childhood amnesia. The screen memory is often striking for the minutiae recalled. Commonly, there are recollections of bright light. Characteristic also of the screen memory is its tendency to return to consciousness repeatedly in an obsessive fashion.

Paradoxically, the qualities of exaggerated accuracy and feelings of certainty that accompany these hypermnnesias are deceptive. There are temporal and spatial alterations and an emphasis on trivia that combine to ward off from conscious recall specific traumatic memories of childhood. Thus, these memories may be more accurately classified among the paramnesias.

Disturbances in Perception

Perception is the awareness of objects, qualities, or relations that follows stimulation of peripheral sense organs, as distinct from the awareness that results from memory. (Thus, perception is the necessary precursor of memory and is connected with memory via the process of memory registration.)

There are as many categories of perceived data as there are types of end organs. The latter include auditory, olfactory, gustatory, tactile, and kinesthetic.

Perception also includes discrimination, that is, the capacity to perceive the differences between two or more objects in respect to certain characteristics. Depth perception is the capacity to perceive the distance of a given object or objects from the observer or the relative distance from front to back in the perception of solid objects.

Agnosia is an inability to recognize and interpret the significance of sensory impressions because of organic brain disease.

Perception may be the result of relatively simple, affectively neutral stimuli, presented one at a time or two at a time (double simultaneous stimulation or DSS). Stimuli may be complex, involving both visual and kinesthetic factors in making a discriminatory judgment, as in binocular vision; or stimuli may be a combination of visual, olfactory, and gustatory in an essentially gustatory perception.

A disturbance of perception associated with organic brain disease forms the basis for the face-hand test (Bender). If a normal alert adult with eyes closed is touched on his face and hand simultaneously, he recognizes both touches accurately and promptly. In settings of diffuse organic brain disease, including cerebral arteriosclerosis, the subject reports the face touch accurately but does not report the hand touch at all or displaces it up toward the face and locates it inaccurately. Persistent errors on double simultaneous stimulation provide presumptive evidence of organic brain disease. This test is normally positive in children up to the age of 4 or 5. It then

becomes negative until age 60, after which it tends to become positive again. In the intervening age groups, the test provides a useful presumptive sign. In elderly patients who are depressed and who give a positive response, the test tends to become negative as the depression lifts. In all instances of a positive response, further neurological studies are required to demonstrate absolutely that organic brain disease is indeed present.

Between the presentation of a stimulus and its recognition by the observer there is a time lapse called the perception time. This involves time for the transmission of the nerve impulse from the sensory receptor to the appropriate brain centers. More significant is the time involved to overcome an emotionally determined barrier to perception, which exists to protect the individual against traumatic stimuli.

Traumatic stimuli of all categories are modified adaptively by the barrier against stimuli. Alterations in the level of consciousness provide one example, with complete loss of consciousness (fainting) as an extreme example.

Whereas emotionally induced fainting eliminates all perception, circumscribed eliminations of perception may occur as a device for coping with traumatic stimuli. In negative hallucination, an individual with a physiologically intact nervous system fails to perceive a stimulus. It can be induced through hypnosis. When the nonperceived stimulus is excluded from conscious awareness because it is traumatic, it is usually part of the syndrome of hysteria.

Any modality of perception may be disordered in hysteria. Total anesthesia can occur, but diminution in sensation is more common. These perceptual disturbances do not follow recognizable neuroanatomical distributions but involve rather a part of a limb (glove and stocking distribution), half the body, and the mucous membranes (vagina, rectum, nose, mouth, and pharynx). Peculiar to the hysterical anesthetics is the usual involvement of all forms of sensation, superficial and deep, without the dissociation that so frequently occurs in organic sensory disturbances. If the sensory loss is limited to half the body, it is found to stop exactly at the midline, a condition contrary to the normal cutaneous overlapping. Similarly, psychogenic loss of sensation is attested to by the hysteric's perception of the tuning fork on only one side of the sternum or on only one side of the head, an obvious impossibility in view of the normal bone conduction of vibrations.

Repeated testing of visual fields in hysteria may result in a spiral contraction of the visual field. Hysterical blindness may occur.

Macropsia is a condition characteristic of hysteria in which objects appear larger than they really are. They may assume terrifying proportions.

Micropsia is a condition in which objects appear smaller than they really are. It may alternate with macropsia in hysteria, but it has also been described as an aura in some cases of epilepsy.

Hysterical patterns of perceptual disturbance do

not by any means rule out organic disease. These perceptual disturbances often seem to emerge in response to repeated sensory testing. This is not at all the result of a conscious intent to deceive the examiner but is often a naive appeal for help.

Brain-injured patients with left hemiplegia, hemianesthesia, and hemianopsia often steadfastly neglect the entire left side of the visual field. For example, they will eat all the food on the right side of the hospital tray right up to the midline; they will write only on the right half of the page; they will read only the right half of an individual word. In drawing the human figure, they draw only the mirrored representation of the right half of the body, neglecting entirely to draw the left half. In all these instances, there seems to be a selective inattention to the sick side, which manifests itself as an essentially hysterical disturbance in vision. The relationship of the latter to denial of illness seems quite clear: "The sick side does not exist."

Patients with organic hearing impairments have selectively more difficulty hearing emotionally disturbing auditory stimuli. In a sense, these patients with mixed (organic and functional) hearing disturbances are expressing in a selective and more circumscribed fashion the same phenomenon that is encountered in complete hysterical deafness without organic hearing impairment, namely, a blocking out of potentially traumatic auditory percepts.

Hysterical anesthesia has been described as a kind of localized fainting. Frigidity, including all degrees of anesthesia of the vagina and external genitalia, is a common hysterical defense against sexual excitement. In each circumstance, there is a withdrawal of attention from potentially traumatic external events.

Just as withdrawal of attention from a body part can reduce perception to the point of complete anesthesia, so can a sensory end organ be over invested with attention because of anxiety. In the latter instance, there may be areas of hyperalgesia to touch, headaches, and other body pains. In spite of verbal expression of great suffering, the hysterical patient may show a characteristic attitude of unconcern. Complaints of pain may be associated with rigidity of muscles and occasionally bizarre flexion deformities of the extremities and spine. Although the physical complaints typically do not conform to recognizable clinical syndromes, actual physical disease, past or present, may set the stage for use of a specific body part in symptom formation that is without organic basis. This return to a previous symptom or the perpetuation and intensification of a present organic symptom is termed somatic compliance.

In all the perceptual disturbances of hysteria it is not enough to demonstrate that the pattern of sensory abnormality is impossible from the point of view of known neuroanatomical facts. One must also search out the emotional meaning of the perceptual disturbance in adaptational terms, recalling that anesthesia, hyperesthesia, or paralysis commonly serve to defend the patient against sexual or violent impulses that he fears may get out of control.

Hypochondriasis. A generalized withdrawal of

attention from external objects is followed almost always by an increase in the attention focused on the self as an object. If this retreat from the world of real objects is complete enough, a pathological awareness of body feelings emerges, which is the basis for hypochondriasis.

Hypochondriasis is the unshakable belief that physical disease is present, in the face of all evidence to the contrary. As a symptom, it occurs in many forms of mental illness. It is most common in the depressions, particularly those of the involutional period. It may take extreme and bizarre forms in schizophrenia, in which case one may speak more appropriately of somatic delusions. (For example, "My insides are rotting," or "My intestines are filled with vermin or a solid plug of wax.") It may occur in a chronic low grade form over a period of years as part of a psychoneurotic reaction. Abnormal body feelings associated with hysteria tend to be localized and serve to protect the individual against the still longed for but potentially traumatic encounters with circumscribed portions of the outer world. Abnormal body feelings associated with hypochondriasis, on the other hand, tend to be generalized, in the sense that the entire body is involved, and result from a relatively complete withdrawal from external objects. Thus, an important difference between the hysterical and the hypochondriac is the degree to which the real objects in the external world have been retained or surrendered.

Illusions. In an illusion there is perceptual misinterpretation of a real external sensory experience. In a state of anxiety and loneliness, a traveler is apt to mistake a tree trunk for a menacing adversary or a mist for a terrifying apparition. This does not necessarily imply psychopathology. However, a schizophrenic patient may hear an insulting remark in the chime of a clock or feel the sinister hand of death in a casual handshake. This kind of misinterpretation is also known as an illusion. Illusions frequently occur in confused toxic conditions.

Hallucinations. A hallucination is the apparent perception of an external object when no corresponding real object exists. That is, an internal psychological event is mistakenly attributed to an external source. A dream is a simple example of a hallucination in normal experience.

Any modality of perception may be involved in a hallucination. Within the framework of normal hallucinatory experience, hypnagogic and hypnopompic hallucinations should be mentioned. Hypnagogic hallucinations occur in the drowsy state preceding deep sleep. They may contain both auditory and visual elements with great clarity and intensity. At times they are associated with paresthesias in the mouth and hand, the sound of murmured voices, and vague visual images of large objects approaching and receding. The latter group of hypnagogic hallucinations has been called the Isakower phenomenon and

seems to represent a reawakening of the memory of early nursing experiences.

Although it is said that hypnagogic hallucinations occur most often in individuals suffering from hysteria, they can also occur in normal individuals, particularly during childhood and early adolescence. (What has been said of hypnagogic hallucinations is also true of hypnopompic hallucinations, except that the latter occur during the drowsy state following deep sleep and preceding awakening.)

When the schizophrenic patient is wide awake by all neurophysiological criteria, he may experience hallucinations as vivid as those experienced by normal people during dreams. He very often acts on these inner perceptions, as though they were more compelling than the external realities that compete for his attention. He may incorporate illusions into his hallucinations, so that the latter occur alongside of external perceptions and even intermingle with them.

The affective content of the schizophrenic hallucination is more like that of a nightmare. In the acute schizophrenic reactions, unpleasant (dysphoric) elements tend to prevail. This is probably a result of the fact that some unendurable reality being warded off in the psychotic state constantly threatens to break through and contradict the schizophrenic distortion of reality. Auditory hallucinations tend to predominate in schizophrenia as contrasted with the predominance of the visual sphere in the dream.

Hallucinosis is a term for psychotic states in which the patient is well oriented, in spite of the fact that he is hallucinating. Such patients slip in and out of the hallucinatory state, with intervals of insight and lucidity. (Hence, Hughling Jackson's term mental diplopia.)

There is a group of hallucinogenic psychotomimetic drugs that characteristically elicit hallucinosis, that is, hallucinations in a setting of relatively clear consciousness. Mescaline and lysergic acid diethylamide (LSD) are well known representatives of this group. The relative alertness of the subject makes it possible for him to communicate his hallucinations in considerable detail in an experimental situation.)

Under mescaline, visual hallucinations, combined with visual illusions, are most frequently reported. These visual phenomena are vivid and change rapidly. Auditory hallucinations also occur, but less frequently.

Proprioceptive, cutaneous, and hypochondriacal sensations are also reported under the influence of LSD. Visual hallucinations tend to be much less frequent with LSD. In describing their reactions to hallucinatory drugs, particularly to LSD, patients have described compound hallucinations such as "color-hearing" or "sound-seeing." These occurrences have been termed synesthesias.

The relationship of drug-induced hallucinosis to schizophrenia and the value of these hallucinatory states as adjuvants to psychotherapy have been studied extensively, with only equivocal results.

In the convulsive disorders, relatively unformed percepts may occur during the aura. Olfactory and gustatory hallucinations occur in temporal lobe lesions in the so-called uncinat fits. Characteristically, the patient is unable to describe these sensations clearly except to say that they are unpleasant. Other patients may experience nausea or flashes of light as part of the aura. Less commonly, the aura in uncinat fits is associated with complex hallucinatory experiences involving visual and auditory components and possessing an affective quality of reminiscence (for example, *déjà vu*). The nature of the preseizures sensory disturbance often provides important clues for the localization of seizure foci amenable to surgical removal.

Generalized organic brain disease of almost any etiology can be associated with hallucinatory states that are at times indistinguishable from schizophrenia. These reactions may be expressive of drug sensitivities. Atropine and its derivatives may cause characteristic Lilliputian hallucinations in drug-sensitive adults receiving relatively small quantities in the form of eyedrops or in children being treated for enuresis. In Lilliputian hallucinations the hallucinated objects, usually people, appear greatly reduced in size. Although they occur most characteristically in psychotic reactions to a variety of drugs and toxic-metabolic states, they can on occasion occur in psychotic reactions without organic brain disease. They are to be differentiated from micropsia, in which real objects in the environment appear reduced in size.

Similarly, relatively small doses of alcohol or marihuana can produce hallucinations in sensitive subjects. Even the phenothiazines, which are administered to decrease psychotic manifestations, may in specific sensitive subjects intensify hallucinations or elicit new ones.

Patients who are chronically habituated to any sedative substance (alcohol, barbiturates, meprobamate, diazepam, etc.) often experience hallucinations when these drugs are withdrawn (withdrawal reaction). These hallucinatory states are commonly associated with great terror.

A large range of toxic metabolic stressors can elicit hallucinations as part of their action on the brain, for example: uremia, hypoglycemia, diabetic acidosis, alkalosis, hyperparathyroidism, and heart failure. The relief of heart failure with digitalis will at times interrupt a hallucinatory psychosis. On the other hand, a sensitivity reaction to digitalis may start one.

Brain tumors, subarachnoid hemorrhage, uremia, strokes, a broad range of endocrine abnormalities, and a variety of drugs may all play a role in initiating hallucinatory psychosis. The main point is that different chemical agents can produce the same hallucinatory effect in a given individual, and, conversely, a given chemical can produce widely vary-

ing responses among different individuals (Kluever: equivalence of heterogeneous stimuli).

In a hallucinatory state the following elements are to be taken into account:

1. *Projection to the outer world.* At times, hallucinations are perceived with great intensity; at other times, they are perceived as barely audible whispers or barely visible shadows. At times, the hallucination is clearly placed in the outer world; at other times, it is experienced within the body: a picture or a voice located in the head, the chest, or some other part of the body. The images and words may be distinct or blurred. They shade off from unmistakable sensory experiences at one extreme, through vivid imaginations and inspired thoughts, to ordinary thoughts and ideas at the other extreme.

2. *The sensory modality.* For example, a haptic hallucination is one associated with the sensation of touch. Although it may occur in schizophrenia, it is probably more common in delirium tremens, in which these cutaneous hallucinations are commonly associated with visual hallucinations of tiny, crawling animals. Creepy sensations under the skin are known as *formication*, for example, the "cocaine bug." Hallucinations of bad tastes and odors may be encountered as part of the aura of temporal lobe epilepsy (uncinate fit). The latter may also occur in schizophrenia, with complex delusional elaboration. The visual sphere is primarily involved in the hallucinatory phenomena seen in the toxic-metabolic disorders. Anton's syndrome is delusional denial of blindness, associated with hemiplegia of the nondominant side. The auditory sphere is probably the most frequently involved sensory modality in the hallucinations of schizophrenia. Reflex hallucinations may occur in one sensory sphere as the result of irritation in another; for example, a toothache may stimulate an auditory hallucination. Kinesthetic hallucinations may occur in amputees, as the phantom limb experience.

3. *The circumstances that have elicited the hallucinations.* A careful history with physical and laboratory examinations must be carried out to diagnose psychoses with acute or chronic brain disease that might otherwise be indistinguishable from schizophrenia. In all cases involving organic brain disease, reactions of delirium are more apt to occur at night. The sensory deprivation, the loneliness, and the anxiety, which tend to be greater at night, may combine to reactivate a psychotic process that has become quiescent by day. Therefore, careful nursing and security precautions throughout the night are particularly important in the treatment of these cases.

4. *Insight.* The degree to which the patient is aware of the pathological nature of his perceptual disturbances may have both diagnostic and prognostic significance. The element of insight is more likely to be present in the early stages of any psychosis and during the period of recovery. In either case, its pres-

ence tends to be associated with a good prognosis, and such patients are naturally more cooperative for treatment.

5. *The emotional and ideational content of the hallucinations.* The acute reactions of withdrawal from drugs and the toxic deliria are associated typically with great terror. Reactions of flight are common, and such patients, if unattended, may leap out of a hospital window to escape the unspeakable horrors of their psychotic world.

During psychotic states of ecstasy and elation, hallucinatory experiences may involve sexual excitement and feelings of being infused with impregnating rays which result in conception. In paranoid states, voices may be threatening. Rays may cause diseases, poisonings, or strange feelings. Voices may order the patient to commit acts of violence to save himself or the world from unspeakable sin. In depressive states, voices may be derisive and humiliating. They may accuse him of sexual perversion and order him to commit some expiatory act of self-mutilation or self-destruction.

As in dreams, memory traces constitute the building blocks of hallucinations. The past history of each patient provides the clue for understanding their content. The content reflects the effort to master anxiety and to fulfill various wishes and needs. Whereas patients with organic brain disease tend to express simple ideas relating to the wish to be well and to be home, patients with functional psychoses express more complex ideas based on interactions with internalized objects and concern themselves primarily with sexual and aggressive drives that the individual has been unable to master in real life.

Disturbances in Affect

Affect is the feeling tone, pleasurable or unpleasurable, that accompanies an idea. Affect and emotion are used interchangeably and include such feelings as *rage*, *grief*, and *joy*. It determines the general attitude, whether of rejection, acceptance, flight, fight, or indifference. Thus, the affects provide the motivational drive (or psychodynamic) component in relation to every life situation and play a determining role in the thoughts and actions of an individual in health and disease. When an affective state is sustained for a considerable period, we speak of a mood. Affect may be described as shallow or inadequate (emotional flatness), inappropriate (when the emotion does not correlate with the stimulus), or labile (changeable).

Attitude refers to the affective state with which a person habitually confronts his environment. Attitude is determined in early childhood by what Erikson called basic trust.

In the normal developmental sequence, an individual develops a capacity to relate to parents and to later parent figures in school and at work with an attitude of love and basic trust. In settings of family disorganization and in the absence of dependable sources of love and safety, the individual grows up with an attitude of basic distrust.

Where the individual's attitude is one of basic dis-

trust, he tends to be rigidly hostile, suspicious, cynical, and pessimistic toward everyone, even when others attempt to relate to him in a positive way.

Disposition refers to the affective state with which an individual habitually confronts himself. Whenever what Erikson called basic security has evolved, there is also a clear sense of personal identity. Associated with this is a sense of well-being and optimism, which tides the individual over the inevitable recurrent life crises that generate anxiety and depression in everyone.

Anxiety. Anxiety may be defined as a disagreeable emotional state in which there are feelings of impending danger, characterized by uneasiness, tension, or apprehension. The cause is usually unconscious or unrecognized intrapsychic conflict. Anxiety is associated with a characteristic pattern of autonomic nervous system discharge involving altered rhythm of respiration, increased heart rate, pallor, dryness of the mouth, increased sweating, and musculoskeletal disturbance involving trembling and feelings of weakness.

Anxiety is to be differentiated from fear, in which the foregoing combination of feelings and nervous discharges occur as a reaction to a real conscious and external danger that is present or that threatens to materialize.

Tension should also be differentiated from anxiety. In tension, the patient feels tight psychologically as well as physically. Tension is associated with conflict as a component of anxiety.

Panic is a state of extreme, acute, intense anxiety, accompanied by disorganization of personality and function.

In infancy, anxiety is hypothesized to be a diffuse, objectless feeling of dread stemming from the discomforts of unsatisfied needs. As the infant comes to identify the people in the environment who satisfy his needs, anxiety appears as a response to separation from them. With biological development, he is able to make complex behavioral responses calculated to prevent separation or to take action to bring separation to an end. As part of the child's anxiety reaction, he develops physical maneuvers to protect the body, to fight off the attentions of unwelcome individuals, or to take flight. Anxiety at this point involves not only a feeling of dread and the concept of danger but also a positive relationship to a specific individual (usually the mother) capable of relieving the danger. As a consequence of this relationship, the anxiety reaction becomes mingled with a feeling of hope.

As the child develops, he learns to anticipate the danger of separation and to initiate maneuvers to avoid it before it starts. As this is accomplished with increasing success, the gross reaction of discomfort subsides, and in time anxiety is reduced to a mere signal of danger, which sets off appropriate responses so swiftly and silently that there is no conscious awareness of danger in the entire process.

When confronted with an unprecedented danger or when the previous solutions are no longer available, the silent signal of danger once again becomes a conscious clamor, and once again there are psychologically meaningful actions representing calls for help and preparations for fight or flight. If a solution is still not forthcoming, anxiety increases progressively. At one point, expressions of helplessness and hopelessness ensue, with panic and various pathological forms of withdrawal from the traumatic environment.

As the infant develops strength and understanding, he becomes increasingly capable of accepting periods of separation from his mother and increasingly capable of accepting suitable substitutes for her during periods of enforced separation.

Realistic dangers continue throughout life. Such stressful situations still call forth the feeling of dread, the impulse to fight or take flight, and all the associated physiological concomitants. Commonly, the stressor is readily identifiable—for example, an impending operation. At other times the source of anxiety is more difficult to identify. In the early stages of organic disease, a reaction of anxiety to the vaguely sensed organic impairment may be the earliest clinical symptom preceding the appearance of any other localizing somatic symptoms.

Whenever the psychological adaptational mechanisms threaten to decompensate, anxiety appears. This may occur in a chronic low grade form as a constant accompaniment to life. This occurs when a more or less compensated mental disorder exists. Sudden changes in the life situation may evoke an increase of anxiety or precipitate an episode of panic as a warning that more disastrous emotional decompensation is in the offing. Thus, the presence of generalized anxiety or the occurrence of anxiety attacks are indicative not of any one clinical entity but are rather psychophysiological signals of danger that can occur in any diagnostic category of physical or emotional disease.

Free-floating anxiety is the nucleus and key symptom of neurosis. It consists of a feeling of dread that the patient cannot logically assign to a specific cause. In the quest for causality, patients suffering from free-floating anxiety are always ready to attach it to some suitable ideational content.

Anxiety reaction is a psychoneurotic state based primarily on free-floating anxiety. It is characterized by irritability, anxious expectation, pangs of conscience, and episodes of panic. There is a hypersensitivity to ordinary sights and sounds, as a result of which startle reactions occur frequently and with minimal sensory provocation. Cardiac palpitation, breathlessness, giddiness, nausea, dryness of mouth, diarrhea, compulsive eating, urinary frequency, seminal emissions, blurring of vision, general physical weakness, and other physical manifestations may occur chronically as part of anxiety neurosis. In an effort to reduce the unpleasant feelings associated with anxiety, the individual evolves a variety of defensive devices that in their entirety constitute many of the clinical manifestations of psychiatric disorder.

Conversion hysteria, for example, is a well known pathological device for reducing or eliminating free-floating anxiety. It is a psychoneurotic reaction characterized by sensory and motor deficits without a corresponding structural organic lesion. The effect of a hysterical paraplegia, for example, may be to prevent access to a situation feared by the patient because of unconsciously desired and rejected erotic or aggressive impulses. Often the physical symptom is so effective in alleviating the anxiety that the patient displays an attitude of calm (*la belle indifférence*) that contrasts strangely with the extent of the physical disability. *La belle indifférence* is an example of inappropriate affect.

Anxiety hysteria is a psychoneurotic reaction in

which the patient develops specific fears or phobias in relation to situations that might stimulate erotic or aggressive impulses unconsciously desired and rejected by the patient. A similar anxiety-relieving role can be made out for many of the symptoms of the obsessive-compulsive reaction and schizophrenic reaction.

Patients rarely employ a single fixed pattern for relieving anxiety. They try one and then another, and when these reactions fail, they may try still a third. This is repeated until the best adaptation possible under the circumstances is attained. And then, if the circumstances change, the pattern of adaptation may change again. In time, one pattern of adaptation does tend to become fixed in most patients.

In all instances, however, the clinical picture is best understood in adaptational terms in which a dangerous impulse is permitted some modicum of indirect or disguised discharge and the need for restraint and punishment is also permitted some degree of gratification, albeit in disguised form. These conflictual strivings are synthesized and harmonized in a way to reduce the amount of suffering caused by anxiety, and together they form the clinical symptom or reaction.

For example, a young woman was brought into the emergency room of a general hospital by her sister and brother-in-law with an adductor spasm of both lower extremities and an inability to walk. This motor abnormality was without accompanying organic disease. The emergency room physician gave her a small quantity of Amobarbital sodium intravenously, with the strong suggestion that her leg muscles would relax and return to normal when he finished counting to 10. At the appropriate signal, the patient relaxed, got off the table, and walked out of the emergency room, apparently elated. Four hours later, she was returned to the emergency room in a catatonic stupor, for which she had to be hospitalized. At that point, information was elicited for the first time that the patient had just recently moved into her sister's household and had suffered from guilt and anxiety as a result of illicit sexual play with her brother-in-law. Thus, removal of the hysterical defense (adductor spasm) caused this patient to regress to a psychotic defense (catatonia).

Depression. Depression, or a feeling of sadness, shares with anxiety a preeminent place among the most frequently expressed human complaints. Depression may vary in intensity from mild dejection to feelings of deep melancholia and profound despair. Just as fear, as contrasted with anxiety, is a reaction to real danger, so grief, contrasted with depression, is a reaction to a real loss.

The reaction of grief or mourning, which is the appropriate emotional response to a real loss, can be encompassed within the limits of normal reaction patterns. At the outset, grief may be expressed by uncontrollable crying or a shocklike state, with confusion, temporary panic, and thoughts of self-destruction. There may be physical weakness and loss of appetite, withdrawal of attention from the surrounding world, and inconsolability. After the initial period of mourning, there is a restoration of interest in the world. However, each new reminder of the loss reawakens the reaction of grief. The associated affective changes may go on for months and constitute what Freud called the work of mourning. This reaction may be accompanied by irritability and feeling of guilt. In time, the bereaved accepts the irrevoca-

bility of the loss, works through the complex issues raised by his sense of guilt, and is restored to normal.

Where the emotional development of the bereaved is inadequate and where feelings of guilt are very great, the mourning reaction may go on more or less indefinitely and merge into a pathological state of reactive depression. Thus, reactive depression may be defined as a psychoneurotic reaction characterized primarily by feelings of sadness, pessimism, lassitude, and inadequacy. It is commonly associated with anxiety and is precipitated by some loss. The actual loss may involve a loved person, physical health, beauty, or social position.

Anaclitic depression refers to the syndrome shown by infants during the first years of life if deprived of the attentions of a suitable mothering figure. Anaclitic means "leaning on" and is a psychoanalytic term denoting an infant's dependency on his mother for his sense of well-being. On separation from the mother, the infant goes through a characteristic sequence of changes. There is an initial phase of protest, characterized by intense crying and struggling. If this state of affect deprivation continues, the infant lapses into the phase of despair. At this point behavior suggests hopelessness. Struggling decreases, and crying is softer and monotonous. In children's hospitals this quieter state is commonly misinterpreted as a state of diminished distress. Actually, it is a state of mourning. Some such infants fail to thrive. They may stop eating and then waste away and die, a state called marasmus. Those who survive lapse into a phase of detachment, in which the infant withdraws from human relationships and becomes preoccupied with inanimate objects or his own body parts, engaging in masturbation, fecal smearing, head banging, and rocking.

In children of grade school age, the loss of loving parental figures tends to result in aggressiveness, hyperactivity, self-injury due to frequent accidents, inattentiveness in school, fire setting, and enuresis.

Many youngsters enter adolescence with a sense of loss relative to the simplicity of their previous life. Reactions of depression in adolescence are common. Sexual acting out is more often an expression of loneliness than of lack of morality. Because of his great vitality, the depressed teen-ager tends to act out not only sexually but antisocially. Juvenile delinquency, aggression, and reckless driving may be compared to the phase of protest previously mentioned. Suicidal threats and actions are used more to coerce adults than with deliberate self-destructive intent. However, successful acts of suicide are encountered with increasing frequency in the late teenage period.

Corresponding to the phase of detachment in early childhood is the "so what?" reaction in adolescence. An attitude of cynicism reinforces antisocial attitudes. Feelings of hopelessness, emptiness, and purposelessness may lead to addictions of all kinds. In

fact, addictions—whether to alcohol, narcotics, other drugs, food, or even the company of other people are typical adolescent expressions of the effort to overcome feelings of depression.

In adult life and thereafter, the picture of depression comes to resemble the picture of mourning more closely. In speech and behavior, the patient who expresses his helplessness often succeeds in recruiting support from the environment. In this context, suicidal threats and gestures are commonly employed as measures of protest or coercion.

Many fragile people maintain a marginal adaptation in highly supportive relationships in marriage or friendship. When these are disrupted, severe depression may emerge, which proceeds through all the phases: protest, despair, and detachment. Suicidal threats and gestures may occur during the reaction of protest. Alcohol, barbiturates, and other sedative drugs may be used to overcome feelings of despair.

A defense mechanism for dealing with the lost loved one is to act like that person, to adopt his interests, mannerisms, and way of life. This process is referred to as introjection. It is a form of identification that is potentially pathological in that it is often the result of feelings of helplessness and loneliness. Very commonly, depressed patients complain of symptoms that precisely reproduce the physical complaints of the deceased.

In a case of transvestitism (a compulsion to dress in the clothing of members of the opposite sex), a male patient periodically dressed in female attire as a way of retrieving his deceased mother.

A state of chronic depression may go on for years, with a progressive decrease of interest in the outside world. This intensifies the attention paid to the body, with a tendency to hypochondriasis. In later years, there may be an overlay of organic factors from cerebral arteriosclerosis, which complicates the clinical picture and renders the prognosis more grave. The reduction in energy output in depression also fulfills a self-preservation function in that it reduces the likelihood of self-destructive acting out.

Thoughts of self-destruction may occur transiently at one time or another during life within the limits of normal behavior. On the other hand, all verbally expressed suicidal thoughts must be given serious consideration, particularly where there is depression and there seems to be no promise of relief. In many instances, suicidal behavior represents a cry for help or an effort to induce protective behavior from an indifferent environment. With increasing age and progressive exhaustion of the reservoir of potential environmental helpers, the incidence of successful suicide goes up. Incidence of suicide rises uninterruptedly throughout life with males but tends to level off in the 7th decade with females.

Aggression. Aggression is forceful, goal-directed action that may be physical or verbal. It is the motor counterpart of the affect of rage, anger, or

hostility. It may be realistic and healthy, thereby representing self-assertion, directed toward the external world or turned inward, resulting in impulses or acts of self-destruction. Aggression is constructive when it is problem-solving and appropriate as a defense against realistic attack. It is pathological when it is unrealistic, self-destructive, non-problem-solving, and the outcome of unresolved emotional conflict.

Rage tends to emerge whenever strong drives are frustrated. In early childhood, separation from the mother, which is experienced as frustration, tends to generate rage as well as anxiety. The need to share the mother with the father is a universally encountered frustration and provides the basis for the Oedipus complex. The need to share the mother's love with siblings also creates frustration and reactions of rage: sibling rivalry.

Uncontrolled rage in early childhood may result in loss of mother's love and incur punishment. As a result, the youngster growing up in the framework of normal family life experiences great pressure to control outward expressions of rage. To a considerable degree, the psychological developmental process involves the increasing capacity to control rage and to find substitutive outlets for it. Conversely, loss of control elicits feelings of guilt and anxiety.

Where there is family disorganization, particularly in the socioeconomically deprived group which is characterized by broken homes and absent fathers, the capacity to control outward expressions of rage is impaired. In such a population, the incidence of suicide due to inwardly turned rage is low, while the occurrence of assaultive behavior and homicide is high.

In pathological mother-child relationships, a spectrum of rage reactions may be discerned with postpartum depression and suicide at one end of the scale and child battering and infanticide at the other. There are innumerable intermediary ambivalent mothering reactions, resulting in infant neglect and failure of the youngster to thrive physically and emotionally.

Psychiatric symptom formation has as one of its primary goals the control of forbidden aggressive impulses. Phobias, hysterical paralyses, and hysterical fugue states are common examples of this type of defense. Obsessive-compulsive symptoms may develop as devices for expressing aggression in a diluted form. Typically, even these "modified aggressions" generate so much guilt that the obsessional patient feels compelled to *undo* the aggressive act by means of a variety of complex compulsive rituals. Pathological states of apathy and boredom may result as a defense against rage. In some patients, a small quantity of alcohol may suffice to precipitate an attack of pathological alcoholic intoxication, which is characterized by an outburst of homicidal fury. Morbid fear of death may be the result of a chronic fear of loss of control of aggression, with a concomitant anticipation of retaliation from the environment.

Rage, unexpressed because of guilt and fear of retaliation, has been hypothesized to result in a variety of physical symptoms involving various organ systems of the body in psychosomatic disease. Homicidal rage may occur episodically in postepileptic twilight states. Aggression verbally expressed may take the form of obscene speech, and the defense against this may take the form of stuttering or hysterical speech disturbances.

Irritability refers to a state in which chronic diffuse expressions of anger occur to ward off relationships viewed as threatening. This may be found in paranoid character disorders, various psychoneurotic reactions, and the early stages of psychotic depression and schizophrenia. It is commonly encountered in adolescents to ward off sexual feelings felt toward parents and siblings.

Outbursts of rage with delusional ideation may occur in schizophrenia as a defense against unconscious homosexual impulses or other impulses consciously unacceptable. Violence

associated with criminal acts of breaking and entering may be encountered with perverse sexual impulses. Uncontrollable compulsive acts such as kleptomania, pyromania, and gambling may be masked expressions of rage. A major cause of suicidal behavior in depression is rage turned against oneself. In these instances, suicide becomes an internalized act of homicide.

Aggression merges with erotic thought and action in sadism and masochism. Sadism is the experience of pleasure derived from inflicting physical or psychological pain on others. Masochism is defined as pleasure derived from physical or psychological pain inflicted on oneself. Sadism and masochism may occur unconsciously within the limits of normal behavior as well as in sadistic or masochistic character disorders and in some psychoneurotic and psychotic reactions. These tendencies may also occur consciously in various sexual perversions, such as flagellantism, a masochistic or sadistic act in which one or both participants derive erotic stimulation from whipping or being whipped. Masochistic reactions are associated with unconscious guilt feelings, in response to which punishment is sought or invited.

Pleasurable affects. Implicit in the description of anxiety and depression are converse states, in which danger is absent and union with loved ones is perfect. In such a setting, the pressure of one's wishes and needs is balanced by the availability of adequate channels for impulse or drive discharge, and contentment prevails.

In infancy and early childhood, hunger and fatigue may rapidly transform a contented child into one who is fretful and unhappy. In the course of biopsychosocial maturation, the individual develops an increasing range of substitutive outlets and the capacity to delay immediate gratification. As a result, the capacity for affect stabilization increases. In the emotionally mature adult, there is an underlying stability of good mood that withstands the undermining traumata of daily life. The chronic absence of good feeling, anhedonia, is seen in chronic depressive states and in simple schizophrenia.

Normal recreation may be cited as an example of a substitutive outlet that allows for stabilization of mood. Recreation is characterized by a quality of irresponsibility, spontaneity, enthusiasm, hilarity, euphoria, elation, and other relatively uncontrolled expressions of emotion. During play, the emotionally mature adult is permitted to become a "child" again. Not only is this socially approved, but the capacity to act childishly in a controlled setting is a distinct asset. In play, it is possible to vent aggressive feelings against one's opponent. Mounting excitement culminating in a victorious climax may represent sublimation of sexual drives. Repetitive motor discharge through playing games is a device for achieving motor mastery in the developmental process and for recalling the sense of triumph upon accomplishing motor competence in the adult. Thus, while there are regressive elements in normal play, they are always within limits set by the rules of the game. The capacity to regress while maintaining disciplined contact with reality is not only part of recreation but of the esthetic experience in general and has been referred to by Kris as regression in the service of the ego.

Euphoria refers to the first, moderate level in the scale of pleasurable affects. It has been defined as a feeling of emotional and physical well-being. When it occurs in a manifestly inappropriate setting, it is indicative of mental disorder. Although it is usually psychogenic, it may be observed in organic brain disease.

Elation may be thought of as a second level in the scale of pleasurable affects. It is characterized by a definite affect of gladness in which there is an air of enjoyment and self-confidence, and motor activity is increased. This affect belongs within the limits of normal life experience. Yet, it may be indicative of mental disorder when it occurs in a manifestly inappropriate setting.

Mood swings refer to the oscillations between periods of euphoria and feelings of depression and anxiety. To some degree, mood swings occur within normal limits throughout life. They may be more marked during adolescence. Another normal life situation characterized by mood instability is the premenstrual phase in women, which has been referred to as "the recurrent neurosis of women." Anxiety, excitability, and anger are common; other cases show fatigue, irritability, hypersensitivity, and weeping spells. In almost all instances there is some regression, as a result of which the capacity to delay immediate gratification of impulses is impaired, and frustration seems unbearable. In most adult women, the onset of menstrual flow is followed by emotional relief.

As Benedek has shown, hormonal influences undoubtedly play a large role in this premenstrual upheaval. However, psychological difficulties related to unresolved feminine identity problems may complicate the picture.

Ambivalence refers to the coexistence of antithetical emotions, attitudes, ideas, or wishes toward a given object or situation at the same time. Usually, only one attitude emerges into consciousness, the other remaining unconscious. Ambivalence is encountered in all instances of affective instability. Thus, it plays a role in the mood swings that occur within normal limits. However, it is fundamental in many pathological mental states, being particularly prominent in the obsessive-compulsive, manic-depressive, and schizophrenic reactions. Bleuler regarded marked ambivalence as one of the primary symptoms of schizophrenia.

Various pharmacological agents may induce euphoria or elation. Alcohol, narcotics, and the amphetamines may be cited as examples. Underlying most cases of addiction is an anxious-depressive state that drives the patient to use agents which will relieve the painful affective states. These substances enable the patient to repress or deny the existence of painful affects. Brain lesions may have a similar impact on painful affects.

It was once thought that lesions of the frontal lobe specifically elicited a mood of euphoria. It is now known that any

brain lesion—anywhere and from any cause—that lowers the level of consciousness can have this effect. A small lesion involving the floor of the third ventricle may have a greater mood-elevating effect than a much larger one occurring elsewhere. Affability encountered in patients with senile dementia is an example of mood elevation associated with diffuse organic brain disease.

So far the role of drugs and toxic and organic factors as affect-elevating agents has been emphasized. Some patients are able to eliminate from consciousness painful affects without the aid of chemical consciousness-impairing agents by utilizing defense mechanisms that are exclusively psychological. They deny not only depression but all object losses as well. The manic patient does not feel deprived; he feels elated. In place of pessimism and despair, he has feelings of unwarranted optimism and self-confidence, and he is physically overactive and high-spirited. He feels that he has unlimited resources and, as a result, squanders money with reckless abandon. This pattern is called the manic reaction, or mania. When less intense, this behavior is described as a hypomanic reaction. Because the clinical picture represents a complete break with reality, without awareness on the part of the patient, such reactions are defined as psychotic.

Often the manic reaction thinly disguises an underlying depression by which it may be abruptly replaced. Manic reactions tend to be relatively short-lived and are typically followed by depression, hence the term manic-depressive or cyclothymic psychosis. In some instances, a hypomanic reaction may be indefinitely prolonged.

Exaltation may be defined as extreme elation and is usually associated with delusions of grandeur. It merges into ecstasy, which represents a peak state of rapture. These affects in inappropriate circumstances are found almost exclusively in relation to psychosis, such as the schizophrenic reaction.

The ecstatic states occurring in acute schizophrenia are related to the ecstatic transports of religious mysticism. The mystical experience, whether religious or not, possesses certain distinguishing qualities:

1. **Ineffability.** The subject often insists that his experience is inexpressible and indescribable, that it is impossible to convey what it is like to one who have never experienced it.

2. **Noesis.** The subject has the feeling that the mystery of the universe has been plumbed, that an immense illumination or revelation has occurred. Along with this may go a curious sense of authority, the conviction that one is privileged to lead and to command. As for the revelation itself, it seems to consist of layer upon layer of truth that, as it unfolds, may find expression in some familiar or even commonplace thought that suddenly seems pregnant with new meaning. On occasion, the expression of the truth may take the form of a document of poetic beauty and great moral significance, such as are represented by the writings of the biblical prophets. On the other hand, the revelation may be expressed in words that are unintelligible to the speaker.

3. **Transiency.** The actual mystical state may last only a moment, or it may go on for an hour or two; but when the experience ceases, the particular quality of feeling it aroused is only imperfectly reproducible in memory. Yet it is as un-

forgettable as it is highly treasured, and it colors all subsequent activity.

4. **Passivity.** In the mystical state there is an abeyance of the will, as if the subject were in the grip of a superior power to whose direction he is highly responsive.

5. **Unio mystica.** There is a sense of mystic unity with an infinite power, an oceanic feeling in which opposites are reconciled, in which there are "darknesses that dazzle" and "voices of silence." There is a quality of timelessness, in which minutes and centuries are one and in which past and present are one.

The mystical experience seems to represent psychological regression at its most extreme. It has been hypothesized that it is a retreat to the very beginnings of conscious psychological life, and in a sense it is an ultimate counsel of despair. As the individual travels backward in memory in search of a time when life was endurable, finding no one on earth to whom he can turn for help, he comes at last to a time of contentment that preceded conscious awareness of other human beings. It is a retreat to a time when infant and mother were fused. In recapturing this mood, the individual may find in the mystical experience a way out in the form of psychosis or a compelling religious experience, whatever its nature, that may be life-saving in its impact on the subsequent behavior of a despairing human being.

Mechanisms for maintaining mood control. The euphoric, manic, and ecstatic states are often based on painful affects, which are replaced in consciousness by their opposite. Other ways in which painful affects may be brought under control follow:

Depersonalization. This is a mental phenomenon characterized by a feeling of unreality and strangeness about oneself. The patient says, in effect, "This experience does not hurt *me* because I am not *me*."

The term depersonalization includes feelings of unreality, estrangement, amnesia, multiple personality states, and distortions in the body image. Depersonalization may be partial or complete, transient or long-lasting. It may be encountered in hysteria or as part of the aura of epilepsy. In schizophrenia it is complete and lasting.

Derealization. This is a mental phenomenon characterized by the loss of the sense of reality concerning one's surroundings. The patient says, in effect, "This environment is not dangerous to me because this environment does not really exist."

Derealization includes distortions of spatial and temporal relationships so that an essentially neutral environment seems strangely familiar (*déjà vu*) or strangely unfamiliar (*jamais vu*) or otherwise strange and distorted. Like depersonalization, to which it is closely related, derealization can be partial or complete, transient or long-lasting. Similarly, it may occur in hysteria or as part of the aura of epilepsy. It, too, is most complete and persistent in schizophrenia.

Although depersonalization and derealization occur as adaptational mechanisms to reduce unpleasant affects, they may in their own right create a feeling of impending catastrophe.

A feeling that could be shattering if experienced in a single episode becomes tolerable if "digested" piecemeal over an extended period. The traumatic neuroses of wartime may be cited as an example. An experience capable of generating overwhelming terror may be dealt with at the moment of occurrence

by depersonalization and derealization. When the catastrophe is over and the individual is no longer in danger, delayed reactions of anxiety may appear. Sleep may be disturbed by recurrent battle dreams. There may be an intolerance for sudden loud noises and for displays of aggression. After memories of the traumatic incident have been "revisited" repeatedly and the anxiety slowly mastered in small doses, the traumatic neurosis subsides.

Disturbances in Motor Aspects of Behavior

Conation, or the conative aspect of mental functioning, refers to the capacity to initiate action or motor discharge and concerns the basic strivings of an individual as expressed through his behavior. The affective component of an idea determines the force and the direction of the action that follows that idea. Thus, conation cannot be considered apart from affects, and, conversely, all affects represent potential energy via their conative components.

The schizophrenic seems to have a basic impairment of the conative capacity. He has difficulty initiating goal-directed activity. He may in some instances be capable of carrying on useful work if it is initiated for him and carried out under constant supervision, as in a sheltered workshop. Other examples of impaired conation in schizophrenia follow.

Echolalia is the pathological repetition by imitation of the speech of another person. In certain instances of catatonic schizophrenia, all speech is echolalic in nature.

Echopraxia is the pathological repetition by imitation of the movements of another person. The patient may act as the mirror image of his physician and assume his postures and gestures. Echopraxia is characteristic of catatonic schizophrenia. Waxy flexibility (*cerea flexibilitas*) is the maintenance by a patient of imposed postures with increased muscle tone, as when a limb remains passively in the position in which it is placed, however long or uncomfortable. This phenomenon may be induced during a hypnotic trance (catalepsy) in essentially normal individuals, but it is most characteristic of catatonic schizophrenia and organic brain disease. It is to be differentiated from cataplexy, which refers to a sudden, transient attack of muscular weakness, with or without loss of consciousness. Narcolepsy is paroxysmal sleep associated with cataplexy.

Echolalia, echopraxia, and waxy flexibility are cited as examples of command automatism, wherein commands or suggestions are automatically and uncritically fulfilled. Disturbances of motor activity may also be conveniently classified in terms of overactivity and underactivity.

Overactivity. Some individuals are endowed biologically with a tendency to increased motor output, which can be demonstrated in studies of fetal movements antepartum. The hyperkinetic child is particularly prone to restlessness, aggressivity, destructiveness, and assaultive activity during periods of family disorganization and emotional deprivation. Patho-

logical overactivity in childhood is particularly prevalent among boys. As they develop motor skills, boys become increasingly involved in athletic activities, which offer an opportunity for self-discipline and goal direction in the expression of their intense motor drives. Children may also develop hyperkinesis as a sequel to organic brain disease such as encephalitis.

Agitation is a state of chronic restless motor activity that is a manifestation of emotional tension. When a patient is restless and depressed, his diagnosis is agitated depression. The restlessness and uncontrolled motor activity associated with certain ataractic drugs such as the phenothiazines is called akathisia.

Learned sphincter control, which is part of motor development, may be lost during periods of stress. Thus, previously toilet-trained youngsters may become enuretic or encopretic during periods of enforced separation from the mother.

Patterns of hyperkinesis that start during the grade school period may carry over into adolescence and are, in part, the basis of antisocial behavior during this period. Thus, adolescent tendencies to reckless driving and sexual acting out, which have far reaching social implications, are best understood and treated as manifestations of biopsychosocial stress. Overeating, excessive drinking, smoking, irritability, and restlessness may also occur as fragments of the anxiety and depression syndrome in the adult.

Patterns of increased motor activity can be observed in the psychoneurotic reactions. The hysterical convulsion, for example, also known as major hysteria or hystero-epilepsy, consists usually of pantomimic expressions of sexual and aggressive fantasies. Occasionally, a hysteric patient may mimic a grand mal seizure with extraordinary fidelity; the major differential diagnostic feature is the patient's failure to develop postseizure reflex abnormalities.

Sleep-walking (somnambulism) is a motor disturbance that occurs primarily during childhood and tends to occur more often in individuals prone to hysterical symptom formation. It is also commonly associated with enuresis. On a psychological motivational level, it seems to be related to nocturnal feelings of fear and loneliness and the wish to enter the parental bed. In spite of what seems to be a simple mechanism at work, in which a child acts out relatively superficial wishes in a half-waking state, sleep-walking (as well as sleep-talking and enuresis), when monitored electroencephalographically, appears to take place during stage IV sleep, a period of deep sleep during which dreaming rarely if ever occurs.

Psychoneurotic reactions of the obsessive-compulsive type are characterized both by obsessive ideas and doubts and by complicated compulsive rituals. The range of compulsive actions is literally limitless, although certain patterns tend to occur most frequently, such as compulsive hand washing, counting, and repetitive ceremonial rituals, including the reci-

tation of prayers and the repeated checking of door locks, water faucets, gas jets, and windows. In each instance, the compulsive symptom simultaneously carries out a forbidden wish and then undoes it. The endlessly repeated cycle of anxiety, the need to carry out the forbidden act, relief of anxiety by carrying out the compulsive act, and the need to undo the act, characterizes the compulsive symptom.

Various compulsive manias are, in effect, pathological preoccupations or compulsions associated with specific ideas, activities, or impulses. For example: dipsomania, the compulsion to drink alcohol excessively; egomania, the pathological preoccupation with self; kleptomania, compulsive stealing; megalomania, preoccupation with delusions of great power; monomania, the preoccupation with a single idea; nymphomania, excessive sexual desire in a female; pyromania, the morbid compulsion to set fires; trichotillomania, the compulsive pulling out of one's hair.

A tic is an intermittent spasmodic twitching of the face or other body part, repeated at frequent intervals and without external stimulus. Although there seems to be some relationship between tics and motor disturbances of conversion hysteria, the tic is more stereotyped and difficult to influence with treatment. Tics occur automatically and are not under conscious control. They seem to originate as an accompaniment to affect: sex, rage, anxiety, grief, triumph, or embarrassment. In time, they become affect equivalents, in the sense that there is repetitive discharge without conscious awareness of the original affective significance.

Maladie des tics is a disorder characterized by a facial tic, which may spread to involve the head, neck, and upper and lower extremities. The tic is associated with stereotyped gestures, echolalia, coprolalia (preoccupation with obscene words), and compulsive thoughts. It usually begins between the ages of 7 and 15 and is essentially incurable. The muscular movements begin in the face and extend to the rest of the body. The patient opens his mouth, spits, jerks his head, claps his hands, scratches, jumps, and dances. Articulation and phonation are affected, and barking noises are often made. The patient repeats certain words or phrases, frequently expressing compulsive ideas. There may be some accompanying organic changes, but the nature of the pathology is unknown.

Manic patients may talk, sing, dance, and joke with apparently inexhaustible energy and good spirits. In agitated depression, there may be crying, pacing, and wringing of hands. In catatonic excitement, the pattern of overactivity is extreme from a quantitative point of view and bewildering from the point of view of content. Talking, which may be loud and voluble, is in response to delusions and hallucinations. The talk may consist of endless repetitions of sentences or phrases, the meaning of which is obscure (verbigeration). The severe ambivalence char-

acterizing the schizophrenic process may result in great mood swings, ranging from abject terror to exaltation. There may be sudden eruptions of terror and rage, in response to which the patient may become homicidal. There may be moments of deep guilt and an urge for self-sacrifice, which may result in acts of self-mutilation. The excited catatonic patient may execute various gestures that have the intent of influencing the world by means of magical thinking. Catatonic excitement, because of qualitative intensity and a tendency to be prolonged, may result in severe exhaustive states, with dehydration, hyperthermia, and sudden death. The use of physical restraint tends to increase terror, intensify excitement, and increase the dangers of exhaustion and death.

Underactivity (psychomotor retardation). Just as there are individuals constitutionally predisposed to hyperkinesis, so there are others who react to stress with motor inhibition. In childhood and early adolescence, generalized patterns of inhibition and retreat tend to have a more grave clinical significance than they do in later years and suggest the presence of a schizophrenic process.

Simple depression, in contrast to the agitated depression, is characterized by the absence of anxiety and by decreased motor activity. There is a feeling of pronounced fatigue and great difficulty in initiating any activity, including speech. Responses to stimuli are slowed up on an ideational, verbal, and motor level. The patient's posture is expressive of the underlying affect of hopelessness and futility.

Hysterical motor disturbances can affect any of the voluntary muscle groups in patterns calculated to ward off forbidden sexual and aggressive discharges or to avoid situations of physical danger. They may present clinically as paralysis or muscular weakness (asthenia); abnormal posture, such as torticollis, camptocormia, pseudocontractures, and stiffness; gait disturbances ranging from hysterical paraplegia to astasia-abasia. The speech apparatus may be affected with aphonia, hoarseness, and stammering. Blepharospasm may occur in relation to forbidden scopophilic wishes. The muscular abnormalities of hysteria are usually associated with an increase in muscular tonus. If sustained, they may produce painful orthopedic and gynecologic disorders. For example, hysterical spasm of the muscles of the pelvic floor may cause vaginismus. Concerning the physical findings in hysterical paralysis, Freud wrote "The hysteric acts in his paralyzes and other manifestations as if anatomy were non-existent or as if he had no knowledge of it."

Although hysterical paralyzes are usually associated with increased muscle tone and rigidity, on other occasions a total flaccidity, except for the retention of normal reflexes, is encountered. On occasion, an attitude of ambivalence will express itself in variations in muscle tone.

In the schizophrenic catatonic stupor, the patient is immobile. His face may be masklike in its lack of animation. He is unresponsive to questions or commands except when he occasionally manifests echolalia or echopraxia. When an attempt is made to bend his arm at the elbow, he may vigorously extend it. He may close his eyes tightly when asked to open them. These qualities, which may be regarded as contrariness or countersuggestibility, are manifestations of a generalized oppositional attitude called negativism, wherein the patient does the opposite of what is requested. Ambivalence may modify the muscle tonus of the patient with catatonic stupor to the extent that he will permit bending of his arm but against a resistance, so that a tonus quality emerges known as waxy flexibility.

Motor disturbances may express themselves primarily in disorders of language. Stammering is a disorder characterized by spasmodic, halting or hesitating speech. Stuttering is a more severe degree of stammering. It tends to have a more explosive quality, based on violent expulsive respiratory movements associated with the production of speech. It usually appears between the ages of 2 and 6 years. It occurs much more frequently in males and is said to be more frequent in those who are left-handed.

When an individual encounters an affect-laden idea while speaking, he may hesitate and stammer. Such an interruption in the flow of words is analogous to a slip of the tongue and represents a momentary speech impediment based on an encounter with a circumscribed and personalized conflict. However, when the function of speech itself has acquired an objectionable emotional overlay, there is an ongoing disturbance in the capacity to speak more or less independent of the ideas themselves. Such is the situation in stuttering.

Disturbances of Personality

Personality refers to the sum total of the patterns of thought, feeling, and behavior that an individual habitually employs in his ongoing adaptation to life. Personality is often used synonymously with character. Normal personality implies a state of maximal fulfillment in terms of flexible adaptation to adult reality. For most people, however, personality development involves a process of becoming psychologically rigid and of making peace with one's own illogicalities, eccentricities, and follies. As a result of personality rigidity, there is a certain loss of freedom of thought and action. However, overt symptom formation is prevented thereby. The structural rigidities of personality often conceal deep-seated psychopathology. Under stressful conditions sufficient to disrupt these structures, severe symptom formation, including overt psychosis, may erupt.

Various personality disturbances may be distinguished and are described in detail in the chapters covering personality disorders. They include, to cite a few: inadequate personality, schizoid personality, cyclothymic personality, paranoid personality,

passive-aggressive personality, and compulsive personality.

The sexual perversions are also included among the personality disorders. Some of these are: homosexuality, pedophilia, fetishism, transvestitism, exhibitionism, voyeurism, sadism and masochism, and zoophilia.

Disturbances in Appearance

It is relevant at this point to discuss the relationship of appearance to the clinical manifestations of psychiatric disorder. Extremes of meticulousness or slovenliness and attire which is manifestly inappropriate or bizarre and which calls attention to itself for these reasons may all be indicative of mental disturbance.

Excessive fastidiousness may suggest an obsessive-compulsive disorder. Deterioration from a previous normal level of neatness may be an early sign of depression or schizophrenia. When a female patient seeks to arouse sexual desire by her seductive dress, make-up, and manner, hysteria should be suspected as an element in the clinical diagnosis. Male homosexuals are distinguished for their exhibitionistic attire. A sexually fearful female may deliberately choose neutral or drab clothing to discourage the interest of potential sexual partners. Regressive clinging to childhood may be expressed in childish patterns of dress. For example, a mature woman may wear a large ribbon in her hair.

Rejection of normal sexual identity is encountered in adolescent females who affect boys' haircuts and blue jeans and in adolescent boys who affect female or childhood hair styles. Repulsive body odors due to lack of bathing may be designated "the skunk maneuver," calculated to keep a frightening world at a safe distance. Paranoid patients may wear dark glasses so that they may "spy" on others without themselves being spied upon. Eccentric patterns of dress, including large unkempt beards and excessively tight pants, may become a badge of rebellion or a conformity for membership in teen-age groups.

Transvestites are sometimes acting out complex fantasies involving a wish to recapture a lost parent figure. Schizophrenic patients may first reveal the delusion of body change by complaining that a hat or a pair of eye glasses no longer fits properly. Powerful automobiles and other possessions may become extensions of the body image and serve to compensate for feelings of inferiority.

Life Pattern Disturbances

In the psychiatric evaluation of an individual, the main concern should be with actual life performance rather than with the symptoms he displays or the psychodynamics of each symptom. The important question is not whether he has psychopathology but whether the psychopathology "has" him. To evaluate an individual in operational terms, the psychiatrist

must make inquiry into four separate areas: family, work, play, and community. In each of these areas, the patient is expected to function in a specific role. The effectiveness with which he performs these roles is a measure of health, just as impairments in these areas are a measure of life pattern disturbances and mental illness.

Family. Within a family group, one can identify the following roles: (1) spouse (husband, wife), (2) parent (father, mother, grandparents), and (3) child (son, daughter, sibling).

Each of these roles involves a complex of capacities and responsibilities. The husband must be not only the wage earner but also the sexual partner and companion for his wife. The capacity for satisfactory sexual performance is implicit in his role. Potency disturbances can have a severe undermining effect on family happiness. Just as satisfactory sexual performance reinforces the male's concept of self as a man, the satisfactions he gives to his wife reinforces her identity as a woman and promotes acceptance of her female role. Ideally, from a psychological point of view, the husband should be the leader in the home. If he is unable to assume family leadership because of his personal psychopathology or because socioeconomic factors have displaced him from that role, he gets caught up in a vicious cycle that is destructive to both himself and the rest of the family.

The wife must be capable of accepting her feminine role both sexually and in her over-all responsibilities in the household. If she is frigid and incapable of sexual satisfaction in spite of normal sexual potential in the husband, this may undermine his self-esteem and have a destructive impact on his over-all performance. Thus, there is in the sexual life of the married couple a give and take in which there is mutual reinforcement of self-esteem when the sexual life is normal and mutual disturbance when it is not.

Perhaps the most important aspect of the parental role is the capacity to accept an attitude of passive dependence in others. There are periods of helplessness and dependency needs that fall within the range of normal, and a *sine qua non* for normal function as a spouse or parent is the mastery of one's own infantile dependency needs. A person who has achieved this is capable of providing maximal opportunity for normal emotional development in others. On the other hand, reversal of roles is often seen in disturbed households in which an emotionally immature parent makes unrealistic demands on a young child. A schizophrenic or depressed mother may take to her bed and expect her little daughter to mother her.

That the mother plays a role of special importance in the emotional development of the child is self-evident. However, the importance of the father in the developmental process is equally great. Not only does he consolidate the self-esteem of the

mother, but he provides an identification for the son and, in his relation to the mother, an identification model for the daughter. Families without fathers are particularly prone to psychopathology.

Grandparents play a complex role in family life, with variations that are determined largely by cultural factors. Perhaps the most important fact is that the grandparent role permits the individual to continue the reproductive role vicariously, with many privileges that are not possible with one's own children.

Children must develop basic security and basic trust in their relationships to their parents. Where the opportunity for this does not exist, attitudes of cynicism and distrust emerge and seriously impair the social, intellectual, and emotional developmental process. One result of effective parental participation in family life is the setting of limits on the outward expression of sibling rivalry. The birth of a sibling is universally experienced as a trauma, resulting as it does in a displacement of the older child from the bosom of the mother. The displaced youngster has feelings of rage, for which he needs help from his parents. If this help is not forthcoming, the youngster does not internalize his aggression or learn to sublimate it. Instead, he expresses it outwardly. This is why the likelihood of homicide and other forms of violence is greatly increased in communities characterized by family disorganization and absent parents.

Work. At each stage of life every individual has a work role. For the school age youngster, this involves his capacity to function as a student. The wage earner must be able to work with reasonable effectiveness and personal satisfaction. The same is true for the wife in relation to her household chores. Many people work far below their potential because of psychopathological work inhibitions. Some are self-defeating out of a sense of guilt. Others are self-defeating because of a fear of success (those who are destroyed by success). Some fall behind because they must rebel in their quest for identity. On a school level, this expresses itself as an impaired capacity for learning and in the school dropout problem.

Retirement from work may have a severe disruptive impact on the adaptational patterns in a family and may touch off a vicious cycle of psychopathology. Some people might be termed work addicts. These are guilt-ridden people who work compulsively and for whom loss of a job or retirement upsets a delicately balanced adaptational state; loss of work may at times result in severe mental illness and disruption of family life.

The chronic schizophrenic patient has a peculiar attitude to work. If he works at all, he chooses work settings that are highly structured and that permit isolation from other human beings. The postal clerk on the night shift occasionally is an example of this. Many schizophrenics refuse to work. In some instances at least, work is viewed as a threat to basic

security in the sense that success might mean separation from parent figures and loss of a sheltered home setting. For this very reason, some patients who fear to work for pay will work on a volunteer basis. The inability to hold a job carries with it a particularly poor prognosis in schizophrenic patients.

Social. Normal emotional development calls for a capacity to enjoy one's leisure. This involves not only a range of skills and interests but freedom from guilt and anxiety. The capacity for spontaneity, enthusiasm, and elation has already been mentioned in the description of normal recreation. Some people in recreational situations are like work addicts. They play compulsively, angrily, and anxiously. They are so demanding of themselves that they suffer severely if they make errors; if they lose, they become depressed. In these instances, the superego remains too much in control, and there is no opportunity for genuine sublimation.

Community. A concern for the welfare of others should extend beyond the confines of the family. The emotionally mature adult has a sense of duty toward his community and ideally involves himself in charitable, educational, or political groups to provide service to others without financial reward. This involves a capacity for idealism and self-sacrifice and the ability to get along with others. Needless to say, many become involved in this area for pathological reasons, such as guilt, exhibitionism, and a need for self-aggrandizement. In such instances the formal goal of the group may clash with the pathological informal goals of the individual. If such individuals have positions of leadership, they may exert a highly destructive influence on the group, which may necessitate their removal if formal group goals are to be achieved.

Suggested Cross References

The reader is referred to the sections dealing with the psychiatric examination (Chapter 11) and psychological testing (Sections 12.1 and 12.2) for information regarding the techniques of psychiatric assessment that are designed to elicit and identify the various psychiatric symptoms described in this chapter. For a further understanding of the implication of the symptoms covered in this chapter, see the discussion of the specific disorders in which these symptoms occur, which may be found in Area F, on psychiatric disorders, and Area H, on child psychiatry.

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THE PSYCHIATRIC SYNDROMES

This area addresses itself to discussion of those clinical syndromes which fall within the province of psychiatry. As such, it deals with disorders of diverse etiology which share in common the fact that their clinical manifestations involve disturbances of psychological functioning. In essence, this area has been organized according to the official nosological system of the American Psychiatric Association. However, any such attempt to organize psychiatric clinical entities must, inevitably, reflect the problems intrinsic to diagnosis and classification in this specialty. These problems are discussed in detail in Chapter 14 of this area; an overview of the major issues involved is presented below for purposes of orientation.

Historically, the classification of syndromes associated with a predictable outcome, on the basis of clusters of clinical symptoms, represented a major advance in psychiatry. Kraepelin's delineation of dementia praecox—the syndrome now identified as schizophrenia—as distinct from other forms of psychosis was a crucial contribution toward this end. Equally significant was Freud's concept of the "defense neuroses" as a single diagnostic category which encompassed clinical disorders with widely divergent symptomatology, such as hysteria, obsessive-compulsive reactions, and phobias, which had previously been regarded as unrelated disorders; furthermore, this formulation led to important therapeutic advances, as well as conceptual clarity. Nevertheless, despite the fact that it reflects such major achievements, it is the general consensus of professional opinion that the system of psychiatric nosology in current usage is not entirely satisfactory. Its limitations derive primarily from the fact that the etiology of many psychiatric disorders is not fully understood as yet. Thus, while the current nosological system is based on the description and classification of the clinical manifestations of

psychiatric syndromes, these syndromes are not always associated with reliably predictable outcomes; nor does the system always facilitate choice of treatment. In an effort to surmount these defects, many other systems of classification have been proposed as possible alternatives. For the most part, these are based on various controversial assumptions regarding the etiology of mental illness and employ criteria which range widely, from degree of social disability, at one end of the continuum, to response to drug therapy, at the other.

Admittedly, the limitations of our present nosological system are serious. Unfortunately, however, none of the alternate proposals made to date appears to offer any striking advantages over the system presently in use. For one, it is self-evident that a uniformly accepted psychiatric "vocabulary" is a prerequisite for purposes of communication. If we dispensed with a uniform nosology, the veritable Tower of Babel which would certainly arise in its place would surely disrupt research, epidemiological studies, and efforts to teach and communicate the skills of psychiatry.

In light of the foregoing considerations, Area F has been organized into chapters which deal with adult psychoses, brain disorders, psychoneuroses, personality disorders, psychophysiological reactions, and mental retardation—as delineated in the official nomenclature of the American Psychiatric Association. In addition, however, several disorders which are not presently included in the official nosology but which, nevertheless, are of interest and importance are described. These include "exotic" psychotic states, such as latak and amok, which are seen in cultural settings other than our own, as well as clinical entities which are commonly encountered in our society, such as postpartum disorders, hypochondriasis and neuroasthenia, and nonpsychotic cyclical depression. Another chap-

ter within this area is devoted to the description and discussion of psychiatric emergencies, such as suicide, homicide, and other forms of violent behavior, and states of acute intoxication which are accompanied by dangerous behavioral manifestations. These syndromes may cut across various diagnostic categories; they are presented under a single rubric herein, by virtue of the fact that they share in common an urgent need for immediate psychiatric intervention.

For purposes of clarity and comparison, the discussion of each of the clinical entities presented has been organized, insofar as this was feasible, to include the following topics: definition; epidemiology; clinical description (including symptoms, course, laboratory findings, differential diagnosis, and prognosis); etiology; and treatment.

As might be expected, in some instances, the subjects of etiology and treatment must pose a problem for the editors of a psychiatric textbook which attempts a comprehensive and eclectic presentation. For example, although many different hypotheses have been advanced to explain the etiology of the so-called "functional" psychoses, such as schizophrenia and the depressive psychoses, no single formulation is universally accepted. In this book an attempt has been made to review those hypotheses which appear to have scientific merit, without commitment to any specific viewpoint.

To illustrate, the section which deals with the etiology of schizophrenia reviews a wide range of hypotheses which might be categorized as follows. A growing number of hypotheses emphasize the importance of biochemical, genetic, or physiological factors in the predisposition to and/or precipitation of this disorder; a second group of psychodynamic theories rests on the assumption that disturbances in the patients' early psychic development are operative in the genesis of schizophrenia; other formulations attribute schizophrenic disorganization to disruptive factors in our society; and, finally, still a fourth group of authors postulate a unified view in this connection. More specifically, according to this last viewpoint, distortions in early development, adverse environmental and experiential factors, and disruptive elements in society

will combine to produce a schizophrenic person when there is a genetic predisposition to this illness.

The fact is that even the dynamics of those disorders which are presently ascribed primarily to psychogenic factors, such as neurotic reactions and personality disorders, are subject to controversy. These differences among psychiatrists in their interpretation of the psychodynamics operative in the disorders in question derive, in turn, from the fact that no single theory of psychopathology is universally accepted. In keeping with the eclectic orientation which we have tried to maintain throughout this volume, the chapters dealing with these syndromes encompass sections by authors of diverse theoretical persuasions.

At times, this current diversity in theoretical orientation is reflected in corresponding differences in treatment orientation. For example, an author who feels that there is a primarily organic determinant operative in depressive reactions will tend to advocate electric convulsive therapy as the treatment of choice for this patient population. In contrast, those authors who attribute depressive illness to early disturbances in object relationships would be expected to employ psychoanalysis, when feasible, or some form of psychotherapeutic intervention as the ideal treatment modality. Within each section, each author has discussed the specific disorder or disease category under consideration according to his own particular theoretical (and therapeutic) predilection. In addition, in order to ensure comprehensive presentation, each author has indicated the existence of alternative theoretical viewpoints and has attempted to review the various forms of treatment which are traditionally employed in the disorder under discussion.

Specific psychiatric syndromes are the focus of discussion in this area, and general information regarding techniques of psychiatric diagnosis and descriptions of the various psychiatric symptoms may be found in Area E, on psychiatric assessment. In addition, the various treatment modalities described herein with reference to specific syndromes are discussed in detail in Area G, which deals specifically with psychiatric treatment. Finally, this area is limited to discussion of psychiatric disorders in adults; psychiatric disorders in childhood are discussed in Area H.

Chapter 14

Classification in Psychiatry

14.1 NOSOLOGY

HENRY BRILL, M.D.

Psychiatric classification is in many ways a deceptively simple matter. It can be carried out routinely by using less than 50 of the 132 pages of the American Psychiatric Association's *Diagnostic and Statistical Manual*, and a number of national systems are far shorter. It is surprising how quickly the average resident in training can learn to comply with the formal requirements by using one of these outlines as his main guide.

On somewhat closer examination, this seeming simplicity proves illusory because psychiatric classification approximates a kind of maximum condensation of contemporary psychiatry and embodies theoretical and practical implications of the utmost complexity. Exploring these can lead one into such collateral problems as communication theory, the science of systematics, the philosophy of science, the history of psychiatry, and the complex problems central to psychiatric nosology itself. Obviously, most of these topics can be barely mentioned in a review of this kind, but they cannot be completely ignored, since they are a part of the total perspective.

Classical Background of Classification Theory

Many current issues in psychiatric classification are neither new nor specific to the field, although, if seen as purely psychiatric problems, they do appear to be specific and perhaps subject to simple solutions. An interesting example is the often repeated proposal that *all* psychiatric classification be abolished, on the ground that there are only quantitative differences among the disorders of various individuals and that all cases are *different* and, therefore, cannot be grouped but must be described individually.

It is difficult to avoid the impression that this is a replay in modern dress of a controversy that extended from the 11th to the 14th century, when a bitter debate raged around the idea that all collective terms, such as animal, man, wood, stone, had no existence or

reality and were mere words. The argument originated in Aristotle's "Categories," which propounded the problem of genera and species and which split Scholastics into three warring groups. This analogy may seem far fetched, but it serves to recall that classification involves a very subtle and complex logic, although it is basic to even quite simple human thought. Common language itself is made up of classifications developed in a long forgotten past, and Aristotle, as founder of the science of logic, gave classification a central place in it.

The heat of the discussion of the Scholastics arose not from the abstract merits of the issues themselves but as a displacement from certain very practical religious implications. Similarly today, there is considerable displacement of affect from certain practical implications of psychiatric classification onto the classification itself. Although this is quite human and understandable, it is not helpful in arriving at a scientific solution. In any case, it appears futile to speak of abolishing classification, unless one were to give up all generalization and communicate only in the most concrete, individualistic terms. In view of this, the question is not whether or not we shall have classification but rather what *kind* or *kinds* will best serve our purposes. The answer depends entirely on what our aims are.

Purposes of Classification

In general, classifications are a device for reducing complexity by noting the similarities in a given mass of observations and then grouping them abstractly in order to deal with them more easily as a conveniently small number of things. A multitude of concrete observations must be brought to some kind of order and simplification if they are to constitute a subject of effective communication that can be handled by logic or if they are to serve the needs of knowledge.

There is, of course, no one absolute means of arranging objects. They may be grouped in many different ways depending on the purpose of the moment. For instance, water may be classified according to size (from puddles to oceans), temperature (from steam to ice), or purity (from pure to infected). Each

classification is valid and useful for a particular purpose or interest, though each is made up of quite arbitrary points on a continuum, and not one is composed of entities with absolute differences.

In clinical psychiatry, classifications serve important functions with respect to education, treatment, professional communication for recording and retrieval of data, research, and administration.

Definitions

Classification is a specialized science and a branch of logic with its own history, terminology, and definitions, and it has various subspecialties, of which psychiatric nosology is only one. A review of several of the important definitions is necessary here because various authors use terms in somewhat different ways.

Classification. In medicine the term classification refers to a specifically ordered arrangement of selected terms in which various disorders are gathered into groups, and these in turn are gathered into larger classes, which in their turn are finally drawn into major categories. Thus, in the American Psychiatric Association (A.P.A.) classification, catatonic schizophrenic reaction is a subdivision of schizophrenia, which is one of a family of psychoses, and this is, in turn, a member of the subdivision called "disorders of psychogenic origin." The purpose of the classification is to create groupings based on significant similarities among the properties and peculiarities of the items being arranged. Thus, the disorders gathered under the heading of "psychoses" are thought to have characteristics in common that distinguish them from those found under "neuroses."

Any particular classification must be like a sorting rack for experience, with one specific position for each type of case, including the unclassifiable and the partially unclassifiable. Individual terms may be, and usually are, part of a nomenclature or terminology; but the way in which the terms are grouped and arranged turns the list into a classification. There is some reason to consider the identification of entities as different in nature from the arrangement of entities into larger groups that correspond to genera and species, but this has not been widely accepted in psychiatry.

Artificial and natural classifications. When the products of human experience are arranged, satisfactory underlying principles are often lacking, and it becomes necessary to use arbitrary groupings based on superficial characteristics, as when patients are classified according to economic disability. Such a classification is called artificial. In some discussions of psychiatric classification, the assumption seems to be that this is unscientific and that the only acceptable form is the natural one, that is, some system based on a significant underlying characteristic. For example, a natural classification of disease would be by causes, such as infections, trauma, and prenatal influences.

The most advanced scientific classifications do today

reflect great natural laws. An example of such a classification is the periodic table of Mendeleev; but the vast inner meaning of this arrangement did not emerge until long after the arrangement had been devised on relatively superficial, or artificial, grounds. Another great natural law is that of evolution, which is linked to the classification of Linnaeus; but his classification is an outstanding example of the value of an artificial arrangement, since it preceded Darwin's work by a century and originated as a purely artificial grouping based entirely on external characteristics; its natural characteristics were not discovered until long afterward.

The major psychiatric nosologies are neither totally artificial nor totally natural. Their individual elements or entities did not originate from a single system but were each evolved separately in the course of a long history of cumulative observations. All important modern psychiatric nosologies show gradations from the clearly natural organic disorders to the clearly conventional wastebasket of the personality disorders, where much of our current lack of knowledge is gathered into one place. Yet the artificial elements are justified by the principle that a purely artificial and conventional system is far better than none at all, and must be used when a natural one is not available.

Nomenclature. An arrangement of the terminology specific to a science is called its nomenclature. The arrangement is arbitrary and often alphabetical and is independent of any underlying characteristics. There may be, and often are, overlapping among various terms and multiple names for a given object, although one is generally marked as "preferred." *Current Medical Terminology*, now published annually by the American Medical Association, is an excellent example that covers the entire field of medical practice, including psychiatry. It represents a bold and revolutionary attempt to create and maintain a codification of current usage, quite in contrast to the decennial revisions of the classification systems.

Nosology, taxonomy, and systematics. Specialists make various distinctions among these terms, but here they are considered synonymous with each other and with "classification."

Statistics, statisticians, and code numbers. Classification is as old as recorded psychiatry, but the current use of diagnosis for public health purposes can be fairly attributed to Florence Nightingale, who, with the medical statistician William Farr, first proved the devastating effect of well marshaled medical statistics in a battle for medical reform. Since their time, it has become increasingly clear that diagnosis cannot be a strictly individual and personal affair between patient and physician because of the overriding implications for public health and prevention. As a result, the mechanism for collecting such data has been much expanded and formalized.

Each item in a modern classification is accom-

panied by its identifying code number, and these numbers, arranged in a sequence, together form a system for sorting cases into various categories. Contrary to the impression that might derive from a hasty glance at these impressive looking columns of figures (some of which are hyphenated and run to six digits), there is no computational principle involved. They are purely for identification, analogous to numbers on license plates of automobiles, for convenience in sorting cases according to diagnosis, and for carrying on various statistical analyses. The special requirements imposed on the psychiatrist by statistical needs are relatively slight, and in no case do they impinge on his freedom to make an adequate diagnosis. They do not, however, permit making multiple diagnoses, all of equal value. Given half a dozen such terms in each case, the statistician would, because of the vast number of permutations, find it difficult to identify more than a small number of patients with exactly the same diagnosis in any sample of reasonable size, thus ruling out all statistical analysis of diagnosis. Of course, there are some investigators who feel that classification should not be subject to statistical analysis, but they are as yet in the minority and stand contradicted by a vast amount of work being done in terms of classification.

History of Classification in Psychiatry

It is fair to say that there has never been any psychiatric practice without a classification, and each classification represents a condensation of an entire system of psychiatric thought; thus, a history of classification would be equivalent to a history of psychiatry. This section is limited to a review of some of the relevant and interesting facts.

In spite of many deviations and retrogressions, the record is one of cumulative observation, with gradual evolution of concepts and clarification of thinking over more than 4,000 years. Traces of the evolutionary process survive in current psychiatric terminology, and the evolution has been in part a reflection of advances in knowledge. In addition, there are other influences—social and religious influences, political conditions, and the state of general technology. Finally, time alone seems to bring changes in the language of psychiatry independent of external influences.

Early classification. The mental changes of old age were historically among the first to be clearly identified, although the differentiation between parenchymatous disease and cerebral arteriosclerosis had to wait for the development of histology at the end of the 19th century. Similarly, alcoholic mental disorders and deterioration were recognized in ancient times, in spite of the fact that distilled liquors were not invented until about 900 A.D. Curiously enough, opium was described in the earliest records, but addiction was not medically diagnosed until comparatively modern times, and the effects of abuse were not even mentioned until late in the Middle Ages.

From the beginning, a very important place was assigned to supernatural causes of disease, and these influences are still seen in current terminology. The term "obsession" survives as a memento of the time when it was thought that the mentally ill person was besieged by the devil from without—a less serious condition than "possession," where the devil was within the victim. Similarly, the term "alienated" originated with the same idea that the victim had alienated or given over control of his soul to the devil in barter, and the term is borrowed from business law.

Many modern entities have a history that goes back to ancient medicine. The homosexual was described by the Greeks under the name of "pathicus." The ancients recognized the deliria of fever, some depressive states, the patterns of epilepsy, and certain effects of brain trauma. They also showed considerable sophistication about the existence of psychosomatic influences, although these were limited to the more obvious autonomic reactions of pulse and the like. Malingering of psychosis was recognized, as was mental retardation in children. But there was much confusion of functional and organic disorders. Schizophrenia itself was not delineated until the 19th century, and the neuroses remained virtually unexplored nosologically until then.

Modern classification. Modern classification begins in the late 18th century. Historical accounts stress the great influence of Linnaeus, whose success with biological taxonomy stimulated a vast amount of nosological activity in psychiatry. This effort, however, proved to be of little value or effect. Numerous classifications of mental disorder were created, one such coming from the pen of Erasmus Darwin, the grandfather of the great naturalist. All these are of purely academic interest, and it was not until the development of asylums brought the mentally ill under observation of specializing physicians that psychiatric nosology entered into its modern phase of rapid development.

The first of these physicians was Pinel, who provided a very simple system based solely on his own observations; he refused even to discuss the arbitrary distributions of other nosologists. Although fully aware of the work of his predecessors and his contemporaries, he consciously imitated only the methods that had "contributed to the rapid advance of modern natural history." He described melancholia, mania without delirium, mania with delirium, dementia, and idiotism. However, hallucinations in our modern sense are not described in his 1806 edition. And although Pinel uses the engaging term "mental indispositions," he does not discuss the neuroses as we know them today, nor does he describe the mental changes of age, although he mentions them briefly.

Objective, long term observation in mental hospitals continued to support advances, which were accelerated by the use of the pathological laboratory, a German development that helped that country assume psychiatric leadership by the middle of the 19th century.

It was from there that Griesinger's influential nosology was published. He had a strongly organicist approach, in contrast to the antiorganicism of Pinel, and for several generations the work of the pathologists in the mental hospitals played a significant role in neuropsychiatry. The organic and exogenous psychiatric disorders were rapidly delineated, and the studies of Alzheimer, Nissl, Wernicke, Bonhoeffer, and the Russian Korsakoff made psychiatric history. The clinical work of Itard and Séguin clarified the question of mental deficiency and cleared the way for a better delineation of the functional mental disorders.

As a result, a new concept, *dementia praecox*, began to emerge. Thomas Willis had noted regressive changes in previously normal children 2 centuries before. Morel used the term in 1850, but without delineating the syndrome, and in 1870 Hecker and Kahlbaum described "katatonia." But it remained for Kraepelin, on the basis of his asylum experience, to pull together katatonia, hebephrenia, various dementias, *vesanias*, and certain "degenerations" to create the new concept of *dementia praecox*. This was later modified to schizophrenia by Bleuler, but the basic syndrome described by Kraepelin was widely accepted, as was his subsequent delineation of the manic-depressive psychoses.

The personality disorders (still the most unfinished of all the categories) had long been recognized in relation to law and literature but did not become a part of psychiatry until noted in "Moral Insanity," by Prichard.

The concept of the psychoneuroses is often considered to be of rather late development, and this is true of its modern psychodynamic form. However, the hysteria of the ancients certainly dealt with psychoneuroses, and a vast amount of out-patient psychiatry with psychoneurotics was done by the Mesmerists of the 19th century and by their predecessors, who had practiced magnetism and the laying on of hands for centuries. An extensive background of clinical practice thus existed for the systematic work of Beard in neurasthenia, Janet in psychasthenia, and Charcot in hysteria and, finally, for the great syntheses by Freud, whose classification of mental mechanisms cuts across all others and operates in its own independent dimension.

By the end of the 19th century, the main outlines of current nosologies had been laid down, for both descriptive and dynamic psychiatry. In the next 20 years, the marked variability in nosology that had characterized the previous century gradually came to be replaced by standardizations based on the categories just outlined.

Standardization of Nomenclature and Classification

Until relatively recent times, medical classification and nomenclature, including that of psychiatry, were local or even personal matters based on whatever authorities a physician was inclined to follow and on

whatever influences a hospital or medical school might bring to bear. The example of Florence Nightingale and others proved the importance of medical statistics, and it was inevitable that from then on uniformity and comparability of data should become a key issue in public health matters. A standardized international list of causes of death was first authorized in 1853, and in 1900, after the death lists had been revised many times, the causes of morbidity began to be developed. An eighth revision of this now standard work is in process under the aegis of the World Health Organization (W.H.O.). Most of the psychiatric disorders are found in one section of this publication, although some are scattered elsewhere in the classification.

In the United States the first move toward psychiatric standardization occurred in 1917, with a statistical classification of mental diseases prepared by the American Medical Psychological Association. In 1928 the American Medical Association first moved to adopt a general standard nomenclature of morbidity and death, and organized psychiatry undertook to prepare the section on mental disorders, which appeared simultaneously as a manual of the Association. This pattern has been retained through successive revisions at intervals of about 10 years, and the current A.P.A. manual dates from the 1952 revision.

Diagnostic and Statistical Manual of the A.P.A.

Adopted in 1952, the current manual of the A.P.A. represents the most radical of the revisions to date. It sought to meet the objections that previous listings had been based purely on the experience of mental hospitals and were not suited to out-patient psychiatry or even to the psychiatry of the short term, acute psychiatric unit of a general hospital. The manual drew heavily on the experiences of World War II and on private practice; it reflected the very important position of psychodynamic concepts in American psychiatry. As a result, the A.P.A. classification is different in terminology and in certain aspects of orientation from systems used elsewhere in the world, but, as appears very clearly in Stengel's review of current systems, the points of similarity are even more important; this is not surprising, in view of the fact that all such systems stem from a common psychiatric literature.

Advantages. Among the advantages of this A.P.A. standardization, the following may be listed: (1) It has achieved a far wider acceptance and use than has been the case with any other system, a fact of the utmost importance if it is to have meaning as an instrument of professional communication and of public health policy. It has now entered the literature extensively and has been the vehicle for a large amount of publication. (2) It contains a succinct and clearly defined syllabus that defines and delineates the various disorders. (3) It is easily convertible to the W.H.O. classification and contains convenient tables that pro-

vide the equivalent terms for these systems and for the 1942 edition of the A.P.A. manual. (4) It contains clear operating instructions for statisticians and hospital librarians to facilitate reporting and preparation of uniform data. (5) It gathers all terms necessary for psychiatric classification into one manual and does not scatter them over a much larger, general medical classification. (6) It is sufficiently simple to be used in average hospital practice, and its formal characteristics are such that the data produced are suitable for statistical analysis.

Each of these characteristics is important for a national system of classification and will have to be improved upon or at least equaled by any system that might replace it.

Criticisms. Since the criticisms of current classifications are many and range from abstract, conceptual differences to simple operating problems, it is difficult to select among them for discussion, as each has its own relevance. Some urge that mental disorder is different from physical disorder and that mental disorders deal with differences in degree and in amount of psychopathology rather than with different entities of disease.

The essence of this argument seems to be that the classification is artificial and not natural; but even completely artificial systems may be useful when the basic concepts underlying the manifest differences have not yet been clarified. However, it is true that such criticisms often accompany elaborate replacement proposals, and it remains to be seen if one of these will eventually emerge as more useful and more effective than the methods that now exist. Perhaps it might be better to consider such proposals, in part at least, as an effort to provide additional methods of classification in a field so complex that no one system is adequate for all purposes, statistical, clinical, and experimental.

Underlying much of the discontent with existing methods is the fact that no matter what terms are used for psychiatric classification, these soon come to be burdened with stigma, and the heat of controversy is a displacement from this difficulty. It would seem more logical to attack the problem of stigma directly than to create or use new names or no names at all. The fate of "Section VIII" of World War II fame is an apt example.

Another displacement of affect may be suspected with respect to the criticism that the classification does not permit a satisfactory classification of observed data, but it would seem that the real problem is not with inability to classify what is known but rather with the fact that not enough is known. The most promising solution, therefore, seems to lie outside rearrangements of classifications of what is known.

On a different level are the criticisms that psychiatric nosology is based on multiple axes of classification and that the percentage of cases found in each

category varies widely without obvious reason from one center to another and from time to time in any given center. That this is true cannot be doubted, but in itself it does not constitute proof that any other method would be better or even less that investigators would be well advised to attempt to operate with no classification whatever.

In many ways the specific criticisms leveled against the A.P.A. classification itself are more important than the more general and theoretical ones because the specific ones are susceptible of more direct corrective action, and a brief critical description of certain specific aspects of the A.P.A. classification is in order.

Acute and chronic brain disorders. This is in many ways the least controversial category. Disorders are grouped under their etiologies, which in turn are arranged in an order standard for all somatic disorders. This is the category that most closely approximates a natural classification, and there is relatively little controversy as to the nosological significance of the associated disorders of memory, judgment, and volition. The material is easily and directly related to the technical literature, and it seems that advances in medical knowledge will be easily accommodated without changing the general structure of the section.

Under this category, there have been some proposals for change, however: (1) It is proposed that the acute and chronic forms should be combined into one list, not divided into independent lists, since the distinction between acute and chronic brain syndromes is often impossible and constitutes a prognosis as to recovery rather than a diagnosis of what is wrong. (2) There is considerable feeling that the names of the disorders here and throughout the classification should be shorn of their polysyllabics, which serve no purpose except to reiterate certain concepts as to etiology and pathogenesis. Such terms as "chronic brain syndrome associated with central nervous system syphilis, meningoencephalitic type" are often cited as being so ponderous that they are never actually used in ordinary communication. (3) The term "brain syndrome" is thought to carry unnecessary connotations and to be insufficiently neutral.

Mental deficiency. The mental deficiency section provides for only two varieties, each being subdivided into mild, moderate, and severe. The intent was apparently to scatter all the organic varieties among the brain syndromes according to etiology, with no provision for other types. This method has proved unsuitable and has led to the creation of a special full length classification for these conditions, which (in outline form) will probably replace the current brevity in the next A.P.A. revision.

Psychotic disorders. These disorders correspond to the functional psychoses of other nosologies, and, although the terminology of the section is different from theirs, the delineation of individual syndromes is basically the same. The general outline of the schizophrenias appears to offer few problems, although other

countries tend to accuse American psychiatry of extending the concept into a pervasive panschizophrenia of classification that has been said to rival the pansexuality of our psychodynamics. The pseudotypes are vigorously questioned, and yet one often hears reference to the pseudoneurotic and pseudopsychopathic varieties in European clinics, and current concepts also envision what amounts to a pseudodeficient type of schizophrenia in children.

There are proposals to simplify schizophrenia by eliminating the acute and chronic undifferentiated, the schizoaffective, and the residual types. There is also a recommendation to drop the term "reaction" throughout the classification as a redundant reiteration of a hypothesis as to causality.

A very important point of difference from European classifications of psychosis is the absence of a category of "reactive psychoses," which is used for situationally induced depressions, paranoid reactions, and excitements. This, to most Americans, seems to be a classification with an unacceptably heterogeneous content.

The differential response of the psychoses to drug therapy has been used both to defend and to attack the idea that functional psychoses are medical entities in any sense. Specific as well as nonspecific reactions can be identified, but in any case the results are on a different level than that applied to the neuroses. To this extent, at least, they seem to constitute a valid category.

Psychophysiologic autonomic and visceral disorders. This group represents a relatively modern nosological concept, but it is now firmly entrenched in European medicine under the name of psychosomatic disorders, the latter term having been first widely accepted in this country. This category appears to be due for little fundamental revision, although there is considerable doubt as to its exact relation to the psychoneuroses and to certain true somatic disorders.

Psychoneurotic disorders. As a group, these are as well recognized as are the functional psychoses, but the delineation of subdivisions is highly uncertain. Mixed syndromes are the rule rather than the exception, and any given case is likely to exhibit different types of disorders at different times. Psychodynamics predominate in the classification and in the treatment of these cases. If one can speak of a "therapeutic specificity," it lies in the fact that somatic therapies, including drugs, play merely a subsidiary and adjuvant role in treatment. The concept of obsessive-compulsive syndrome is perhaps the most stable of the entire group.

Personality disorders. Here are gathered a highly heterogeneous collection of problems in which the conduct disorder tends to dominate and to divert attention from the underlying psychiatric problem. A strong condemnation and social stigma are attached to many of these conditions (drug addiction, alcoholism, and homosexuality), and legal sanctions are

often involved. As a result, the way in which these disorders are grouped gives rise to practical medico-legal problems, and it is quite likely that the current A.P.A. over-all designation of "sociopathic" for all these types may be dropped, since they have nothing in common except the legal attitude toward them.

In addition, it appears likely that the distinction between "personality pattern disturbance" and "personality trait disturbance" may be dropped and that this part of the classification will be simplified.

The current inclusion of special symptom reactions here is highly debatable, and it seems quite likely that this will be radically changed in classifications now being considered for child psychiatry, although the nosology for this group of disorders presents very complex problems.

Transient situational personality disorders. Many of these terms also find their chief use in the psychiatry of children and adolescents, and their revision is under discussion. An essential characteristic of the transient situational disorders, as the title indicates, should be the favorable prognosis as well as the absence of symptoms of well recognized forms of major disorders. Many of the cases remain ill for years, however, and the outcome is not always as favorable as the title indicates. In spite of these and other deficiencies, it must be admitted that there has not yet been formed a generally accepted substitute.

Items not included. Although it is quite possible to place any type of psychiatric disorder correctly within one of the established A.P.A. categories, there are a number of other designations, generally recognized and widely described in the technical literature, that cut across several recognized A.P.A. categories. One of the best known is that of the "war neuroses," also called the "traumatic neuroses"; "folie à deux" is another syndrome often described; "depersonalization neuroses" and "anxiety psychosis" are less well known. A reasonable and valid conclusion that can be drawn from studying such material is that the proved usefulness of the A.P.A. classification within its field does not preclude the finding of valuable information under other headings and along axes that this classification does not recognize. The psychodynamic nosology of Freud is the most outstanding example, but there are others.

Synopsis of current version of A.P.A. Diagnostic and Statistical Manual. Satisfactory use of the American Psychiatric Association classification requires a careful reading of the instructions in the *Diagnostic and Statistical Manual* and close attention to the definition of terms found in Sections II and III of the manual. Section IV ("Statistical Reporting") is lengthy and is not of immediate interest to the physician; neither is the tabulating scheme (pages 78 to 86 inclusive). But Appendix C (pages 120 to 128) requires attention because it contains a list of useful supplementary terms.

Perhaps because of its location in the introduction

TABLE I

Diseases of the Psychobiologic Unit^a

DISORDERS CAUSED BY OR ASSOCIATED WITH IMPAIRMENT OF BRAIN TISSUE FUNCTION	
ACUTE BRAIN DISORDERS	
-1 DISORDERS DUE TO OR ASSOCIATED WITH INFECTION	
000-100	Acute brain syndrome associated with intracranial infection. <i>Specify infection</i>
000-100	Acute brain syndrome associated with systemic infection. <i>Specify infection</i>
-3 DISORDERS DUE TO OR ASSOCIATED WITH INTOXICATION	
000-3..	Acute brain syndrome, drug or poison intoxication. <i>Specify drug or poison</i>
000-3312	Acute brain syndrome, alcohol intoxication
000-33122	Acute hallucinosis
000-33123	Delirium tremens
-4 DISORDERS DUE TO OR ASSOCIATED WITH TRAUMA	
000-4..	Acute brain syndrome associated with trauma. <i>Specify trauma</i>
-50 DISORDERS DUE TO OR ASSOCIATED WITH CIRCULATORY DISTURBANCE	
000-5..	Acute brain syndrome associated with circulatory disturbance. <i>Indicate cardiovascular disease at additional diagnosis</i>
-55 DISORDERS DUE TO OR ASSOCIATED WITH DISTURBANCE OF INNERVATION OR OF PSYCHIC CONTROL	
000-550	Acute brain syndrome associated with convulsive disorder. <i>Indicate manifestation by supplementary term</i>
-7 DISORDERS DUE TO OR ASSOCIATED WITH DISTURBANCE OF METABOLISM, GROWTH OR NUTRITION	
000-7..	Acute brain syndrome with metabolic disturbance. <i>Specify</i>
-8 DISORDERS DUE TO OR ASSOCIATED WITH NEW GROWTH	
000-8..	Acute brain syndrome associated with intracranial neoplasm. <i>Specify</i>
-9 DISORDERS DUE TO UNKNOWN OR UNCERTAIN CAUSE	
000-900	Acute brain syndrome with disease of unknown or uncertain cause. <i>Indicate disease as additional diagnosis</i>
-X DISORDERS DUE TO UNKNOWN OR UNCERTAIN CAUSE WITH THE FUNCTIONAL REACTION ALONE MANIFEST	
000-xx0	Acute brain syndrome of unknown cause
CHRONIC BRAIN DISORDERS ^b	
-0 DISORDERS DUE TO PRENATAL (CONSTITUTIONAL) INFLUENCE	
000-0..	Chronic brain syndrome associated with congenital cranial anomaly. <i>Specify anomaly</i>
000-016	Chronic brain syndrome associated with congenital spastic paraplegia
000-071	Chronic brain syndrome associated with Mongolism
000-052	Chronic brain syndrome due to prenatal maternal infectious diseases
-1 DISORDERS DUE TO OR ASSOCIATED WITH INFECTION ^c	
0..-147.0	Chronic brain syndrome associated with central nervous system syphilis. <i>Specify as below</i>
000-147.0	Meningoencephalitic

^a From the American Psychiatric Association. *Diagnostic and Statistical Manual, Mental Disorders*. Washington, 1952. Courtesy American Psychiatric Association.

^b The qualifying phrase "Mental Deficiency" .x4 (mild .x41, moderate .x42, or severe .x43) should be added at the end of the diagnosis in disorders of this group which present mental

TABLE I—Continued

000-147.0	Meningovascular
0y0-147.0	Other central nervous system syphilis
000-1...0	Chronic brain syndrome associated with intracranial infection other than syphilis. <i>Specify infection</i>
-3 DISORDERS ASSOCIATED WITH INTOXICATION	
000-300	Chronic brain syndrome associated with intoxication
000-3..	Chronic brain syndrome, drug or poison intoxication. <i>Specify drug or poison</i>
000-3312	Chronic brain syndrome, alcohol intoxication. <i>Specify reaction .x1, .x2, .x3 when known</i>
-4 DISORDERS ASSOCIATED WITH TRAUMA	
000-050	Chronic brain syndrome associated with birth trauma
000-400	Chronic brain syndrome associated with brain trauma
000-4..	Chronic brain syndrome, brain trauma, gross force. <i>Specify. (Other than operative)</i>
000-415	Chronic brain syndrome following brain operation
000-462	Chronic brain syndrome following electrical brain trauma
000-470	Chronic brain syndrome following irradiational brain trauma
-5 DISORDERS ASSOCIATED WITH CIRCULATORY DISTURBANCES	
000-516	Chronic brain syndrome associated with cerebral arteriosclerosis
000-5..	Chronic brain syndrome associated with circulatory disturbance other than cerebral arteriosclerosis. <i>Specify</i>
-55 DISORDERS ASSOCIATED WITH DISTURBANCES OF INNERVATION OR OF PSYCHIC CONTROL	
000 550	Chronic brain syndrome associated with convulsive disorder
-7 DISORDERS ASSOCIATED WITH DISTURBANCE OF METABOLISM, GROWTH OR NUTRITION	
000-79x	Chronic brain syndrome associated with senile brain disease
000-700	Chronic brain syndrome associated with other disturbance of metabolism, growth or nutrition (includes presenile, glandular, pellagra, familial amaurosis)
-8 DISORDERS ASSOCIATED WITH NEW GROWTH	
000-8..	Chronic brain syndrome associated with intracranial neoplasm. <i>Specify neoplasm</i>
9 DISORDERS ASSOCIATED WITH UNKNOWN OR UNCERTAIN CAUSE	
000-900	Chronic brain syndrome associated with diseases of unknown or uncertain cause (includes multiple sclerosis, Huntington's chorea, Pick's disease and other diseases of a familial or hereditary nature). <i>Indicate disease by additional diagnosis</i>
-X DISORDERS DUE TO UNKNOWN OR UNCERTAIN CAUSE WITH THE FUNCTIONAL REACTION ALONE MANIFEST	
000-xx0	Chronic brain syndrome of unknown cause

deficiency as the major symptom of the disorder. Include intelligence quotient (I. Q.) in the diagnosis.

^c When infection is more important than the reaction or mental deficiency, specify the infection. If both infection and reaction or mental deficiency are important two diagnoses are required.

TABLE I—Continued
MENTAL DEFICIENCY^d

-X	DISORDERS DUE TO UNKNOWN OR UNCERTAIN CAUSE WITH THE FUNCTIONAL REACTION ALONE MANIFEST; HEREDITARY AND FAMILIAL DISEASES OF THIS NATURE
000-x90	Mental deficiency (familial or hereditary)
000-x901	Mild
000-x902	Moderate
000-x903	Severe
-y	DISORDERS DUE TO UNDETERMINED CAUSE
000-y90	Mental deficiency, idiopathic
000-y901	Mild
000-y902	Moderate
000-y903	Severe

DISORDERS OF PSYCHOGENIC ORIGIN OR WITHOUT CLEARLY DEFINED PHYSICAL CAUSE OR STRUCTURAL CHANGE IN THE BRAIN

Psychotic Disorders

-7	DISORDERS DUE TO DISTURBANCE OF METABOLISM, GROWTH, NUTRITION OR ENDOCRINE FUNCTION
000-796	Involitional psychotic reaction
-x	DISORDERS OF PSYCHOGENIC ORIGIN OR WITHOUT CLEARLY DEFINED TANGIBLE CAUSE OR STRUCTURAL CHANGE
000-x10	Affective reactions
000-x11	Manic-depressive reaction, manic type
000-x12	Manic-depressive reaction, depressive type
000-x13	Manic-depressive reaction, other
000-x14	Psychotic depressive reaction
000-x20	Schizophrenic reactions
000-x21	Schizophrenic reaction, simple type
000-x22	Schizophrenic reaction, hebephrenic type
000-x23	Schizophrenic reaction, catatonic type
000-x24	Schizophrenic reaction, paranoid type
000-x25	Schizophrenic reaction, acute undifferentiated type
000-x26	Schizophrenic reaction, chronic, undifferentiated type
000-x27	Schizophrenic reaction, schizoaffective type
000-x28	Schizophrenic reaction, childhood type
000-x29	Schizophrenic reaction, residual type
000-x30	Paranoid reactions
000-x31	Paranoia
000-x32	Paranoid state
000-xy0	Psychotic reaction without clearly defined structural change, other than above

PSYCHOPHYSIOLOGIC AUTONOMIC AND VISCERAL DISORDERS
-55 DISORDERS DUE TO DISTURBANCE OF INNERVATION OR OF PSYCHIC CONTROL^e

001-580	Psychophysiologic skin reaction
002-580	Psychophysiologic musculoskeletal reaction
003-580	Psychophysiologic respiratory reaction
004-580	Psychophysiologic cardiovascular reaction
005-580	Psychophysiologic hemic and lymphatic reaction
006-580	Psychophysiologic gastrointestinal reaction
007-580	Psychophysiologic genitourinary reaction
008-580	Psychophysiologic endocrine reaction
009-580	Psychophysiologic nervous system reaction
00x-580	Psychophysiologic reaction of organs of special sense

^d Include intelligence quotient (I.Q.) in the diagnosis.^e Indicate manifestation by supplementary term in each.

TABLE I—Concluded

PSYCHONEUROTIC DISORDERS

-x	DISORDERS OF PSYCHOGENIC ORIGIN OR WITHOUT CLEARLY DEFINED TANGIBLE CAUSE OR STRUCTURAL CHANGE
000-x00	Psychoneurotic reactions
000-x01	Anxiety reaction
000-x02	Dissociative reaction
000-x03	Conversion reaction
000-x04	Phobic reaction
000-x05	Obsessive-compulsive reaction
000-x06	Depressive reaction
000-x0y	Psychoneurotic reaction, other

PERSONALITY DISORDERS

-x	DISORDERS OF PSYCHOGENIC ORIGIN OR WITHOUT CLEARLY DEFINED TANGIBLE CAUSE OR STRUCTURAL CHANGE
000-x40	Personality pattern disturbance
000-x41	Inadequate personality
000-x42	Schizoid personality
000-x43	Cyclothymic personality
000-x44	Paranoid personality
000-x50	Personality trait disturbance
000-x51	Emotionally unstable personality
000-x52	Passive-aggressive personality
000-x53	Compulsive personality
000-x5y	Personality trait disturbance, other
000-x60	Sociopathic personality disturbance
000-x61	Antisocial reaction
000-x62	Dyssocial reaction
000-x63	Sexual deviation. <i>Specify supplementary term</i>
000-x64	Addiction
000-x641	Alcoholism
000-x642	Drug addiction
000-x70	Special symptom reactions
000-x71	Learning disturbance
000-x72	Speech disturbance
000-x73	Enuresis
000-x74	Somnambulism
000-x7y	Other

TRANSIENT SITUATIONAL PERSONALITY DISORDERS

000-x80	Transient situational personality disturbance
000-x81	Gross stress reaction
000-x82	Adult situational reaction
000-x83	Adjustment reaction of infancy
000-x84	Adjustment reaction of childhood
000-x841	Habit disturbance
000-x842	Conduct disturbance
000-x843	Neurotic traits
000-x85	Adjustment reaction of adolescence
000-x86	Adjustment reaction of late life

QUALIFYING PHRASES^f

.x1	With psychotic reaction
.x2	With neurotic reaction
.x3	With behavioral reaction

^f The qualifying phrases may be added to any diagnosis in the Psychobiologic Unit when needed to further define or describe the clinical picture. They are not used where such use is redundant.

(page 1), the description of the use of the important qualifying phrases is often omitted in studying the manual. These modifiers create additional flexibility, making it possible, for example, to diagnose chronic brain disorder with psychotic or neurotic or behavioral reaction. In addition, on page 10 further qualifying phrases are provided for mental deficiency of various degrees, making it possible to diagnose chronic brain syndrome of many types with mental deficiency of different degrees.

Section III B (beginning on page 46) shows that the original intention was to include such factors as premorbid personality and degree of psychiatric impairment in the classification, but, so far, this is one of many potentialities in the A.P.A. classification that have been utilized little or not at all. This and other experiences with the manual indicate that, in the field, under actual working conditions, only the relatively simple aspects of a classification tend to come into general use.

Table I is a list of terms in the A.P.A. classification.

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- American Association on Mental Deficiency. *A Manual on Terminology and Classification in Mental Retardation*. J. Ment. Defic., 64: No. 2, suppl., 1959.
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naming, at best, one or another truth regarding the subject and often ignoring or obscuring others. Diagnostic categories are man-made orderings, useful if they point to significant variables, obfuscating if some spurious or irrelevant order is suggested.

In attempting to utilize diagnostic labels for human beings, one confronts another problem. Jung put it this way, "Even if everyone knows how everything in a given person has come about, that person would still be only half-understood." In the same spirit, May commented: "We may know a great deal about a patient from his case record, let us say, and may have a fairly good idea of how other interviewers have described him. But when the patient himself steps in, we often have a sudden, sometimes powerful experience of here-is-a-new-person, an experience that normally carries with it an element of surprise, not in the sense of perplexity or bewilderment but in its etymological sense of being 'taken from above.' This is, of course, in no sense a criticism of one's colleagues' reports. . . . The data we learned about the patient may have been accurate and well-worth learning. But the point rather is that the grasping of the being of the other person occurs on a quite different level from our knowledge of specific things about him."

At the same time, however, a 3,000-year record of attempts to categorize mental disorders attests the need for some standards of classification. Certainly, in every other area of medicine, meaningful diagnosis and effective remedy have proven inseparable. The task then is to find a variety of psychiatric nosology that tells more truths about a patient than it implies things that are not true.

Diagnostic categorizations of mental disorder have usually separated conditions with known gross organic precipitants from those that seem rooted in psychological or some subtle, as yet undiagnosable, organic cause. A second variable ordinarily included in diagnostic classification has been an assessment of the seriousness or the magnitude of disruption produced in the life of the person by the disorder. Finally, and especially in recent years, most efforts at the categorization of mental disorder have emphasized the adaptational, the dynamic, the changing and the integrating functions of personality demonstrated as a given individual deals with the opportunities and frustrations of his life.

Neurosis

The term "neurosis" has had differing connotations over the years. At one time, it implied a very severe mental disorder; but at the present time, it suggests a less serious syndrome with a mild to mildly moderate level of psychological pain, anxiety, hyperalertness, and/or withdrawal. The term implies a kind of maladaptation that restricts to some extent the individual's over-all judgment, his ability to make good contact with reality, and his capacity to relate effectively with others in the environment.

14.2 NEUROSIS, PSYCHOSIS, AND THE BORDERLINE STATES

MILTON H. MILLER, M.D.

For many years, two standard questions in medical school examinations have been, "Differentiate between psychosis and neurosis" and "Discuss the borderline psychotic states." However, the usefulness of these diagnostic concepts has become increasingly suspect in recent decades. Menninger states, "These old names are wrong labels and have wrong implications. They have become obsolete and hence dangerous." And, indeed, no diagnostic categorization can be expected to be more than a partial approximation,

In the phenomenological sense, the neurotic diagnosis implies that the individual's world of experience is one in which much anxiety and psychological pain will be encountered unless careful precautionary steps are taken. These precautionary steps may be in the nature of avoidance mechanisms or some form of denial or substitution, usually with an accompanying level of discomfort. A diagnosis of neurosis suggests a kind of person who is fundamentally mistrustful of his own general level of competence and basic merit and of the basic friendliness and accepting nature of the environment. Thus the psychoneurotic individual is conceived of as an individual who lives in a world in which there is real and immediate danger of encountering painful anxiety and/or humiliating self-doubt. He must thus direct an inordinate part of his activities in such a way as to avoid these dangers. As a consequence, he may deny himself the hearty and spontaneous experience of life events and may complain that he is missing many of the good things life has to offer.

In the current American Psychiatric Association classification of mental disorders, a number of psychoneurotic reactions are listed, each naming one predominant kind of defensive pattern operative in the general framework just described. The subdivisions include anxiety reaction, dissociative reaction, conversion reaction, phobic reaction, obsessive-compulsive reaction, depressive reaction (mild to moderate), and psychoneurotic reaction.

Psychosis

Contrasting terms to neurosis have been *normality* and *psychosis*. The latter term has been reserved ordinarily for mental disorders characterized by pervasive and profound alterations of mood, disorganization of thinking, and an associated withdrawal from the real world into a world of highly personalized preoccupations. Menninger has enumerated five classical syndromes that accompany the majority of psychotic patterns: "(1) Pervasive feelings of sadness, guilt, despondence, and hopelessness, with convictions of inadequacy, incompetence, unworthiness, or wickedness; (2) more or less continuous erratic, disorganized excitement, accompanied by a corresponding excess of verbal and motor production and emotional heightening, elation, excitement, irritability, etc.; (3) autistic regression and self-absorption, silliness, mannerisms of speech and behavior, bizarre delusional ideation, irrelevancy and incoherence of speech, posturing, and gross (apparent) indifference to social expectations; (4) delusional preoccupation with one or several themes, usually persecutory in trend and usually accompanied by defensiveness, resentment, suspiciousness, grandiosity, condescension, irritability, etc.; (5) confused, delirious states with disorientation, bewilderment, amnesia, confabulation, and sometimes hallucinations and hyperactivity."

All these symptoms are to be viewed in the context

of active adaptations of personality in the face of disorganizing threat.

Shifting Patterns of Neurosis and Psychosis

Ordinarily, in thinking of the circumstances leading to the emergence of psychosis, an image of mounting anxiety and progressively more disabling symptomatology comes to mind. However, all combinations and permutations of symptomatology are seen in clinical experience. Thus, one encounters individuals with neurotic symptoms who are somehow unable to work or relate effectively and whose over-all life patterns are very disrupted. At the other end of the continuum, one not infrequently sees overtly psychotic individuals with delusions, hallucinations, or disorganized symptomatic patterns and profound periods of anxiety who are, nevertheless, highly successful and creative people. This is, of course, not the rule but tends to be the exception.

The same is true of anxiety. On occasion, one sees extremely severe, disabling, sustained anxiety in neurotic patients and, at the other extreme, individuals who develop pervasive psychotic symptomatology with little or no evidence of accompanying anxiety or stress.

Joan was one of monozygotic twins born to a South Dakota middle class family. She was the more passive of the two girls in personality structure but adjusted well within the family unit, school, and community to all outward appearances until she left home and went to college. At that time, the family decision was to split up the twin girls. Joan went west to a California college, and her sister went east.

Within a few days after arriving at college, Joan became extremely homesick, began to cry uncontrollably, and experienced the first gross anxiety of her life. She sought medical help at the school infirmary because she feared she was having a heart attack. She weathered this crisis and, 10 days after arriving on the campus, met Bob. Within 2 weeks, she had become his steady. Theirs was an idyllic 4-year college romance. All other friends, teachers, learning experiences, etc., were subsidiary to this relationship. They ate most of their meals together, took many classes in common, and were, in a sense, not only sweethearts and lovers but best friends.

They were married 1 week following graduation and moved to a small suburban community in Pennsylvania. Two children were born during the first 4 years of their married life. They remained devoted to each other, yet each was successful in his own respective areas of community activity and family life.

In 1950, unexpectedly, Bob was called to active duty as a pilot during the Korean War. Joan was very shaken and, during the weeks before his departure, cried a great deal, experienced much anxiety, but finally pulled herself together and bravely bid her husband farewell.

Within a few days after his departure, however, Joan began to experience extreme anxiety and tearfulness. In an effort to retain her self-control, she composed a schedule of projects for herself, including a 3-month project of refinishing furniture in the home, a several-month project of sewing for the children, and a project of sewing new clothes for herself in anticipation of her husband's arrival home. She threw herself tirelessly into the furniture-sanding project, using all her spare time and working late into the evening in this effort.

About 2 months after Bob's departure, she became concerned about heart palpitations and entered the local hos-

pital for a 3-day period of tests and examinations. The results of the hospital examinations were "essentially negative," and she was placed on mild sedatives. Her apprehension continued, however, and she began to supplement the sedatives with alcohol. She was particularly agitated during the late evening hours, and her sleeping patterns were disrupted by early morning awakening, bad dreams, and preoccupation with night noises in the house.

Four months after her husband's departure, she precipitously took her children back to the family home in South Dakota and remained with her family for a month. She then returned to Pennsylvania with the children, despite the objections of her parents, who were very concerned over her restlessness. The next several months saw a steady increase in the level of her agitation, attested to by a number of contacts with her physician, two late evening calls to the police department because she felt the house was being invaded, a progressive loss of weight, and the total abandonment of her work projects. By the 7th month after her husband's departure, Joan's condition had deteriorated alarmingly. She cried a great deal, was extremely anxious, felt certain that she would die of a heart attack before her husband returned, and at times would sit mutely for hours, giving little attention to her home or children. Her mother was called by the physician, and ultimately she came to help Joan.

Seven and a half months after Bob's departure, efforts were undertaken by the family physician through the American Red Cross to return Bob to his family. Joan handled this newest development in a peculiar way. There was a sudden demonstration of an outward calm. She insisted on completing dental work before her husband's return, explaining to her mother, "I want to be perfect when he comes back." The family dentist told her that five teeth needed filling and was startled when she asked him to remove these teeth. He declined her urgent request, and Joan began a search of the community to find a dentist who would remove all of the "decayed and rotten teeth." She was ultimately successful.

Immediately afterward, she became frantically agitated, alternately fearful and elated, grandiose, and delusional. She stated that she was the Virgin Mary awaiting the return of God. She was floridly psychotic and actively suicidal when her husband returned.

Joan required 2 years of continuous hospitalization, and she continued to receive out-patient psychotherapeutic help for some years after release from the hospital and return to her husband and children.

Joan was, then, within an 8-month period of time in her life, a normal wife and mother, anxious and edgy, obsessively preoccupied, phobic, somatically fixated, dependent on alcohol, suicidally depressed, and, finally, delusional. She was, to all appearances, normal, neurotic, and psychotic within a relatively short interval. Of course, not all neurotic or psychotic patterns are characterized by this level of fluidity and change.

Borderline States

Compounding the effort to describe inclusive categories of neurotic versus psychotic individuals is the clinical picture presented by a large group of patients who have been variously labeled "borderline psychotics," "psychoneurotic schizophrenics," "ambulatory psychotics," etc. The unifying characteristic in such patients, who vary considerably in terms of individual complaints, is the tendency toward the episodic emergence of very profound psychotic behavioral patterns during times of stress, often with relatively prompt restitution of a less disordered neurotic or even normal clinical picture when stress is relieved.

Hoch and Polatin described such patients as suffering pseudoneurotic mental disorders. This has been an appealing concept to many clinicians, since, among other things, it explained why some apparently neurotic patients proved to be quite refractory to the kinds of psychological therapies that ordinarily were useful in treating neurotic patients. Miller has described the special diagnostic problems posed for the family physician by these patients who present fluctuating psychological pictures, pointing out the tendency of doctors to misinterpret bizarre somatic complaints that have emerged in the face of life stress and thus reflect organismic rather than organ disorder. Knight, in 1938, offered a logistic conceptualization to aid in understanding patients who may present rapidly shifting or fluid symptomatology:

"I believe it was Freud who used the metaphor of a retreating army to illuminate the mixed clinical picture of libidinal regression. I should like to borrow the metaphor and elaborate for the purpose of illuminating ego-defensive operations. Various segments or detachments of the retreating army may make a stand and conduct holding or delaying operations at various points where the terrain lends itself to such operations, while the main retreating forces may have retired much further to the rear. The defensive operation of the more forward detachments would, thus, actually protect the bulk of the army from disaster; but these forward detachments may not be able to hold their positions and may have to retreat at any time in the face of superior might. On the other hand, the main army may be able to regroup itself, receive reinforcements, or gain new leadership and recapture its morale. In that event, the forward positions may hold long enough for the main forces to move forward to, or even well beyond, the stubbornly defended outposts."

Maladaptive Life Style

Another rather complex group of patients who do not fit neatly into any neurosis, psychosis, or borderline state diagnostic categories are individuals who have evolved a rather frozen, often relatively anxiety-free, style of life that encompasses maladaptive or even psychotic ways of interrelating with their everyday life in a seemingly conflict-free way.

For example, one encounters the obsessive, excessively serious, humorless, and compulsive child who grows up to be precisely the same kind of adult. Another fixed pattern is that of the chronically depressed, pessimistic individual who seems to discover constant fulfillment of his disappointing expectations. However, these disappointments are not additive in their consequences, and the patient's depression does not mount but sustains the same magnitude over the years. Such individuals are never happy, but only rarely do they become actually suicidal. Similarly, one may observe patients (usually women) whose life style is characterized by a heavy predominance of hysterical features relentlessly sustained from little girlhood into senescence.

Many of these individuals who have developed highly stylized, conflict-free, maladaptive ways of living have proven to be most refractory to efforts to

help them achieve symptomatic relief or modification of behavior patterns.

The Trend in Classifications

The task of delineating diagnostic categories that will serve more to illuminate than to obscure the mental status and life situation of a given individual is by no means a simple one. Certainly, the trend in thinking about psychiatric diagnosis in recent years has been to stress the dynamic and fluctuating patterns rather than the entity itself. Thus, the American Psychiatric Association classification no longer speaks of neurotic and psychotic states but rather of neurotic and psychotic *reactions*.

Menninger, Mayman, and Pruyser in their book, *The Vital Balance*, propose a unified view of mental illness that dispenses with labels and substitutes a method of diagnosis in which all disturbed states are seen as sequential stages in a single and reversible process. They propose five levels of personality disorganization, extending from a first level marked by "slight but definite impairment of smooth adaptive control, a slight but definite disturbance of organization, a slight but definite failure in coping" and extending to a fifth level of disorganization, "an extremity beyond psychosis in the obsolescent sense, the abandonment of the will to live." These authors feel that it is now time to abandon earlier concepts of psychosis, borderline schizophrenias, neurosis, etc., in favor of a definition of personality that emphasizes personality's special role as system regulator and maintainer of organization and homeostasis. They

state: "Threatened disorganization evokes tension which may exceed the powers of the habitual 'normal' coping devices of the organism. Various special devices are called upon in the emergency to maintain the equilibrium, perhaps at a lower level of total functioning, with the best possible facade and with a minimum of discomfort."

This manner of thinking about mental disorder may be more consistent with other medical and biological measures, for example, the functional impairment and capacity scale in heart disease, and may anticipate the nature of psychiatric nomenclature in the future.

Suggested Cross References

For a discussion of psychiatric normality, see Section 5.6 by Offer and Sabshin in Area B, on the basic behavioral sciences. More detailed descriptions of the neuroses and psychoses may be found in subsequent sections in this area on psychiatric disorders. For additional comments on the problems of psychiatric nomenclature, see the preceding section by Brill and the editors' introduction to Area H.

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Chapter 15

Psychotic Disorders. I: Schizophrenic Reactions

15.1 SCHIZOPHRENIA. I: INTRODUCTION AND HISTORY

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Schizophrenia is generally considered to be the prototype of all functional psychoses, and it has been said that "to know schizophrenia is to know psychiatry."

There are an estimated 320,000 hospitalized schizophrenic patients in the United States today. When undiagnosed, untreated, and ambulatory cases are added to this number, the total rises to nearly 600,000. The odds are one in 100 that an individual will be hospitalized as a schizophrenic patient some time during his life. Every year, between 100,000 and 300,000 new cases of schizophrenia are diagnosed in the United States alone. Schizophrenics now occupy close to two-thirds of our mental hospital beds and more than a quarter of all hospital beds.

There may be some 4,500,000 new cases of schizophrenia in the world every year, and the total world schizophrenic population now numbers about 9,000,000—nearly the equivalent of the entire population of metropolitan New York City.

Hospital records provide evidence that the incidence of schizophrenia in the United States has probably remained unchanged, at least for the past 100 years and possibly throughout our entire history, despite tremendous socioeconomic and population changes. However, a recent study of two sample groups of schizophrenic patients, one hospitalized before and the other after the introduction of pharmacotherapy and active social treatment methods, revealed an increased marriage rate in both groups. This increase was more marked in the second group and greater than that for the general population. There was also an increase in the reproductivity rate, more than three times the increase in the general population. The reproductivity rate of schizophrenics has always been distinctly

lower than that of the general population. It is now approaching the latter, and the selective biological disadvantage that in the past had a restrictive effect on the incidence of schizophrenia in the population seems to be gradually disappearing.

Whether one accepts the genetic or the environmental etiology of schizophrenia, there is little doubt that more children in families with schizophrenic parents will mean a growing incidence of schizophrenia in the future. And the cost of schizophrenia, not only in dollars spent for medical and social services but also in human suffering and productivity loss, is astronomical.

Historical Framework

Early observations. The symptoms of schizophrenia have fascinated physicians and philosophers for thousands of years. As early as 1400 B.C., a Hindu fragment from the Ayur-Veda described a condition, brought on by devils, in which the afflicted is "gluttonous, filthy, walks naked, has lost his memory, and moves about in an uneasy manner."

In the 1st century A.D., the physician Aretaeus of Cappadocia noted the essential qualitative difference between patients suffering from the then traditional catch-all known as "mania" and those whom this gifted observer and clinician described as "stupid, absent, and musing"—possibly equivalent to the modern terminology applied to schizophrenics, whom we now describe as stuporous, preoccupied, and in poor contact with reality.

Aretaeus also observed the deterioration of mental faculties and personality in some of his patients, who may well have been schizophrenics. Such patients, wrote Aretaeus, "fall into such a degree of degradation that, plunged into an absolute fatuousness, they forget themselves, pass the remainder of their lives as brute beasts, and the habits of their bodies lose all human dignity." Similarly, Aretaeus clearly described paranoid syndromes among those whom he called "melancholics," for example, delusions of being poisoned, withdrawal, and preoccupation with religion.

Soranus, in the 2nd century A.D., described delusions of grandeur in patients who "believe themselves to be God" or who "refuse to urinate for fear of causing a new deluge." He also gave careful descriptions of stupor states.

After this early era of detached clinical interest and earnest attempts at treatment, the schizophrenic was cloaked for well over 1,000 years in the shadows of superstition and religious zeal. Countless schizophrenics judged to be possessed by the devil were burned at the stake or condemned and confined by society to jails and the unbelievably gruesome conditions of asylums such as Bedlam in England and Bicêtre in France. During this period the schizophrenic was banished from the public eye and was virtually inaccessible to clinicians or scientists for study.

Treatment. The idea of caring for people with mental disorders, rather than simply keeping them, did not emerge again until the 18th century. Psychology had been left to the philosophers, and the laws of the behavioral sciences had not even been thought of. Physicians were confined to the use of physical and chemical remedies that they knew from empirical application in the treatment of other diseases.

The therapeutic armamentarium of these early physicians was actually restricted for centuries to a few standard procedures, such as blood letting, purging, and the administration of emetics. There existed a fantastic pharmacopoeia, which owed many of its principles to the medieval alchemists.

Convulsions produced by camphor and anesthesia produced by ether were also employed occasionally. Shock treatment in the 18th and 19th centuries consisted of twirling the patient on a stool until he lost consciousness or dropping him through a trap door into an icy lake. This early shock treatment, with its emphasis on producing fear and discomfort in the patient, is directly opposed to modern, physiological shock therapy, where every effort is made to eliminate psychological trauma.

Animal magnetism, or Mesmerism, which became the fashion for a brief period in the late 18th and early 19th centuries, was probably not used frequently for the treatment of psychotics. However, moral treatment, applied widely to hospitalized psychotics in the United States during the middle 19th century, resembled in many aspects today's milieu therapy and other social therapies and was probably an effective therapeutic approach to schizophrenic patients at that time.

With the advent of huge mental hospitals in which a personal approach was impossible, moral treatment and its therapeutic gains were lost. A therapeutic vacuum persisted for half a century until the development in the middle 1930's of Sakel's hypoglycemic coma treatment and Meduna's convulsive therapy.

The neuroleptic drugs in the 1950's brought impor-

tant further gains, particularly in the sustained control of schizophrenic manifestations. And despite Freud's firm belief, shared by most early psychoanalysts, that psychotherapy could not be effective in the treatment of schizophrenia, it has been demonstrated over the past few decades that not only is psychotherapy of schizophrenia feasible and frequently effective but it can also provide vitally important new insights into the complex psychopathology of the schizophrenic patient. Nevertheless, there still is no definitive cure for schizophrenia, and nobody has yet succeeded in isolating its basic causes.

Causes. Over the centuries there have been many theories about the causes of psychotic disorders. Among the earliest were the suggestions that insanity resulted from possession by the devil or evil spirits or indicated punishment by the gods. Physical factors in the form of vapors or pressure on the brain were held responsible by those who later tried to cure these states by venesection and purging.

In the 18th century Georg Stahl introduced the idea of a vital force into the theory of disease. And in the 19th century Heinrich Neumann suggested that insanity was due to a "loosening of the togetherness." These concepts indicated an early awareness of the important role of dynamic factors and interpersonal relationships in psychotic disorders.

In fact, during the 19th century a violent controversy developed between those psychiatrists who, as Griesinger had first emphatically proclaimed, believed that all mental disorders were due to physical brain disease and those who thought they were due to a dynamic, psychological struggle between freedom and obstacles, sin and guilt, and other psychological forces. Heinroth derided his opponents of the somatological school because they looked on the human mind "as a cadaver which one could cut to pieces with a knife, or as a chemical compound which could be broken down into elements, or as a mechanical contraption, the workings of which one could calculate with the help of mathematics."

The factor of heredity as a possible cause of psychosis was also considered by psychiatrists of the early 19th century. Morel describes the case of a psychotic boy whose mother had been insane and whose grandmother had been eccentric, suggesting heredity as a definite etiological factor.

Is all mental disorder constitutional and genetically determined, or is it acquired through traumatic experiences in early childhood? The debate between somatogenic and psychogenic schools of thought on the causes of mental disorder and the nature-nurture controversy still go on today.

Classification and diagnosis. The long search for causes and cures of schizophrenic manifestations was certainly impeded by the fact that what we know now as schizophrenia was not even recognized or described as a disease entity until 1896, when Emil Kraepelin brought together under the name "dementia praecox"

a variety of psychotic syndromes previously believed to represent separate diseases.

Classifications in 18th century. In the 1780's Thomas Arnold had differentiated "ideal and notional insanity" from other types of mental disease. This differentiation may correspond to the modern paranoid subtype of schizophrenia in which delusions prevail, although Arnold may also have been referring to the thought disorder that we today consider to be one of the cardinal symptoms of schizophrenia.

The 18th century German philosopher Immanuel Kant also took an active interest in the methodology and classification of mental disorders and stressed the importance of puberty as a critical period in personality development. This emphasis on puberty, in fact, later led psychiatrists to the term "dementia praecox," which was originally defined as mental deterioration beginning at puberty. Kant also pointed out that in insanity a *sensus communis* is lost and is replaced by a *sensus privatus*—contact with reality versus loss of contact with reality, as we would express it today.

Classifications in 19th century. K. G. Neumann introduced the term "recovery with defect." In France, Esquirol, a pupil of the great reformer Pinel, enriched psychiatric terminology with the introduction of the term "hallucinations," which he defined precisely as it is defined today. He also described a special type of psychosis called "monomania," which seems to have corresponded to a certain form of paranoid or paraphrenic schizophrenia.

The French psychiatrists of the early 1800's were apparently well acquainted with the general picture of schizophrenia, since Pinel and Esquirol have described under different names many cases who must have been schizophrenics. These various clinical observations and methodological clarifications prepared the way for the first major milestones in the development of a unified concept of dementia praecox in the 19th century.

Morel in France, a contemporary of Kraepelin, first introduced the term *démence précoce* in 1856. He applied it to the condition of an adolescent patient, originally bright and active, who gradually became gloomy, silent, and withdrawn. The boy expressed hatred for his father and had thoughts of killing him.

At that time, too, the first methodological distinction was made between the terms "idiocy" and "dementia." The former referred to congenital or very early defects and the latter to acquired or reversible defects.

The French concept of *délires*, meaning delusional states, had in Germany been termed *paranoia*. This term was first used by Vogel in 1764 and later by Heinroth, Zeller, and Ellinger in the early 19th century. Wilhelm Sander in 1868 described paranoid states much as we understand them today, and La-sèque in 1871 published a study on the *délire de persécutions*.

In the middle 19th century there began to crystal-

ize, for the first time in medical history, a distinct interest in the nosology of mental diseases. The controversy that started then—and has by no means been resolved yet—was between a classification according to cause and classification according to symptoms.

Those who subscribed to the classification by symptoms found it easy to make their point that few causes of mental diseases were known and that hypothetical assumptions were no solid foundation for scientific groupings of mental illness. The other side claimed that a good classification of diseases must always be based on etiology. Since this group had to make certain assumptions on the causes of mental illness, they found themselves in the midst of another familiar dilemma: Were all mental disorders due to physical brain disease or to a disturbance of the functional equilibrium?

Heinroth had distinguished 48 separate mental diseases and had brought about considerable confusion as a result. In reaction to this confusion, Heinrich Neumann rejected all classifications and declared in 1860 that psychiatry would not be able to progress until it had decided "to throw overboard the whole business of classifications. . . . There is but one type of mental disturbance, and we call it 'insanity.'"

Kahlbaum, a perceptive psychiatric observer, described a pattern of phenomena characterized by pathologically changed motor tension, to which he gave the name "katatonia" in 1868. Kahlbaum's assistant, Hecker, described the symptomatic picture of hebephrenia and gave it its name in 1870, when he pointed out that this disease occurred mainly in young people or adolescents and usually ended in deterioration.

Kraepelin. The stage was set for a bold consolidation and synthesis of these well established but separately conceived psychiatric syndromes. This could not be done without the most expert and critical judgment that could distinguish between authentic clinical syndromes and spurious groupings or artificial classifications. Such a task would also require much creative insight that would make it possible to choose a number of separate, apparently independent diseases and integrate them into one meaningful whole. Emil Kraepelin had these qualifications and the courage to follow through and defend his synthesis in the face of great opposition by skeptics and conservatives among his colleagues.

At first, Kraepelin thought that dementia praecox was identical with hebephrenia and that catatonia and dementia paranoides were separate diseases. He took this stand in 1887. The 1896 edition of his text book distinguished dementia praecox ending in deterioration from manic-depressive psychosis, which does not end in deterioration. And in 1898 at an historic meeting in Heidelberg, he presented a paper entitled "The Diagnosis and Prognosis of Dementia Praecox." Here he unified all primary and secondary dementias into one mental disease characterized by

the lack of external causes, by its occurrence usually in young, previously healthy individuals, and, most important, by ultimate deterioration.

Most of those present at the meeting, the 29th Congress of Southwestern German Psychiatry, opposed Kraepelin's new concept. They objected, as many modern audiences would undoubtedly do today, to a new classification without any etiological or pathological basis. Nevertheless, today Kraepelin stands unopposed as the founder of the modern system of psychiatric classification.

In distinguishing between dementia praecox and manic-depressive psychosis, Kraepelin focused primarily on the outcome: deterioration versus nondeterioration. This new focus, in contrast to a simple collection of symptoms, constituted a major reform in psychiatric thinking. But Kraepelin himself had pointed out that about 13 per cent of dementia praecox patients recovered without deterioration or major defect. Should these, asked critical psychiatrists throughout the world, be diagnosed as dementia praecox sine dementia?

Kraepelin's description of dementia praecox included not only the prognostic factor of final deterioration but also the observed clinical phenomena, such as hallucinations, delusions, stereotypes, disordered affect, etc. These phenomena were a substantial aid to diagnosis; but to arrive at a definitive diagnosis, the clinician might well have to wait for several years to observe the outcome in dementia and confirm the presumptive diagnostic impression of dementia praecox. This was rather awkward. And what about the 13 per cent who did not deteriorate? Most important, could a psychiatrist really pursue his therapeutic task constructively if he accepted in advance the fatalistic dictum that his patient would ultimately deteriorate?

Bleuler. Eugen Bleuler broke through this impasse with his new conceptualization of the whole problem and the new term "schizophrenia" for dementia praecox. Translated literally, this term means "split-mindedness," and Bleuler saw the splitting of the personality, rather than the outcome, as the central feature of this disease. In his classic monograph, "Dementia Praecox or the Group of Schizophrenias," which appeared in 1911, Bleuler reoriented the basic approach to the dementia praecox problem. He no longer considered incurability and terminal deterioration a necessary feature of schizophrenia. To him, schizophrenia was both a disease entity and a psychopathological reaction. Consequently, he expected some patients to deteriorate and others to recover with or without defect.

Bleuler's fundamental contribution was the introduction of hierarchical ordering of symptoms to replace the mere description of equivalent clinical phenomena. In the new hierarchy, he introduced the idea of primary and secondary symptoms, an idea that was later adopted by a number of psychiatric investigators in Germany, such as Schneider, Gruhle, and Berze,

who have referred to them variously as first order or basic symptoms. To Bleuler, the primary symptoms included disturbances of affect, associations, and volition. But virtually the entire clinical picture that Kraepelin had described as typical of schizophrenic pathology was seen by Bleuler as consisting of secondary symptoms, for example, hallucinations, delusions, negativism, and stupor. Ambivalence and the new, important concept that Bleuler first described and that he named "autism" are particularly important features in his clinical picture of schizophrenia.

Bleuler's original monograph describing the group of schizophrenias is, after more than half a century, still a basic reference because it represents brilliant observations and inspired descriptions by an eminent clinician, who painstakingly collected a tremendous volume of material over many years. Unlike Kraepelin, Bleuler had been influenced by Freud's new dynamic insights, and Bleuler's monograph represents a successful welding of Kraepelin's new discipline of systematic classification of symptoms, Freud's sensitive attention to the dynamic importance of the content of symptoms, and Bleuler's own evaluative idea of a hierarchy of symptoms according to their relative weight in the whole clinical picture of the disease.

Meyer. Adolf Meyer, an American and the founder of the psychobiological school of psychiatry, was the third important figure in the development of the schizophrenia concept. He called it "parergasia," a name that has never been widely accepted, and defined it as a reaction to traumatic life situations, the outcome of a complex habit pattern of nonadaptive responses.

Meyer believed not that schizophrenic behavior was brought about by hidden physical or psychic causes but that it was the natural result of a life history that could be clearly traced to various physical, social, and psychological factors in the individual's past. He never subscribed to Kraepelin's or Bleuler's systems of classification, although he acknowledged Kraepelin's historic achievement as a "stroke of genius."

Nor did Meyer accept Freud's comprehensive theoretical framework. Rather than explaining a patient's symptoms in terms of a certain number of universal psychodynamic principles or diagnosing disorders on the basis of a few general principles of classification, Meyer insisted on the unique, idiosyncratic nature of every patient's psychiatric disorder. Each patient, as Meyer saw him, represented his own research challenge, requiring intensive individual study by the clinician, without easy recourse to traditional theoretical explanations or standard diagnostic labeling procedures.

Current types of schizophrenia. Kraepelin described three basic types of dementia praecox: the catatonic, hebephrenic, and paranoid. Bleuler later added a fourth: simple schizophrenia. These four types are generally accepted today as basic schizophrenic syndromes. Later investigators have added a

number of new subtypes, including schizoaffective and pseudoneurotic schizophrenia and the borderline conditions of latent and ambulatory schizophrenia.

In 1939 Langfeldt introduced the concept of schizophreniform psychoses and proposed an additional distinction between process schizophrenia and schizophrenic reaction. His process form of schizophrenia refers essentially to the old dementia praecox concept and was to be diagnosed in schizophrenic patients where final deterioration had either occurred or was to be expected. The schizophrenic reaction, on the other hand, is characterized by symptoms that appear fairly typical for acute schizophrenia, except for certain factors in the patient's history: (1) His prepsychotic personality was not characteristically schizoid but was fairly well adjusted to work and social situations. (2) His psychotic breakdown occurred in close temporal association with and probably due to a traumatic event in his life situation rather than without any discernible external cause.

Langfeldt's distinction into process and reactive schizophrenia is an attractive device that many clinicians use to make a clinical prognosis, good in the case of schizophrenic reaction, poor in the case of schizophrenic process, and a good deal of research has been focused on an objective separation of these two clinical types, either by means of psychological tests or through some biochemical or other physical factors. However, there still is no decisive evidence to prove that these two types are really of a qualitatively different nature and not simply different degrees of severity on a psychopathological continuum.

Conceptual Frameworks of Schizophrenia

Schizophrenia as seen today has many different facets. The following is a brief outline of five conceptual models that may be considered basic ways of viewing this disease.

Physical-biological models. These models are all oriented toward explaining the manifestations of schizophrenia in terms of its causes.

Historically, the primitive physical factors of heredity and pressure or vapors on the brain were at first considered to be the causes of schizophrenic symptoms. Later, autotoxic factors and gonadal (testicular) insufficiency were discussed as possibilities, as was bacterial infection, for example, a particular form of tuberculosis of the central nervous system.

More recent theories have been focusing on specific toxic factors in the blood, such as a globulin plasma factor; on enzyme abnormalities that may interfere with the normal functioning, production, and degradation of biogenic amines (catecholamines and indolamines); on autoimmune processes attacking the brain; and, again, on heredity. The experimental production of model psychoses through the action of psychotomimetic drugs may also be regarded as an

attempt to simulate possible toxic factors contributing to the appearance of schizophrenic symptoms.

Description-classification models. Oriented primarily toward clinical observation, recording, description, and classification, these models have three main approaches: (1) simple, clinical description of syndromes and reaction patterns, (2) synthesis of nosological entities based on clinical judgment, and (3) computer-derived typology based on factor analysis and cluster analysis of behavioral manifestations.

Psychodynamic-interactions models. These models are primarily oriented toward empathic understanding and theoretical explanations of the observed psychopathology. The explanations are based not on experiments but on concepts and constructs referring mainly to functional intrapersonal dynamics and interpersonal relationships.

Originally, Freud described schizophrenia as a deep disturbance of an individual's object relations, a narcissistic psychosis that precluded psychotherapy because the patient was not capable of an effective transference relationship with the therapist. The different symptomatic manifestations of schizophrenia were explained as an interaction of various defense mechanisms against anxiety arising from early psychic traumas.

Another model in this category postulates that certain stages or positions follow each other in regular sequence during the development of the human infant. These positions, for example, the paranoid or the depressed, determine the infant's basic perspective of the world at each respective stage of psychic development. According to this theory, a paranoid psychosis occurring in adult life may represent a pathological regression to an earlier developmental stage.

The most widely accepted psychodynamic model today stresses the primary importance of deeply disturbed interpersonal relationships. Disturbed family communication and interaction may be the origin of the disorder, and effective psychotherapy requires many modifications of the orthodox analytic procedure because of the unusual intensity and precariousness of the transference relationship.

Phenomenological-existential models. These more recent models aim at understanding a schizophrenic patient's mode of existing in and experiencing his world.

The emphasis in these models is on the immediacy and directness of the patient's lived experiences. These are accepted and appreciated as phenomena in their own right and are analyzed strictly within the limits of their own self-evidence (phenomenological analysis). Every effort is made in such analysis to keep completely free from such traditional, preconceived concepts as subject and object, cause and effect, and mechanism of action.

By accepting the patient's pathological world as being given with irreducible immediacy in all its spatial, temporal, and interpersonal aspects and by not

attempting to explain its special nature, the therapist, it is assumed, will be able to encounter the schizophrenic in his own world, the first condition for eventually leading him out of it.

Conditioning-behavioral models. These models aim at explanations of deviant behavior on the basis of experientially established disturbances of acquired response patterns in primitive signal systems that enable the organism to adapt to changes in the perceived environment through neurophysiological learning.

Pavlov saw in schizophrenia the manifestations of generalized inhibition, which he referred to as a chronic hypnotic state. This hypnotic state, representing pathological fatigue of the higher nervous centers, was in his view the result of ultramaximal stimulation. In a nervous system weakened through hereditary or acquired damage, this produces paradoxical or ultra-paradoxical responses.

Current models of this school of thought consider schizophrenia as a chronic condition of nonadaptive responding due to disturbed reinforcement patterns of early experiences. These maladaptive experience-response-reinforcement contingencies lead to faulty generalizations of responses and in this manner interfere with perceptual and cognitive discrimination. Behavioral therapy based on the principles of operant conditioning and aiming at corrective changes in reinforcement experiences seems to have found a place in the total treatment program for certain schizophrenic patients, notably those who, like autistic children, are extremely restricted in their capacity to communicate at any level.

Current Status

The problem of schizophrenia remains an urgent challenge to the researcher, clinician, and sociologist alike. Today, etiological research is actively exploring four major factors: (1) the genetic, the role of heredity; (2) the biochemical, searching for a toxic factor that may be the result of an innate metabolic error; (3) the psychodynamic, the effects of early psychic trauma; and (4) the social, focusing on the role of a disturbed family structure in the life of a schizophrenic.

The diagnosis of schizophrenia is still by no means a clearly defined procedure. The lack of agreement on objective criteria for this diagnosis today embarrasses psychiatrists throughout the world more than ever before because it seriously hampers epidemiological research and comparison of therapeutic results by different methods and clinicians. A modern development in schizophrenia research is, therefore, a growing preoccupation with the diagnostic problem and the role played by cultural influences, changing clinical fashions, and differing schools of thought in diagnosing schizophrenia. Independently, the search for objec-

tive or at least relatively culture-free diagnostic criteria continues.

The area in which the greatest progress has been made since Kraepelin is the therapeutic management of schizophrenia. Psychiatrists have learned to control quite effectively the acute and often the chronic symptomatic manifestations of schizophrenia. With modern pharmacotherapy it is even possible to maintain many schizophrenic patients symptom-free and to prevent relapses. Yet, despite relative success in the therapeutic control of schizophrenia, the search for a cure goes on and awaits the solution of the etiological riddle.

Suggested Cross References

More detailed information regarding the epidemiology, etiology, clinical manifestations, and various forms of treatment of schizophrenia may be found in the specific sections on these topics in this chapter. Problems regarding nosology, nomenclature, and differentiation between neurosis and psychosis are further discussed by Brill (Section 14.1) and by Miller (Section 14.2), respectively. Further references to the history of schizophrenia may be found in Mora's chapter on the history of psychiatry (Chapter 1). General concepts of the epidemiology of psychiatric disorders are covered by Lemkau and Crocetti (Section 5.1) in Area B, on the basic behavioral sciences.

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15.2 SCHIZOPHRENIA. II: EPIDEMIOLOGY

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One of the major problems in the application of the epidemiological method to mental illnesses is the definition of a case. The problems of case definition are greatest in those chronic diseases of unknown etiology, of which schizophrenia is a classic example. Here the maximum reliance must be placed on clinical evaluation. In such diseases there are no laboratory procedures to supplement the judgment of the physician.

At first sight, this appears to impair the application of the epidemiological method to the mental illnesses. Admittedly, it does create special problems. However, these problems are logically no different from those that confronted investigators into the epidemiology of many infectious diseases a century ago. Then, too, the specific etiological agents were unknown, as were the modes of transmission and patterns of the diseases involved. In other words, in and of themselves, these limitations do not automatically invalidate the application of epidemiological methods by the investigator of mental diseases.

In the epidemiological investigation of mental illnesses, many types of case definition have been used. Some studies have relied on hospital admissions and discharges; some studies have relied on a physician's examination; some studies have used a physician's examination followed by a psychiatric evaluation of that examination; some studies have used a lay interview, which was then evaluated and scored by a panel of psychiatrists. Several recent studies have used register statistics. This requires an area—usually a state—where every individual making use of either outpatient or in-patient psychiatric services is centrally listed, along with certain information about his age, diagnosis, treatment, etc. Whatever means of case definition is used, it must be the same for all groups involved. The assumption here is that within reasonable limits the errors produced by the type of case definition will be approximately the same among all the groups being studied and compared. Therefore, these errors, if reasonable precautions are taken, will be distributed in an essentially random manner. Thus, although such errors may change the magnitudes involved, they will not in any fundamental sense change the nature of the comparisons. This assumption, of course, does not always hold. If too many false positives or false negatives are included in the group being compared, true differences may well be obscured.

The application of these methods to schizophrenia is beset with difficulties. As a recent comprehensive review by Mishler and Scotch noted, "Like both clinical

and experimental investigations, the epidemiologic study of schizophrenia has had to face serious methodological and conceptual problems that have interfered with the steady growth of empirical information and also of theoretical understanding." However, it is possible to review various epidemiological studies of schizophrenia and to observe the emergence of some broad general outlines and patterns.

Incidence and Prevalence

To begin with, there is the question of the over-all incidence and prevalence of schizophrenia. How important and frequent a disease is it? Lemkau and Crocetti have stated:

When discussing such over-all statistics, several caveats must be borne in mind. Ideally, such statistics are arrived at by selecting a broad sample of the world's population, having each member of the sample diagnostically examined in the same way, and then counting the number of positive and negative cases. Even in such an idealized and oversimplified design, massive conceptual and procedural problems have to be overcome. Obviously, no such ideal study exists.

What does exist are numerous fragmentary studies of limited populations carried out under a variety of conditions and diagnostic procedures, case definitions, etc. Added to these difficulties is the fact that many of these studies were done at different times. In the time between the earliest and latest studies, the diagnostic definition of schizophrenia was itself undergoing considerable change. Furthermore, the overwhelming majority of the studies involved deal with the West European populations. What the investigator does under such circumstances is to attempt a careful analysis of the various studies, try to establish corrective statistics for each study so as to make them all generally comparable, then on this basis formulate a minimal and maximal estimate of prevalence and incidence and select by some criteria the estimate that he feels will have the least chance of containing error.

It is obvious that such estimates are highly subjective statistics. In fact, many medical statisticians will not attempt them at all, since they are bound to be in error. The heavy stress on the limitations of these statistics is necessary since, once formulated and published, they tend to assume a life of their own. They are cited in the literature with decreasing regard to the qualifications that accompanied their original formulation and tend to become fixed and immovable points of reference. In addition, since most of these statistics were based on studies available at a particular time and since new studies are constantly being published, the figures should be continuously reevaluated in the light of new data.

It would seem that the true incidence of schizophrenia in a western European type of society can hardly be less than 50 per 100,000 and within all reasonable probability does not exceed 250 per 100,000 per annum. The incidence range most likely to contain the least error in its general application to various communities in western European type societies is approximately 150 cases per 100,000 population per year. That is to say that the true rate for various communities in these societies can be expected to fall above as well as below this figure with equal frequency.

The above figures allow for both hospitalized and nonhospitalized patients. If case definition is restricted to first admissions to state mental hospitals, the figure for New York State in 1950 was 35 per 100,000, accord-

ing to Kramer et al. If allowance is made for schizophrenic patients in private mental hospitals, in general hospitals, and in ambulatory treatment, it can be seen that the resultant estimated figure must be close to the minimum estimate cited above.

Estimates of the prevalence of schizophrenia—that is, the proportion of a population that would be diagnosed as schizophrenic at any one point in time—are even more subjective than estimates of incidence. This is due primarily to the extreme chronicity of schizophrenia and to diagnostic disagreement as to whether an individual who has had multiple schizophrenic episodes but is in a state of remission at a given point of time should be counted as a schizophrenic or not.

Taking a very narrow basis of case definition, namely, hospitalized schizophrenics, on any given day in the United States, there were 160 schizophrenics per 100,000 population in mental hospitals in 1965. In a recent study in Croatia, Yugoslavia, the average rate of hospitalized schizophrenics over a 5-year period was 142 per 100,000 population. When allowances are made for differences in medical practice, bed-population ratios, etc., the two statistics do not appear very different. When one adds to these minimal estimates, based on diagnosed and hospitalized cases, those estimates of the undiagnosed and unknown schizophrenics in the population, the prevalence figure approximates 290 per 100,000 population.

A certain credibility is lent to this figure by another recent Yugoslav study. In this study 4th year medical students took special lectures in psychiatry, visited hospitals, and had cases demonstrated. Then they interviewed at least one member of every household in a carefully defined village. They asked such questions as: "Has any member of this household ever been in a mental hospital?" "Has any member of this household ever seen Drs. ____ or ____?" (These were the psychiatrists who served the areas.) "Has any member of this household ever had the following symptoms?" (An appropriate list was presented.) The students also examined the medications present in the household, looking for any of the drugs commonly used in controlling psychiatric symptoms. On the basis of this interview, they reported cases as "suspected of mental illness" or "not suspected of mental illness." All suspected cases were then examined by a qualified psychiatrist, and a diagnosis was made. On the basis of this examination, there appeared to be in this small Yugoslav village of about 20,000 a rate of schizophrenia of 329 per 100,000 population. Of the group of schizophrenics diagnosed in this study, three quarters were known to some medical authority as schizophrenic, but only a quarter were known to the local medical authorities as schizophrenic. Approximately 25 per cent of the cases uncovered in this study were previously unknown to any medical authority as schizophrenic.

The life expectancy rate may also be used to estimate the magnitude of schizophrenia. What are the chances that any individual of a given age may be

hospitalized for schizophrenia between birth and age 75? Norris studied this problem and estimated that the figures are between 800 and 1,200 per 100,000.

Mishler and Scotch summarized all these estimates as follows: "The proportion of the population likely to develop schizophrenia during the course of a year is about 0.15 per cent; those hospitalized for schizophrenia for the first time during a year constitute about 0.02 per cent of the population; approximately 0.30 per cent suffer from the illness at any one time; about 1.00 per cent of each age cohort may be expected to fall ill at some point during their lifetime."

When one considers the chronicity of schizophrenia—an average of 4 to 5 months of hospitalization for the first episode, an average of 10 years of hospitalization throughout a lifetime in the United States (at least until recent years)—it is clear that schizophrenia is one of the major diseases of mankind, especially when measured in terms of its capacity to remove individuals from a community.

Factors Affecting Rates

Age. The comparison of rates among different groups in the population also provides some interesting insights into the nature of the disease. The clearest finding that occurs is in terms of age groups most likely to be affected. As dementia praecox, the old name for the disease, implies, schizophrenia is primarily a disease of younger age groups. In both sexes, admission rates for schizophrenia are concentrated in the age range from 20 to 40, with the peak occurring in the age group from 25 to 34 years of age. This finding is consistent with findings in earlier studies as well as with recent national census data. Many of these studies showed that the peak age of hospitalization occurred earlier among males than females.

And the authors have stated: "More than half of the currently hospitalized cases—about 59 per cent—are under 35 years of age. Less than 1 per cent are over 65 years of age."

"Among those patients under 35, schizophrenia accounts for the largest single percentage of admissions to state mental hospitals among each sex and racial group. In New York State the percentage of admissions for this diagnosis approaches 50 per cent [of patients under 35]."

Socioeconomic factors. Perhaps the second most striking differential in rates of schizophrenia among various population groups is that between different socioeconomic groups. The original study on this aspect was done by Faris and Dunham, two sociologists, in Chicago in 1936. These investigators divided the city of Chicago into areas and computed the disease rate for each area as measured by first hospital admissions. The rates they found for schizophrenia in different areas ranged between 100 per 100,000 population and 1,000 per 100,000 population. Further, they found that the areas of high rates could be characterized as areas of high mobility and social disorganization.

Earlier there had been studies by the Norwegian psychiatrist Ødegaard. He compared the rates of first hospital admissions among the Norwegian-born population of Minnesota with the rates of first admissions among the native-born population of Minnesota and the population of Norway. The rates were compared on an age and sex basis. Statistically and methodologically, the study is one of the most thorough ever done in this field. The investigator concluded that there was definitely a higher rate of schizophrenia among those Norwegians who had migrated to Minnesota.

These two studies, taken in conjunction, have led to what are usually termed the drift hypothesis and the origin hypothesis of schizophrenia. Briefly, these two contradictory hypotheses may be stated as follows.

The drift hypothesis holds that the schizophrenic in his preclinical and postclinical state is a highly mobile individual and tends to drift into those social areas where there is the highest social mobility and greatest social disorganization and that this accounts for the higher rates found in these areas.

The origin hypothesis sees, in the higher rates of these most mobile and disorganized areas, etiological factors that create a higher rate of schizophrenia among the inhabitants than is true of stable areas. Neither hypothesis has as yet been conclusively tested.

The notion that there are higher rates of schizophrenia among the lower socioeconomic groups than among the higher has been borne out by hospitalization statistics and other studies. This finding is, however, open to several interpretations. For example, the findings of some investigators indicate that there is a tendency among therapists to see psychosis among working class individuals and neurosis among middle class individuals. Such a tendency would, of course, distort the statistics. As Mishler and Scotch stated:

We believe that at this time no reasonable decision can be made as to the merits of the alternative explanations of the relationships found between social class and the incidence of schizophrenia. Neither can proper weights be assigned to any set of them taken collectively. The higher rates for schizophrenia found among the lowest social class groups in the studies reviewed here may be a function of errors of measurement or may be an artifact. Before attributing an etiological role to social class, these more parsimonious though less elegant interpretations should be ruled out through systematic investigation.

Migration. The initial findings of a relationship between schizophrenia and migration have not been sustained. The original Norwegian investigator, Ødegaard, undertook a study to compare the rates of hospital admission between those who migrated within the boundaries of Norway and those who remained in their own community. He found that the migrants had *lower* rates of hospital admissions than those who remained in their own community. This was also true for schizophrenia.

In 1956 Malzberg and Lee undertook a study of first admissions to New York State mental hospitals from 1939 through 1941. They concluded:

It has been maintained by several investigators that the relationship between dementia praecox and migration is especially close, either because schizophrenics or persons in the 'schizoid' state tend to migrate or because the stresses of migration tend to precipitate schizophrenia. In the present study the relative rates for the foreign-born in comparison with those for total natives were higher for dementia praecox than for total psychoses, especially among whites. For five-year migrants, however, the differentials in regard to dementia praecox were about the same as those for total psychoses, and for whites they were well below those associated with manic-depressive psychoses. It would seem, therefore, that, if there is an especially close relationship between migration and dementia praecox, its effect relative to that of other psychoses is not always manifested immediately after migration.

In a recent study in Yugoslavia two comparable areas were compared, one having rates of mental hospital admission for schizophrenia twice that of the other. Since the high rate area had a high rate of immigration, it was suggested that the migrants might account for the higher rate of schizophrenia. The birthplace of all patients was known, as was the place of residence immediately prior to admission. These were compared. An individual whose place of residence immediately prior to admission was different from his birthplace was arbitrarily defined as a migrant. An individual who was born in the same community from which he had been admitted to the hospital was defined as a nonmigrant. This was, of course, a rough test, since no information was available on any movement that might have occurred between birth and admission. All that could be inferred from the test was that the individual who had been admitted to the hospital from a community different from the one he was born in had definitely moved. The others may have.

The results of this admittedly limited test were somewhat surprising. The highest rates of all were found among those individuals who were definitely established to have resided in the same community from time of birth to time of admission. The next highest rates were among those who had been admitted to the hospital from the same community they had been born in. The lowest rates were among those individuals who had been born in one community but were admitted to the hospital from another. Although certain statistical problems and problems connected with the definition of migration prevent overgeneralization of this finding, it does seem to support those studies cited previously that found a negative correlation between migration and schizophrenia.

Industrialization. One of the most popular beliefs concerning the epidemiology of schizophrenia is the notion that rates of schizophrenia are somehow connected with the increasing rates of industrialization of contemporary societies. A correlate of this idea is the notion that schizophrenia is virtually nonexistent in primitive and agricultural societies.

Studies that attempt to compare the incidence and prevalence of schizophrenia among different cultures rarely employ the same degree of sophisticated methodology in studying a primitive culture as that em-

played in studying western European societies. Differences in case-finding techniques and case definition also enter into the evaluation of findings. There are many descriptions in the literature of psychopathological pictures in other than western European cultures, but most of these are anecdotal descriptions of a single case or of a group of cases with no relation to a standard population. Many are reports of cases which are clearly comparable to schizophrenia as it is known to Western psychiatrists, and, as a generalization, it may be said that psychiatrists trained in Europe and the United States seem to find cases which fit these diagnostic categories in whatever cultures they work. As a symptom picture, the disease appears to occur in every population that has been thoroughly studied, whatever its cultural background.

However, the rate of occurrence is quite another matter. It should be stated at the outset that there is no culture which has been studied as intensively as the western European group. There are a great many unsupported statements in the literature that one or another culture has a higher or lower incidence of schizophrenia. Most of these data are purely impressionistic and are frequently based on one or two equally undependable indicators: the investigator's prejudices regarding the etiology of schizophrenia or the use of inadequately gathered statistics. There is evidence that schizophrenia or schizophrenia-like reactions occur in all known cultures. There is extremely little valid data on the incidence or prevalence of the disease in other than western European types of cultures; within rough limits, rates are similar in all those cultures which have been carefully studied.

Cultural change. Another possible relationship between culture and schizophrenia is that relating to cultural change. The thesis here is that individuals undergoing rapid change from one cultural milieu to another are more likely to develop schizophrenia than individuals remaining within a stable cultural milieu. The literature here is somewhat confused. As Murphy put it, "There are almost as many studies which suggest that social change leads to no increase in mental disorder, or even to a decrease, as there are studies suggesting that an increase is directly traceable to such a cause."

Investigations that have attempted to use measured changes through time in a limited area as a measure of the impact of cultural change on rates of mental illnesses are rare. One of these, by Goldhammer and Marshall, used rates of admission to a variety of mental institutions in Massachusetts between 1840 and 1940 and ingeniously computed age- and sex-specific rates. This is probably the most rigorous and thorough study done on this problem. Those authors concluded that, contrary to popular belief, there had been no long term increase in the last century in the rates of psychoses of early and middle life. This, of course, includes schizophrenia. If this is true for a rapidly changing area in the United States, the supposition is that it is true for currently changing cultures.

Population density. Population density has also been mentioned as a possible etiological factor in schizophrenia. Animal experiments confirm that increased density in an animal population results in more deviant behavior. The earlier studies by Faris and Dunham are suggestive in this regard. A later study by Tsung-yi Lin also offers some confirmation; he found a ratio of 29 to 14 between rates of schizophrenia in densely populated and sparsely populated areas. However, these findings have not been confirmed, and other studies may be considered contradictory.

Specific area. There is an interesting finding in the Yugoslav studies previously cited. This study investigated a century-old clinical belief among Croatian, Austrian, and Italian psychiatrists that a certain area of Croatia had a much higher rate of schizophrenia than other, comparable areas of Croatia. This belief was first tested against unduplicated hospital admission statistics and was confirmed. The usual fallacies attributed to using hospital statistics as a basis of incidence or prevalence—different patterns of diagnosis, different medical care systems, different community resources, etc.—were tested and ruled out as possible contributing factors. The notion was then tested against the statistics of rejection for military service, which in Croatia is independent of local physicians, and again it was confirmed. Next, the populations of a series of communities in two areas—one of them the area in question—were screened by interview and psychiatric examination, and again the hypotheses that the one area had a higher rate of schizophrenia was confirmed. The final step, a screening of a probability sample of the populations in the two areas, has not yet been reported.

The virtually unique finding of this study, as contrasted to others, is that not only does the rate of schizophrenia seem to be significantly higher (by a 2 to 1 factor), but approximately the same difference seems to apply to all psychoses when compared between the two areas. This may—but does not necessarily—support the old belief in a more or less common etiology of all psychoses. There are several alternative explanations. For example, any weakened population or a population having a high prevalence of any given somatic or psychiatric diseases may reasonably be expected to be more vulnerable to any other disease. In other words, there may well be in many populations a nesting of disease, such that increased vulnerability to any one disease increases the vulnerability to any other.

Conclusions

In summary, then, the evidence provided by the epidemiological analysis of schizophrenia, except for over-all prevalence and incidence by age of onset of the disease and its existence in all cultures, is ambiguous and contradictory. However, the differences in rates among different groups uncovered by epidemiological investigation to date strongly suggest that there are

demographic, social, and cultural factors that have powerful selective influences for the individuals who do develop schizophrenia.

Although the general principle of the applicability of the epidemiological method to schizophrenia seems to have been well established by the studies done, their failure to deal with other than macrosociological variables and their failure to assess the relationship of subtypes of schizophrenia to specific demographic, sociological, and cultural variables may have obscured any basic relationships that exist. It may well be, for example, that for a specific subgroup in the population, different types of individuals become more or less schizophrenic than is true in the general population. Present studies do not provide a fine enough sieve to test such a hypothesis.

What conclusions, then, can be drawn about the epidemiology of schizophrenia? First of all, it is a major disease of mankind. Second, it is a disease that finds most of its victims in the younger age groups, those age groups that are in transition between adolescence and maturity. Third, there is some evidence that those who migrate to radically different cultures are more vulnerable. Fourth, there is evidence that those who live in socially disorganized areas are more vulnerable to the disease than those who do not live in such areas. Finally, those populations having the most psychosis also have the most schizophrenia.

Taking all these things into consideration and emphasizing the fact that this final statement is speculation on the basis of inadequate data at hand, schizophrenia seems to be a disease of multiple entities and causes or a disease of high risk for those who are in transition from one social role to another—or both.

Suggested Cross References

For a discussion of some general concepts and problems in the epidemiology of psychiatric disorders, see Section 5.1 by the same authors in Area B, on the basic behavioral sciences.

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15.3 SCHIZOPHRENIA. III: ETIOLOGY

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Within the past few years, many theories have been advanced by various disciplines on the etiology of schizophrenia. In fact, however, many of these theories are not empirically based and might more accurately be termed hypotheses or even speculations. Moreover, they do not always distinguish between pathogenesis and etiology, and they may deal with one or the other or both. This section attempts to evaluate, in the light of established findings, current genetic, chemical, physiological, psychological, and sociocultural hypotheses (and speculations) concerning the etiology of schizophrenia as well as those hypotheses that attribute the onset of the syndrome to disturbances in the dynamics of family relationships. In addition, reference is made to the methodological problems in each discipline that impede the testing of hypotheses and the construction of theories.

Problems in the Etiology of Schizophrenia

Definitions. In any discussion of the etiology of schizophrenia, two immediate questions arise: first, what is meant by the term "etiology" in general; and, second, what is meant by schizophrenia? Unfortun-

nately, the first question is the easier one to answer. The second is discussed at length later in this section.

Engel has defined etiological factors as those "which either place a burden on or limit the capacity of systems concerned with growth, development, or adaptation, or factors which, by virtue of their physical or chemical properties, have the capacity to destroy cells or parts of the body."

Interrelationships of factors. In contrast, pathogenesis refers to the course of disease, from its source (in terms of the individual's developmental history) through the sequence of processes and events that lead to its overt manifestations. Pathogenesis would, therefore, encompass predisposing and precipitating etiological factors. A single etiological factor, be it proximate or distal, does not exist in nature. It may be prepotent or predominant, but its complex effects become manifest only through its interaction with other systems. One might speculate, for example, as to the relationship between schizophrenia and a possible aberration in catecholamine metabolism. If this aberration were found to be unique for schizophrenia, could it, in itself, account for the natural history of the disease? Or would such an aberration, provided it existed in combination with other factors—genic, physiological, and social—merely increase the predisposition to schizophrenia? A single etiological factor will not account for all the variance; nor will any invariant combination of causes account for a complex natural process.

In psychiatry, the nature-nurture controversy continues to rage in the guise of claims that either a genic, chemical, or psychological factor can, in itself, provide a sufficient causal explanation of schizophrenia, notwithstanding the fact that every biological organism is conceded to be a product of his genotype as well as his phenotype. The genotype represents a complex organization of potentialities that depend on environmental circumstances for their elicitation. Once these potentialities or characteristics have been elicited, they constitute the phenotype. Concomitantly, psychosocial explanations are neither more nor less biological than chemical ones, in the same sense that developmental, maturational, and ecological processes are just as intrinsic to the study of living organisms and hence to biology as are the chemical constitution or energetics of cells.

Purpose of etiological theories. Discussion of the etiology of schizophrenia is complicated by another major conceptual problem: What are the various etiological theories supposed to explain about schizophrenia?

If schizophrenia is conceived of as a disease modeled after the usual concepts—as a disease, such as a viral infection or a neoplasm, that occurs in persons—then it is entirely relevant to investigate metabolic pathways and to do cytogenetic or cellular biochemical studies. Many have argued, however, that there are only schizophrenic persons, that schizophrenia is not a disease per se. If that is so, then research in

personality development or the testing of personality theories might be more relevant and fruitful. Clearly, such research would be useful at various levels of organization, such as genetic and neurochemical, in the attempt to understand the variables of reaction patterns, rudimentary psychological functioning, and individual differences in these areas. Unfortunately, however, current theories, with very few exceptions, do not attempt to relate one level of organization to another. Genetic theories, for instance, do not usually identify the specific factors believed to be transmitted genetically. Do such theories refer to the thought disorder, to a single symptom or a cluster of symptoms, to prognosis, or to the patient's response to therapy?

The nonspecific nature of these theories seems to prevent their wider application and the construction of an integrated theory of the etiology of schizophrenia. To illustrate, the existential psychiatrists have provided moving descriptions of the schizophrenic patient's empty, meaningless, and lonely existence and of his altered experience of space and time. Certainly, these descriptions are of value inasmuch as they stress the essentially human and personal nature of the schizophrenic experience. However, such experiences cannot be understood as yet in genetic or biochemical terms. Nor has their generality for all schizophrenic patients (and hence their validity as diagnostic criteria) been established.

Diagnosis. Although it has long been a focus for professional concern, diagnosis remains the greatest impediment to investigative work in schizophrenia. In general, it is believed that schizophrenia is easier to diagnose in patients who have been ill for a long time than in patients who are in the acute phase of the illness. Actually, however, reliable diagnostic criteria have not yet been established for either patient category.

Similarly, although there is a growing literature to suggest that the paranoid schizophrenic category may be a distinctive one, on the basis of operational criteria such as responsiveness to drugs and response patterns on various tests, this hypothesis cannot be accepted without serious reservations. It is well known that behavior and symptoms in schizophrenia do not remain stable or fixed; for instance, many paranoid schizophrenic patients were initially characterized by catatonic manifestations.

Experimentation. The problem of diagnosis becomes particularly urgent in relation to the selection of subjects for experiments and in framing hypotheses concerning the etiology of the illness on the basis of such experiments. Once such hypotheses have been formulated, there is no assurance that they derive from observations of a homogeneous population.

More specifically, a review of the history of research in the psychology, psychophysiology, and biochemistry of schizophrenia discloses that investigations in these areas have followed three patterns: (1) Two investigators studying the same or similar func-

tions in different populations of schizophrenic patients either have been unable to confirm each other's findings or have produced two sets of contradictory data. (2) When similar criteria are used in the selection of subjects, different investigators, studying the same functions, have been unable to confirm each other's findings. (3) When normal and schizophrenic subjects are compared for differences in performance or functioning, findings have most frequently stressed the variations within the experimental group. However, the experimental and control groups have not demonstrated distinctive differences in central tendencies. Research workers have learned from such experiences that many experiments require two control groups—a normal one and one drawn from other hospitalized patients.

Differences in sex, socioeconomic status, educational level, intelligence, ethnic origin, premorbid history, length of hospitalization, or diet do not in themselves account for these confounded results; nor can the results be attributed to differences in research goals, methodology, sampling procedures, or the type of tasks involved. Therefore, one may justifiably ask whether the schizophrenic group is, in fact, in any way homogeneous and the disease a unitary one.

On the whole, attempts to use prognosis as a differentiating criterion in the selection of experimental groups and to divide schizophrenic patients into process and reactive groups have not been completely successful. These two ways of categorizing patients have prognostic implications. Prognosis is, however, determined by many social variables as well, such as economic status and education. The original criterion for forming the process and reactive groups was on the basis of how explicit was the disturbance in thought processes.

Single symptoms or clusters of symptoms are not dependent variables on which to base the selection of experimental subjects in view of their changing, labile, and nonspecific nature. However altered psychological functions may be, we do not know as much as we should, perhaps, about the discriminating power of alterations in perception, selective attention, reality testing, thought processes, personal relationships, memory, learning, self-object differentiation, motility, and the control and regulation of behavior, and affects in schizophrenia. Most probably, various combinations of such alterations may form the most reliable diagnostic criteria.

It is proposed that etiological theory must attempt to explain why and how one or another or all of these functions become altered to produce the clinical picture known as a schizophrenic reaction.

Psychological Theories of the Etiology of Schizophrenia

Psychiatric theories. Psychiatric and psychoanalytic observations have contributed richly to the unraveling of the incoherence and incomprehensibility of schizophrenic language, semeiology, and be-

havior. Whereas schizophrenia was once considered a disease of neuropathological etiology with a fixed outcome and schizophrenic patients were considered beyond the pale of humanity, psychiatrists have since learned a great deal about the meaning of bizarre behavior and symptoms and the disturbances of psychological function. They have also learned that schizophrenic patients can be cured. Unfortunately, there has been a tendency to neglect diagnostic criteria and etiological investigations in the heat of therapeutic zeal. The ability to understand the seemingly incomprehensible and idiosyncratic is a major advance, of course. But, such understanding in itself may contribute little to a theory of etiology or even to the patient's progress.

Early psychiatric theories. Bleuler and Freud contributed to our understanding of schizophrenic behavior and symptoms through their efforts to refine descriptions of the cognitive, affective, attitudinal, and behavioral disturbances that characterize the illness. In addition, Freud was interested in establishing causal correlations between certain kinds of unconscious conflicts and certain symptoms, such as delusions and the loss of reality testing. He was also interested in describing the nature of schizophrenic withdrawal and its effect on the patient's relationships with others and on the development of megalomania. He also inferred the existence in some schizophrenic patients of a complex defense structure that leads them to ascribe their own unconscious motives to others.

However, Freud was more interested in the neuroses than in the psychoses, primarily because the psychoses were not considered amenable to psychoanalytic treatment at the time. His contributions to our understanding of schizophrenic phenomena and his views with respect to the etiology and diagnosis of schizophrenia did not differ significantly from those of Bleuler and Kraepelin; therefore, Freud's views in this area are not considered representative of psychoanalytic theory.

Current psychiatric theories. These extend, in one form or another, back to antiquity. Yet, we still do not have conclusive evidence that would enable us to determine which one among them is correct. As a result, the particular theory one ascribes to is a matter of taste, logic, or inclination. Psychiatrists hold theories of the etiology of schizophrenia that range from those that focus on a single cause to those that attribute the onset of schizophrenia to the complex interaction of multiple factors. These theories may be summarized as follows.

1. Schizophrenia is a disease that reflects a material defect in an organ system, perhaps the brain. This defect may be instigated by a hereditary, congenital, metabolic, or structural defect; by an exogenous agent, such as a virus or bacterium; or by an endogenous source, such as the endocrine glands. The onset, course, and prognosis of the disease are, therefore, determined by the inciting cause. The unique psychological and

behavioral manifestations that characterize schizophrenia are epiphenomena of these material defects.

2. Schizophrenia is a physical illness that predisposes its host to limitations in adaptation and thus impairs his capacity to deal with stress. Presumably, the physical disease manifests itself in a deficiency in those psychological functions that are involved in adaptation.

3. Schizophrenic persons are not diseased. For complex reasons, either biological, functional, or social, these individuals are incapable of adapting or are unusually sensitive to certain categories of stress encountered in early adulthood. Predisposition interacts with stress.

4. Schizophrenia is not a unitary disease. Its manifestations are an end product of many possible antecedents, genic, metabolic, physiological, psychological, experiential, and social. In some cases, all these antecedents are present; in others, the presence of only some of these antecedents is sufficient to account for the illness.

5. Schizophrenia is a psychosomatic illness. In the predisposed individual, certain life stresses produce physiological changes, possibly in some major substructure of the nervous system, which, in turn, lower his adaptive capacities and bring about further psychophysiological changes.

6. Schizophrenia is a form of maladaptation originally occasioned by, and appropriate to, the family environment and its interacting members.

7. The schizophrenic person may be described as one whose psychosocial development was arrested early in life, either by severe psychological trauma or by some major deviation(s) in the maturation of his psychological functions. Later, under appropriate intrapsychic or environmentally triggered stress, he is unable to adapt and, instead, returns to levels of functioning that were specific to earlier phases of his development.

Current psychoanalytic theories. In the last 25 years, psychoanalytic observations and hypotheses have focused increasingly on the specification of deviant psychological processes and functions and their manifestations in schizophrenia. In the absence of conclusive evidence, most psychoanalytic theories postulate either a predisposition to vulnerability to stress or a disturbance in the interaction between mother and child or both as the etiological basis for schizophrenia.

Methodological problems. Sophisticated psychoanalytic and psychiatric observations of psychotic persons and the hypotheses engendered thereby are easily criticized for their methodology. First, there is a serious dearth of studies that check inter-rater reliability or deal with attendant problems of observer bias and validation. Second, since many of these studies involve one case or, at best, a few, the generality of hypotheses is questionable. Finally, descriptions of function disturbances are often based on

inferences drawn from the patients' own accounts of their psychological experiences.

It is almost axiomatic that inter-rater reliability is lower for inferences about behavior than it is for behavior itself. Yet the criteria for making inferences can be made operational, and psychological tests do permit validation of clinical impressions of formal disturbances in psychological functioning. Notwithstanding the methodological problems involved, much more clinical research is clearly called for, if only because the psychoanalytic method of single case study enables observation of serial changes in functioning, behavior, and symptoms in a setting designed to permit intensive, long term, focused observation.

Diagnostic criteria. The content of the patient's symptoms, that is, his unconscious motives and conflicts and their transformation into behavior and symptoms, does not play a specific etiological or diagnostic role in schizophrenia, no matter what their therapeutic importance. Hallucinations and delusions, with the possible exception of the primary delusion, are not pathognomonic for schizophrenia. Nor are cannibalistic fantasies pathognomonic for this syndrome, although some would argue that such fantasies represent an etiological factor and are generally present in all schizophrenic patients. Others concede that cannibalistic fantasies lack specificity for schizophrenia but do not dispute their etiological or diagnostic role.

From the psychoanalytic point of view, some distinguishing diagnostic criteria may be found in the formal disturbances in psychological functioning and in their quality. More specifically, the recent focus in psychoanalytic hypotheses has shifted to the ego—the organization of functions that are involved in adaptation and the regulation and control of behavior and that include intellect, language, memory, thinking, perception, attention, intention, reality testing, affectivity, the structure of defenses, object relations, and motility. Genic and biochemical factors are acknowledged but are not deemed appropriate for study by psychological means.

Ego disturbances. On the basis of clinical observation, psychoanalysts have defined and refined the specifics of disturbances in ego organization, both in terms of individual functions and in terms of their interaction. In his pioneer investigations of the psychoses, Federn concluded that a crucial and perhaps fundamental disturbance in schizophrenia was the patient's early inability to achieve self-object differentiation. In the years since, workers have stressed the marked consequences of this defect for cognition and object relations. Bak, Fairbairn, Jacobson, and Mahler, in particular, have emphasized the role of disturbances in object relations in schizophrenia. Beres, among others, has detailed the multiplicity of disturbed ego functions. In contrast, other analysts and analytically oriented psychiatrists have studied those disturbances in ego functioning that give rise to

specific symptoms such as transitive manifestations and hallucinations, and the effects of dedifferentiation of function on the behavior of adult schizophrenic patients.

According to current psychoanalytic opinion, disturbances of ego functions, as well as those of the superego, must be attributed to deviations in their development, maturation, and integration in childhood. These disturbances occur as a consequence of genetic, constitutional factors or as a result of distortions in the reciprocal relationship between the infant and his mother.

Bergman and Escalona have specified one such disturbance that, presumably, illustrates the role of constitutional factors. The infant may be unusually sensitive to the quality and intensity of sensory inputs, which disrupt his behavior. This leads to premature developmental changes to minimize this disruptive effect, which in turn results in the uneven integration of ego functions and his impaired adaptive capacity.

According to this hypothesis, there is a constitutional predisposition to schizophrenia in the form of a defect in rudimentary ego functions or intense hostility and aggression, which produces distortions in the mother-infant relationship, leading to a personality organization that is vulnerable to certain categories of stress. Whether this predisposition is monogenic or polygenic or the result of a biochemical error is not stated. Evidence suggests that a variety of predispositions may be genotypic and that these may lead to the illness by diverse pathways. If the polygenic hypothesis is held, then both the degree of predisposition and the severity of potential stresses should be continuously distributed. However, the differences in clinical subtypes in schizophrenia suggest differences in biological predispositions and concomitantly in psychological organizations, and variations in sensitivity to different stresses.

The etiological significance of disturbances in the mother-child relationship, postulated by proponents of the alternative hypothesis, is most evident in the autistic and symbiotic psychoses of childhood. The autistic child behaves as though animate objects did not exist, and he seems not to be aware of his mother as a separate and distinct person. In contrast, in the symbiotic psychosis, first described by Mahler, the child is unable to progress beyond the closeness and complete dependence that characterized his relationship to his mother in infancy. The illness is characterized by panic when the mother is not present; rage and violent agitation; outbursts of excitement and pleasure, alternating with periods of destructiveness; symptoms that suggest the child is unable to differentiate between self and nonself or to discriminate between animate and inanimate objects; a tendency to confuse inner experience and external events; an overwhelming need to cling to adults; and magical and dereistic thought processes.

Kanner does not believe that genetic or constitutional factors play a role in the autistic psychosis. To support this view, he points to the fact that there is no history of psychosis in the forebears of these children. On the other hand, although Mahler has emphasized the significance of the mother-infant relationship for future development, she contends that some constitutional defect, as yet unspecified, must bear the ultimate responsibility for both forms of childhood psychosis. This is borne out by the available evidence. Although three sets of monozygotic twins have been found concordant for infantile autism, no such concordance has been reported for fraternal twins, despite the fact that fraternal twins are more common than identical twins. Clearly, such reports suggest that genetic factors may play a significant role in the etiology of this form of psychosis.

Some years ago, Mahler suggested that increasing motor coordination, which carries the threat of motor independence, may precipitate the onset of symbiotic psychosis in a child who is so predisposed. More recently, Mahler and Bak have postulated that the vicissitudes of the separation-individuation phase of development, which begins when the child is learning to walk and must separate from the mother and ends with the beginning of individuation, may be particularly crucial for adult schizophrenia. At this stage, the child's pleasure in his newly acquired skills alternates with acute fear of separation from his mother. In the normal course of events, the mother gradually becomes a person in her own right (object constancy), rather than just a provider, and is increasingly perceived by the child as she really is, even as she continues to represent an object of directed feelings and desires. The schizophrenic person never achieved object constancy. When major deviations in this developmental process occur, a number of consequences ensue for other ego functions, which either never differentiate or are poorly integrated or, if they do differentiate, are later subject to dedifferentiation. This is the basis for the disturbances in ego function seen in adult schizophrenia.

The etiological emphasis is on those processes that cause the ego disturbances that later become clinically manifest in the schizophrenic illness. Conflicts and the failure to defend against them or the use of pathological defenses are considered secondary. But why are disturbances in certain ego functions manifest in one schizophrenic patient and not in another? And why does the same patient manifest disturbances in different ego functions at different stages of his illness? The answers are still unknown.

When ego functions are poorly integrated or are not fully differentiated, disturbances in the control and regulation of behavior, personal relationships, and adaptation are evident during the premorbid phase. Characteristically, with the onset of psychosis, further dedifferentiation of ego functions and regressive behavioral phenomena occur. But what causes

this process? There are many hypothetical explanations. Some postulate that this regressive developmental process occurs because of the intense and terrifying hostility and aggression (and their transformation) mobilized at the beginning of the illness in response to a precipitating event. The origins of such hostility and its intensity are not known, but severe deprivation may play a role. Other authors have suggested that there may be some inherent, organismic aspect to this untamed aggression that parallels the inherent disturbances in the rudimentary ego functions. In the course of development, this aggression interacts detrimentally with the maturation and integration of these functions.

Interrelationships of hypotheses. Some of these hypotheses are highly complex, but their behavioral referents are clear. When one is dealing with an organization as highly complex as personality, it is difficult to juggle the interactive forces and, at the same time, keep them all in focus. Again, partly because each author stresses different aspects of schizophrenic phenomenology and symptomatology, the reader may get the impression that various hypotheses are mutually exclusive, when in fact they are not.

Some consensus has been reached that very early in personality development, probably (but not necessarily) as the result of some unspecified genic, polygenic, or congenital influences, serious deviations in the development of higher mental functions occur. Since development is considered to be epigenetic, functions that develop later are, in turn, adversely influenced by these earlier deviations. As a result of these early functional disturbances, the mother-child relationship is also disturbed, with adverse consequences for future development. Thus the pathological developmental process is conceived of as being spiral, and the pathological mother-child relationship is conceived of as neither unidirectional nor bidirectional but as transactional.

One other major problem occurs throughout developmental biology, however. In biology, the magnifying effect of development refers to the observation that the earlier those genes with deleterious effects exert themselves, the more detrimental they are likely to be. But it is not known why some genetic influences do not manifest themselves at birth but do so at a later stage of development. Nor is enough known about the genetics of behavior to determine whether deviations in functioning that occur early in life are genetically or postnatally induced. Clearly, the hypotheses reviewed above require validation, which depends on their translation into testable form, to permit systematic investigation of the variables involved.

Psychological theories. Clinical and experimental psychologists have been involved not only in testing hypotheses derived from clinical observation, but also in developing theories about schizophrenia based on their own work. Many of these theories focus on disturbances of one or another psychological function,

e.g., perception, attention, or learning, in schizophrenia. Others postulate that schizophrenia is a function of a particular kind of social learning process. Thus, the theories advanced by psychologists may be divided into two categories: those that postulate specific deficits in perception and cognition, and those that elaborate on the predisposition-stress concept.

Deficits in psychological functions. In early investigations Kraepelin and Bleuler observed disturbances in attention in schizophrenia. And Jung stated that, to a great extent, formal thought disturbances and symptomatic behavior in schizophrenia could be ascribed to a diminution of attention and apperception. In the years since, many experimental studies of attentional processes in schizophrenia have been performed, but with equivocal results. Most recently, Harway and Salzman have suggested that schizophrenic subjects are more sensitive to external information, whether this leads to accurate perception of the environment or not.

Shakow's extensive studies are especially relevant in this regard. On the basis of reaction time experiments, in particular, he has suggested that schizophrenic subjects tend to be affected or distracted by irrelevant aspects in the context of a stimulus. In consequence, their ability to focus on and attend to the relevant aspects of the stimulus that demands response is impaired. Subjects may also have some difficulty in maintaining a state of readiness for response to a subsequent stimulus and in organizing their response to time. Shakow has described this major cognitive disturbance as "an inability to maintain a major set."

Another important and related theory has been formulated by McReynolds: schizophrenic anxiety occurs because the subject has been flooded by unassimilable percepts. In order to defend against this anxiety, he attempts to integrate and reduce these percepts by apathy and withdrawal. There is a considerable body of evidence to suggest that some schizophrenic patients may at first tend to be overly attentive to many or all stimuli, which are often irrelevant, and later to exclude, reduce, or avoid these stimuli. Again, some schizophrenic patients are excessively attentive and vigilant to stimuli or augment their intensity; other patients do not. Experiments have also demonstrated that there may be an idiosyncratic selection of stimuli that leads to responses to inappropriate stimuli or a greater tendency on the part of schizophrenic subjects to respond to certain classes of stimuli, especially if they are threatening or are otherwise affectively toned.

Although such findings have not yet been linked experimentally to schizophrenic subjects, studies of patients in other diagnostic categories have provided evidence that the focus of attention to stimuli may be narrowed by anxiety arousal. Using the ability to discriminate and the discrimination threshold of two flashes of light separated in time by 5 milliseconds as

a criterion of arousal, Venables found that patients who did not have coherent delusions showed a high correlation between arousal and behavioral withdrawal, the most aroused being the most withdrawn. In another experiment Venables found that the selectivity of attention, measured by the degree to which card sorting on the basis of relevant information was undisturbed by an exchange of irrelevant information, was significantly related to the degree of arousal and withdrawal in chronic nonparanoid patients but not in paranoid subjects. Clearly, such research permits selection of experimental subjects on the basis of validated criteria. In addition, however, it tells a great deal about the interrelationship between different psychophysiological processes, behavior patterns, and cognitive functions in schizophrenia.

Another series of similar studies, carried out by Rodnick and Garnezy, is relevant not only to investigation of perceptual processes in schizophrenia but also to family studies of schizophrenic persons. Their studies imply that the performance of male schizophrenic subjects with a domineering mother and a history of poor premorbid adjustment is affected by conditions of mild censure, especially if the stimulus depicts a censorious mother. Presumably, this complex stimulus induces anxiety aroused by censure, which disrupts performance. However, other investigators deny that censure is selectively or exclusively disruptive, and a third group has concluded that censure actually improves performance, unless censure cannot be avoided by the subject. These studies suggest certain areas for future research; at the same time, they point up some of the difficulties in the control of variables that typically impede such research efforts.

Predisposition and stress. Still another series of theories focuses on both predisposition and learning in schizophrenia. The validation of such theories would require the study of physiological variables, of course. Unfortunately, psychophysiological studies involving schizophrenic subjects have consistently yielded contradictory results. Teams of investigators have variously reported that a group of schizophrenic subjects has a higher resting level of galvanic skin response (GSR) or blood pressure or heart rate. However, one cannot assume, on the basis of such findings, that there is some intrinsic physiological deviation in schizophrenia. The higher resting level may simply reflect the subject's heightened physiological response to the novelty of the experimental situation or to some aspect of the social setting of the experiment or to the experimenter himself. In general, the hypotheses that derive from such studies automatically become suspect, but Mednick's theory merits brief discussion.

Mednick's theoretical proposal, which is based on Hullian learning theory, states that the predisposition to schizophrenia is characterized by excessively strong physiological reactions to mild stress; easy or rapid acquisition of conditioned responses; excessively slow recovery from autonomic imbalance; and excessive

stimulus generalization reactivity. In the acute schizophrenic patient, an increase in anxiety is correlated with an increase in the level and breadth of stimulus generalization. As a result, many new stimuli become potentially capable of arousing anxiety, and a vicious cycle is set up. As generalization widens, atypical and tangential thought sequences intrude, and perceptions are distorted. The chronic schizophrenic state is characterized by learning avoidant and irrelevant thoughts that seek to reduce anxiety whenever it occurs. If these thoughts successfully defend against anxiety, they become self-reinforcing.

It remains to be seen whether studies of physiological responses to conditioning do, in fact, support this hypothesis. With few exceptions, psychophysiological studies have reported lower base levels and autonomic responsivity in chronic schizophrenic subjects. However, Zahn found that in his male chronic schizophrenic subjects, in contrast to a control group, galvanic skin response and heart rate responses, elicited by mild visual and auditory stimuli, were greater and habituated more slowly, despite higher base levels at rest. In addition, when the independent variable was a reaction time situation, physiological reactivity in the experimental group was lower. Thus, Zahn's study supports Mednick's hypothesis in part. However, as is true of all psychophysiological experiments, it is necessary to replicate and validate these findings.

Research studies of segmental set and attention processes, based on Hernández-Peón's work, have led to further hypotheses of a neurophysiological nature. Other neurophysiological hypotheses have also been constructed over the years, ranging from Angyal's contention that the cortex of nonparanoid patients is hyporeactive to more recent speculations that the cortex in such patients is hyperreactive, although neither of these hypotheses clearly specified the neurophysiological significance of such cortical states. Perhaps one can best sum up the efforts in this field by quoting Worden's statement that "there is no neurophysiological contribution to the understanding of schizophrenia."

Finally, Meehl has proposed a predisposition-stress theory that postulates a defect in neural integration as the genotype. Social learning, imposed on this genotype, leads to a type of personality or organization predisposed, but not inevitably prone, to decompensate into schizophrenic illness. This personality organization is characterized by symptoms that closely resemble Bleuler's primary symptoms.

Role of family dynamics and life experience. In the past few years particular emphasis has been placed on the study of the parents and families of schizophrenic patients, with the hope of isolating certain variables, such as some aspects of the behavior, personality, or attitudes of one or both parents, or of specifying modes of family interactions that seem to play an etiological role in schizophrenia. In addition, recent publications have dealt with the relation-

ship between the formal aspects of a parent's cognitive style and the cognitive style of the schizophrenic child.

Methodological and conceptual problems. In this area, as in many other, methodological and conceptual problems abound. Most of these studies are clinical and impressionistic, and rater reliability cannot be assessed. To a great extent, such studies are retrospective and are based on the assumption that current patterns of interaction were also obtained in the past. Validation of findings is not carried out. Bias is introduced by the foreknowledge that a member of the particular family under investigation is schizophrenic or that the parent under study has a schizophrenic child. With few exceptions, no control groups or control individuals are included in these studies, and no attempt is made to find out whether the same or similar parents or families can also be associated with children who are not schizophrenic. Important variables, such as social class, educational level, ethnic and religious origin, are frequently not controlled. Consequently, in family studies especially, nagging questions remain unanswered: Is a schizophrenic child or adult the result of certain modes of family interaction? Is he the cause of that interaction? Is the schizophrenic person involved in a reciprocal relationship with that interaction? Or is he independent of such an interaction?

Characteristics of parents. In studies of parents, the mother has borne the brunt of investigative efforts and, regrettably, the blame. The well documented distortions in the mother's behavior in the reciprocal relationship may, in fact, represent a reaction to the child's behavior rather than its cause. To illustrate, many people who become psychotic in later life are said to have been particularly phlegmatic from a very early age or incapable of responding emotionally, that is, of producing the smiling response. If a mother consistently fails to elicit such a response from her child, she may react with disappointment, exasperation, or whatever. Perhaps it is futile to try to determine whether it is the mother or the infant who must bear the primary responsibility for the distortions in their relationship; it might be more fruitful to study the transaction in greater depth and detail.

Sullivan concluded from his clinical investigations that some of his schizophrenic patients had been rendered anxious as infants by their anxious mothers. Others have described the mother of the potential schizophrenic as aggressive, rejecting, domineering, and insecure, and the father as inadequate, passive, and indifferent. Elsewhere in the literature, these fathers have been depicted as directly threatening, assaultive, or brutal or as overwhelming the child. In contrast to those mothers who are described as either subtly or overtly rejecting, others are said to be fussy and overprotective, perpetuating the symbiotic union. Some mothers are said to assume the role of

the martyr in order to restrict the child's freedom and prevent him from directly expressing hostility.

Several investigators have concluded, on the basis of psychological test findings, that schizophrenic patients perceive either one or both parents as authoritarian. But it is not clear from such studies whether the child's perception of his parent(s) as such is a distortion or whether the parents actually are authoritarian and, therefore, have been perceived accurately.

Alanen, who conducted one of the few studies in which some attempt was made to control for socioeconomic status, age, and residence of members of the experimental and two comparison groups, did find descriptive differences between the mothers of schizophrenic, normal, and neurotic children and adolescents. The mothers of schizophrenic children tended not to understand their child's needs and feelings, were overpossessive and often hostile to their children, and tied their children to them in an inimical bond, although they were unable to be emotionally or physically close to them. Alanen has also suggested that this type of mother treats her child as she herself was once treated by her own mother. Hill and Bowen made a similar observation in their three-generation hypothesis: the grandmother rules the family roost, and the mother of the schizophrenic patient is actually immature but has adopted the domineering manner of her own mother.

The parent-child bond. Another series of studies focuses on the pathological aspects of the close bond that exists between some of these mothers and their children. As mentioned earlier, this closeness, in its extreme form, is clinically manifested in the symbiotic psychosis. Other authors have suggested that the longings and close attachment to the mother characteristic of the normal infant may persist as part of the psychopathology of adult schizophrenic patients. But it is not known whether such longings have a specific etiological significance or appear in response to anxieties of other origins.

The consequence of early deprivation of maternal care, closeness, and need fulfillment have been discussed at length. Presumably, a child who had been raised in a foster home would be exposed to such deprivation. Yet, in a follow-up study of such foster children, Beres and Obers pointed out that, although the great majority (21 out of a total of 38) did manifest some form of personality disturbance, only 4 of the 38 children studied were schizophrenic.

Can these studies provide the basis for a scientific theory of the etiology of schizophrenia? Apparently, these patterns of child-parent interaction lead to a failure or retardation of the child's personality development. This, in turn, leads to a failure of adaptation in late adolescence and early adulthood and thus to schizophrenia. But, once again, it is not known why the failure of adaptation takes this particular form.

Family pathology. The study of the family has as its root the concept that the patient is a symptom of the family pathology and that serious mental disturbances are causally related to mental disease or psychopathology in parents. In other words, the child's present maladaptation was once appropriate to the family environment. For instance, in the extensive series of studies by Lidz et al., the authors described families in which the father courted his daughter to enlist her as an ally in his battle with his wife and to undermine his wife's authority. In another family, the father was ineffective or engaged in direct rivalry with his sons for his wife's attention and care or was a poor and ineffectual model for his sons. Other fathers are described as haughty, aloof, and distant.

The family pathology is conceptualized in such terms as marital schism—that is, a husband and wife stay together despite overt scrapping because one marital partner is dependent on the other—or marital skew—overt harmony masks covert disagreement. Other investigators of family pathology, such as Bowen, speak of emotional divorce to characterize marital partnerships in which there are few overt disagreements but no shared, albeit charged, feelings or in which husband and wife present a compatible facade to the world but cannot tolerate each other in private. When the inadequate member of such a partnership is the wife, she imparts her feelings of inadequacy to the child and is threatened by the child's growing independence.

Wynne has conceptualized the pathology in the family of a schizophrenic child in terms of role theory. He called the relationship pseudomutuality and described schizophrenia as the breakdown of that pseudomutuality. Family members fit together and interrelate according to assigned formal and conforming roles and at the expense of their individual identity and separateness. In schizophrenic families, the number of fixed roles is limited; family members may shift from one role to another within this limited framework. Wynne has also stated that certain specific, formal psychological disturbances, for example, the fragmentation of experience, identity diffusion, disturbed modes of perception and of communication, are a result of the internalization of pathological aspects of the family organization.

Another concept, the "double bind," focuses on certain ways the mother behaves with her child. The child "can't win" in his relationship with his mother. While his father stands helplessly by, the child is made to feel helpless, enraged, fearful, and exasperated, and he deals with his predicament by withdrawing into psychosis.

These conceptualizations and theories overlap. Nevertheless, because so many methodological questions remain unanswered, the data presented have not clearly established an etiological relationship be-

tween family pathology and schizophrenia. In focusing on the early environment of children who later become psychotic, workers in this field have identified certain patterns, but the patterns lack regularity. At best, these studies suggest that the family interaction of schizophrenic persons is disturbed in one way or another. At the same time, from the descriptions of such families it might be concluded that many of the parents were themselves psychotic, so that concomitant association of psychosis in the child might be a function of inheritance rather than a function of family pathology.

Characteristics of the child. As mentioned earlier, investigations of disturbances in the relationship between parent (or family) and child customarily fail to take into consideration the child's contribution to such disturbance. Retrospective studies of schizophrenic adults suggest that there are many roads by which they may have traveled. As children, some showed patterns of clinging to the mother, shared her bedroom until late adolescence, had nightmares, were enuretic, and became fearful and panicky away from home. Others were described as bookish, lonely, friendless, intense, self-conscious, prone to day-dream, seclusive, and oversensitive, with occasional outbursts of temper. A third group was, from an early age, asocial, shameless, and lacking in propriety. The behavior of still another group was overly compliant and conforming; these children were overconcerned with the opinions of peers and parents, prudish, afraid to express themselves, too well mannered, too anxious to please others, inconspicuous, docile, and dull. When such behavioral traits are considered more formally, they may be summarized as reflecting deviations in control and regulatory processes and in relationships to other people and a tendency to resort to day-dreaming.

Predictive studies, such as those conducted by O'Neal, suggest that children who are truants, incorrigible, prone to fight, destructive, irritable, and willful are more likely to develop schizophrenia in later life than are those children who are diagnosed as delinquent or neurotic. Can such childhood behavior and the functional deviations observed be ascribed to family dynamics or to some interactive process between child and mother or to genetic factors? This question cannot be answered on the basis of the available evidence.

Interrelationship of parents and child. In a series of studies (with laudable methodology) recently reported by Wynne and Singer, diagnosis, formal qualities of thought processes, and severity of thought disorganization were blindly and successfully predicted from projective test data obtained from patients and members of their families. The test data obtained on each patient were blindly matched to a statistically significant degree with data from the pa-

tient's family. The conclusions drawn from these studies are appropriately tentative. The findings indicate a close correspondence in family members in the formal aspects of the thought disorder.

Is this formal disturbance learned by the child, or is it inherited? The authors did not commit themselves, but they questioned the assumption made in the family studies reported in the literature that parental influence operates continuously and exclusively in the child's direction. Instead, these authors conceive of the parent-child relationship as a transaction: children bring up their families, as well as vice versa. The structural and formal features of parental behavior and thought undoubtedly influence ontogenesis in the child. But the content of parental attitudes, feelings, and behavior, such as overprotection and domination, may be secondary reactions to disturbances already present in the child.

American theories. For many complex reasons, workers in the United States are particularly apt to produce environmentalist theories that place the burden for the etiology of schizophrenia on the parents and family. Genetic or predisposing factors tend to be overlooked, disregarded, or dismissed as insignificant. Rather, it is stressed that the environment, familial and social, causes certain children to become schizophrenic, and the intervening variables are the categories of life experience that precipitate their schizophrenic reaction. This is the basis for the theory, stated earlier, that schizophrenia is not a disease, that there are only schizophrenic persons, who have been so molded by experience. The behavior of some of the parents of schizophrenic children may differ in intensity from the behavior of parents of nonschizophrenic children but not in quality. Therefore, the mechanisms whereby life experience molds the schizophrenic child are either conflicts created in the child or irrational reactions learned by imitation. The asocial manner of schizophrenic persons is explained by the fact that social learning may also fail in these children because of their pathological environment.

Sociocultural Theories of the Etiology of Schizophrenia

It has already been pointed out that in etiological studies of schizophrenic patients it is necessary to control for a number of variables; among these, socioeconomic status is of major importance. In addition, social factors in schizophrenia are relevant if one is interested in the epidemiology of the disorder, in investigation of the morbidity rates for schizophrenia by social class, in the social mobility of schizophrenic patients, in migration, and in cultural change as important variables in the etiology of the disorder. Sociocultural investigations may also point up the possible etiological role of membership in different ethnic groups or subcultures. If the

incidence of mental illness in two subcultures is found to differ significantly, it may be possible to identify the specific variable(s) responsible for this discrepancy.

However, as a number of experts in these fields have pointed out, the methodological problems inherent in such research are so considerable that no clear answers have been found to any of these problems as yet. As is true in other areas of investigation, the main recurring and confounding problem is the lack of reliable diagnostic criteria. When experimental subjects are not selected on the basis of reliable and comparable diagnostic criteria, the statistics derived from large scale morbidity studies in these areas can only be approximate. In addition, as Lemkau and Crocetti have pointed out, it is necessary to define and enumerate the population from which the sample is drawn and to be familiar with all the known cases of schizophrenia in that population, as well as the estimated ratio between the known and undetected cases.

Social class and mobility. One of the most widely accepted hypotheses about schizophrenia is that it is distributed unevenly among social classes. In order to obtain reliable figures in this connection, epidemiological studies are necessary. However, even if problems of diagnosis and case finding are overcome (which is not always the case), one cannot be certain whether the correlation between illness and social class is not a function of a third variable, such as the rate of remission. Furthermore, the meaning of such results is not always clear, and for the most part the results themselves have led to speculation rather than to further empirical research.

In general, investigations of the relationship of social class to schizophrenia have pursued two main themes: the individual's social status at the time he became ill, and ecological characteristics of his community. The methodology of studies within these two research areas is by no means comparable. Some use occupation as a criterion of social class; others do not. Some control for personal or ethnic variables; others do not. Some study only admissions to state hospitals; other include admissions to general or private hospitals as well. Nevertheless, with the exception of the study conducted by Clausen and Kohn, the findings are usually the same: the highest incidence of schizophrenia, especially in women, occurs in the lowest social class; the lowest incidence is found in the managerial classes. Various interpretations have been attached to these findings, ranging from occupational stress to the low prestige associated with certain occupations. Such factors are thought to precipitate the illness. However, it would be difficult to determine the validity of these findings, particularly since it is often impossible to determine the precipitating event in schizophrenia.

In ecological studies, the highest incidence of schizophrenia is found in the poorest, most disorgan-

ized, and often central sections of the city. In fact, this observation was made originally by Bleuler, who believed such an environment to be the result rather than a cause of the illness. Others, however, believe that such a social environment is in itself responsible for the illness either indirectly by creating conditions, such as social isolation, that favor the onset of schizophrenia in those who are so predisposed or directly by exposing a child raised in such an area to specific types of family constellations, economic deprivation, criminal behavior, or social and group disruption. A third hypothesis states that persons prone to schizophrenia tend to migrate or drift into such areas; and a subhypothesis describes such persons as socially mobile in a downward direction. Still another hypothesis relates these findings to the relative lack of psychiatric treatment facilities, other than hospitals, for members of the lowest classes.

Mishler and Scotch have stated that "at this time no reasonable decision can be made as to the merits of the alternative explanations of the relationships found between social class and the incidence of schizophrenia." And this statement is borne out by studies on the social mobility of persons prone to schizophrenia. Thus the original studies of Faris and Dunham, which related the incidence of schizophrenia to ecological niche, led them to reject the hypothesis of downward social mobility in persons predisposed or prone to schizophrenia. Conversely, others who used control groups in studies of this kind did find some merit in this hypothesis or, at least, trends to support it. However, final validation requires longitudinal studies that control such variables as sex, educational level, and ethnic origin.

Culture change. Schizophrenia has also been linked to such processes as urbanization, industrialization, migration, acculturation, and economic change or crisis. The link between such changes and schizophrenia might be accounted for in two hypotheses: the factor of change may be the direct cause of the illness, or change may be a necessary, if not sufficient, precipitating condition in persons predisposed to the illness.

The effects of migration—or, rather, of emigrant status—have been studied more extensively than any other parameter of social change. Ødegaard's studies in this connection showed that the over-all rate of schizophrenia was higher for emigrant Norwegians in Minnesota than it was for Norwegians in Norway. Malzberg and Lee's studies concluded that schizophrenia is more prevalent among recent immigrants to New York State (both native-born and foreign-born) than it is among persons who were born in New York State. A further breakdown of the migrants studied, according to sex and ethnic origin, indicated that such variables interacted with migration.

But for every study that does find a correlation between migration and schizophrenia, there is one that does not. Nor is it understood precisely how

migration may lead to schizophrenia, if it does. Is migration a consequence of schizophrenia, a precipitating factor, or a direct cause of the illness? And what is the intervening variable? Is it, for instance, separation from others or the isolation and loneliness brought about by migration?

Studies of other aspects of social change are similarly characterized by a lack of comparable findings. For example, one such study has produced the finding that, at least in Massachusetts, there has been no increase in first admissions to state hospitals between 1840 and 1940. The remaining studies, particularly those on acculturation, are impressionistic rather than empirically founded. In brief, one must conclude that the highly complex relationship between culture change and schizophrenia has not yet been demonstrated—if it exists at all.

Cultural setting and clinical subtype. Among the many investigations that have tried to relate sociocultural factors to schizophrenia, the studies of Opler and Singer and of Lambo are of particular interest. These studies have established a relationship between the content of symptoms and ethnic origin. Opler and Singer stated that Irish-American schizophrenic patients accept authority, tend to be paranoid, anxious, and hostile, have inferable latent homosexual conflicts, and tend to resort to alcohol in the face of stress and conflict. Italian-American schizophrenic patients tend to display overt homosexual tendencies, complain about bodily functions, show depressive or elated mood states, or both, and catatonic symptoms and signs. Lambo found differences in the behavior of urban and rural Nigerians who were schizophrenic.

Data concerning relationships between schizophrenic subtypes and membership in a specific subculture are not necessarily of etiological significance, however. In order to establish the etiological significance of such a relationship, it would be necessary to demonstrate that two subcultures studied differed in the incidence of schizophrenia as well. If such a difference were confirmed, it would then be necessary to isolate specific variables prepotent or unique to the subculture with the higher incidence or to some segment within it. No such evidence has been collected as yet; nor is this surprising in view of the fact that an accurate determination of morbidity rates in different subcultures has not yet been achieved. In a broader sense, however, perhaps one of the most serious problems in this, as in many other areas of research in schizophrenia, is what might be called a Rousseauist bias; that is, the underlying concept is that natural man is spoiled, perverted, or rendered ill by his civilized social environment, specifically, that schizophrenia is a disease of civilization. But there is no evidence for this viewpoint.

Genetic Theories of Schizophrenia

The studies on which genetic theories rest fall into two groups: those that deal with the incidence of

schizophrenia in relation to the degree of consanguinity in relatives of known schizophrenic persons, and those that describe concordance rates in twins.

Studies of relatives. Studies in this group report, on the basis of hospital records, that in the general population and in step-siblings the morbid risk for schizophrenia is from 0.9 to 1.8 per cent; in full siblings it is 7 to 15 per cent; for children with one schizophrenic parent, it is 7 to 16 per cent. If both parents are schizophrenic, the risk for the children is between 40 and 68 per cent.

Many workers have criticized these statistics on methodological grounds. First, the diagnosis of schizophrenia is notoriously unreliable and may be too inclusive or exclusive. Second, for various reasons, hospital records are not good sources of data, especially if some of the patients included in the sample under investigation are deceased; in that case, neither the diagnostic criteria nor the reliability of diagnosis can be ascertained. Third, the number of hospitalized cases do not reflect the incidence of a disease but rather its prevalence. Finally, for the most part, the variables of socioeconomic class and environmental factors are not controlled. The significance of such variables is evident in Reisby's findings that the incidence of schizophrenia among children of schizophrenic mothers was 6.8 per cent for inhabitants of rural communities and 14.2 per cent for city dwellers.

Studies of twins. Clearly, the preferred method is the study of concordance rates for schizophrenia in monozygotic and dizygotic twins. These have ranged from 61 to 86 per cent and from 2 to 15 per cent, respectively, in four of the most frequently quoted studies. Kallmann, in particular, has pointed out that the concordance rate differed for monozygotic twins who had not lived together for some years prior to his study (77.6 per cent), as opposed to those twins who had not been separated (91.5 per cent). He also found that many more female than male twins were concordant for schizophrenia, whether they were monozygotic or not.

The studies that produced those statistics have been critically scrutinized on methodological grounds. Rosenthal has pointed out that it is important in concordance studies to evaluate findings correctly. Thus, discordance for a specific clinical picture in twin pairs is likely to be more striking than concordance for a broad diagnostic label. But even the finding that monozygotic twins are concordant for schizophrenia has been disputed by some. The same author has quoted two recent studies of schizophrenia in monozygotic twins carried out in Scandinavia in which two pairs were reported as possibly concordant, as opposed to 22 discordant pairs. Rosenthal has been particularly thoughtful about the possible sources of errors that may lead to an overestimation of genetic factors. At the same time, he has pointed out that there is an almost total absence of schizophrenia in

the families of discordant twin pairs and a 60 per cent incidence in the families of concordant twin pairs. Secondly, the twin in the male discordant pair who does not become ill tends to have the better pre-morbid social and sexual history than his psychotic twin, as judged by the Phillips scale. The discordant twin who does become ill tends to have a better pre-morbid adjustment level than do both members of a twin pair concordant for schizophrenia.

One of the major problems in twin research is that concordance studies are customarily done on hospitalized twins. Admittedly, one wishes to be certain of diagnosis, but it is clearly demonstrable that there is a relationship between high concordance rate and the severity of illness, as adjudged by length of hospitalization. Second, concordance rates in hospitalized twins will be higher if one selects samples from a hospital population rather than from consecutive admissions. However, the twin studies performed by Luxenburger and Essen-Möller are based on consecutive admissions.

The manner in which zygosity is determined is also crucial; many of the classical studies of schizophrenic twins were done before the introduction of modern methods of zygosity determination. When less precise methods are used, there is a greater likelihood that monozygotic twins will be classified as dizygotic. Thus, concordance rates will tend to be higher in monozygotic twins.

In order to establish the reliability and validity of the relationship of zygosity to clinical diagnosis, these two variables should be determined by independent raters, the inter-rater reliability of the dependent variable established, and the variable itself checked for its validity as a criterion. Kety has pointed out that, although concordance rates were slightly lower for both monozygotic and dizygotic twins when the clinical diagnosis was made by hospital personnel rather than the investigator, the difference in concordance rates between the two categories of twins is a striking one nonetheless.

Mode of inheritance. Further discussion of the role of genetic factors in the etiology of schizophrenia has resulted in the formulation of theories of the mode of inheritance, that is, whether the illness is inherited through transmission of a dominant, intermediate, or recessive gene or by polygenic means.

Böök has stated that the schizophrenic psychoses are caused by major genic differences that express themselves in a recessive manner in homozygotes and in a dominant manner in heterozygotes. Because the corrected risk figures for the families of known schizophrenics, that is, for parents, siblings, and children with one or no affected parent, do not differ to a significant degree, a simple recessive mode of inheritance must be ruled out. Böök also postulated a 20 per cent (or incomplete) penetrance in heterozygotes and a 100 per cent penetrance in homozygotes. He has been criticized for the concept of penetrance, but

he has repeatedly stressed that penetrance is an operational and statistical concept. It is, of course, well known that all genes, whether pathological or not, are modified or suppressed by other genes as well as by environmental factors.

Those who subscribe to the theory that the mode of transmission of schizophrenia is polygenic point out that the illness does not conform closely to a Mendelian pattern of transmission, in which event monozygotic twins should be 100 per cent concordant for schizophrenia. However, it should be stated that a polygenic inheritance cannot be established by pedigree methods.

The case against genetic factors. A third group of workers have been particularly vociferous in denying that genetic factors play any role in schizophrenia. And, in fact, provided the figures revealed by twin studies are borne out by further investigations and are not a function of artifacts, it would seem logical to conclude that genetic factors *alone* do not determine schizophrenia. But at this state, it cannot be concluded that they do not play any role at all.

Those who deny the influence of genetic factors point to several pieces of data to support their view. For example, as mentioned earlier, in Kallmann's study more female than male pairs of twins were concordant for schizophrenia. This datum has been explained, however, by the fact that the sample was drawn from a hospital population and by the manner in which zygosity was determined. It has also been postulated that sex linkage, for which there is no evidence, would account for this datum. The lower concordance rate among monozygotic twins who had been separated before they were studied, in contrast to the rate for twins who were not separated, is also quoted in support of the role of nongenetic, environmental factors. The fact remains that one has the impression, even after the most cursory examination of a report such as *The Genain Quadruplets*, that either the family environment or genetic factors would, alone, be sufficient to account for schizophrenic illness in these quadruplets. But there is no offhand way to determine which had greater etiological significance.

Interrelationship of genetic and nongenetic factors. It has been suggested that, rather than plump for nature or nurture, it might be more profitable to identify the genotypically determined traits or deviations in function that are elicited or suppressed by genetic or environmental influences to produce the phenotype schizophrenia. Granting the many difficulties such an investigation would have to overcome, for example, the multiplicity of variables to control and the methodological problems that remain totally unsolved, such research is clearly warranted.

At the same time, one is inclined to feel, after a perusal of the literature, that the psychological makeup of the organism has been neglected in the

argument of how much weight can be attached to genetic or environmental factors. In other words, polemics might well be replaced by the broad principles of modern biology.

The environmentalist school argues that the concordance rates for schizophrenia in twins may be understood either in terms of the psychology of twins or in more complex ways as a result of the way twins are treated by their families. Twins are believed to be vulnerable to special psychological problems: they may be confused in their identity, experience difficulty in self-object differentiation, or be predisposed to homosexual attachment. Methodologically, it would, of course, be possible to eliminate such variables by studying twins who had been separated at birth, with each one raised by a different set of parents. It might be argued that a new set of variables would then be introduced—that of being a step-child or an adopted child—and, of course, this would be so. In the meantime, Rosenthal has pointed out that neither schizophrenia nor any other form of psychiatric illness requiring hospitalization occurs more frequently in twins than in nontwins and that neither occurs significantly more frequently among monozygotic than among dizygotic twins. Is the confusion of identity found in schizophrenia at all the same as that found in twins? If not, clearly it does not play an etiological role in the illness. However, if one ascribes to a multifactor theory of etiology, one might postulate that this factor, in combination with other psychological factors in twin relationships, may play such a role in a genetically predisposed monozygotic twin.

A study of monozygotic twins who had been separated at birth might also yield critical data that would enable one to evaluate the relative influence of genetic and environmental factors in schizophrenia. Such a study would have to take into account the findings previously reported in the literature: In one study, five such pairs of twins were reported concordant for mental illness. In another, no cases of mental illness were found among 63 pairs of monozygotic twins who had been separated at birth. There were some I.Q. differences between the twins in this sample, largely as the result of differences in educational exposure, but there was little difference in personality variables, such as mannerisms, gestures, interests, sociability, and activity. The authors of this study concluded that adverse environmental conditions led to neurotic behavior only when a predisposition was present.

That genetic factors may play a role in personality organization that leads by various routes to schizophrenic illness can hardly be doubted, but the mechanism by which they do so is unknown. It is possible that a genetic factor may operate through a defect in one or another enzyme system, possibly in the central nervous system, which, in turn, seriously alters the psychological functioning, differentiation, maturation,

tion, or development in a manner still to be determined.

The findings reported by Bergman and Escalona, that unusual sensitivities to the quality and quantity of sensory input in infants may predispose to psychosis, suggest that certain kinds of psychophysiological deviations may be traced to a very early stage of development. It is possible that such a deviation could be of genetic origin. Equally provocative is the line of investigation pursued by Bender and Fish. The authors did a follow-up study of infants who, from the age of 1 month, manifested disturbed regulation of physiological patterns (for example, vasomotor instability, poor temperature control, disturbed sleep patterns, poor muscle tone) and uneven patterns of growth with retardation or precocity in motor, perceptual, and language skills and in the social sphere. These children were found to be predisposed to schizophrenia in later childhood. Granted the multiplicity of variables involved in such research and the many technical difficulties, such as the evaluation of the neurological status of an infant, this approach has much to recommend it: the link between genetics and growth patterns or physiological regulatory devices has not yet been established.

Current status of genetic theories. Current genetic theories state that schizophrenia is a specific inherited disease due to a single, mutant, inherited gene that is either recessive, dominant, or intermediate. It is further hypothesized that the genotype is characterized by an undiscovered metabolic error that leads to the schizophrenic illness. The fact that there is less than 100 per cent concordance for schizophrenia in monozygotic twins is explained by a constitutional resistance to the disease. Environmental influences are considered inconsequential. The natural history of the disease—premorbid state, onset, course, remission, and outcome—is either overlooked or is explained in some way by the error in metabolism. Genetic theories account for the variety and instability of clinical subtypes in schizophrenia either by postulating that there is one specific gene for schizophrenia, while other genes modify the phenotype, or by postulating that the subtypes lie outside the sphere of genetic influence. On the other hand, some members of this school believe that schizophrenia is not a single disease but that it consists of several diseases or subtypes, which are caused by different genes.

The specific way the metabolic error manifests itself is not stated with certainty: it may produce either the disease or a predisposition to the disease. This predisposition, in turn, has been variously described as a "characterologic deficit" (Essen-Möller), a thought disorder (McConaghy), a defect in the autonomic system (Mednick), and a defect in neural integration (Meehl). As has been suggested here, it may take the form of defects in a number of integrated psychological functions. It is hoped that future

cytogenetic and biochemical genetic studies will help to dispel some of the ignorance in this field.

Organic Theories of Schizophrenia

One of the etiological theories mentioned above, perhaps the one most stubbornly clung to over time, states that schizophrenia is an organic disease due to a morphological or functional defect in some organ system, perhaps, but not necessarily, the brain. The model is a well known one in medicine: some exogenous agent, infectious or toxic, overcomes the defenses of the body and creates a defect or malfunctioning in an organ or functional unit. Most recently, the endocrine glands have been held responsible for schizophrenia. On the basis of the observation that schizophrenic patients have low stress tolerance, the adrenocortical hormones were investigated and abnormal levels found, only to emerge later as covariants of the patient's behavior. Similarly, when one reviews some of the other findings reported in this area, it becomes obvious that the effects of hospitalization, the lack of adequate controls, and observer bias have been mainly responsible for past reports of chronic bacterial infections of the colon, neuropathological changes in the brain, hepatic disturbances, testicular atrophy, and small hearts in schizophrenic patients.

Recently, the search has been for either an abnormal substance present in body fluids or an aberrant metabolic pathway, both of which are presumably genetic in origin. In other words, schizophrenia is conceived of as an inborn error of metabolism, similar to phenylketonuria perhaps. In this model, schizophrenia emerges as a unitary illness caused by a chemical or metabolic derangement, perhaps of neural functioning. This derangement may reveal itself in the finding of some abnormality of serum or urinary or cerebrospinal constituents. Thus conceptualized, schizophrenia would be analogous to a delirious state (acute brain syndrome) or to some kind of metabolic poisoning.

In the past decade the search for metabolic poisons in schizophrenia has been spurred on by the study of the psychological or behavioral effects of such substances as mescaline, and lysergic acid diethylamide. However, there is good evidence, especially in the European literature, to suggest that the effects of these substances on psychological functioning and behavior are by no means homologous to schizophrenic psychopathology.

Other questions remain unanswered: If such an inborn metabolic error is present, why does it only become manifest in late adolescence or early adulthood, whereas the effects of various amino acidurias or phenylketonuria manifest themselves in childhood? If an abnormal metabolite or an aberrant metabolic pathway does exist, how is one to account for different clinical manifestations and subtypes? How can the premorbid personality or the remissions that occur so

often be explained metabolically? And what accounts for periods of lucidity, both brief or prolonged, when the thought disorder is no longer evident? In fact, such periods of lucidity may occur in response to the physician's attempts to understand or his actual understanding of the patient's seemingly incoherent statements. Finally, if schizophrenia is a chronic delirium, why do fever, surgical operations, and bone fractures produce temporary remissions in some patients? These vexing problems have been studiously avoided by adherents of the organic school. Yet, obviously, etiological statements must take such phenomena into account.

Sources of errors. Despite a marked increase in biochemical and neurochemical research activity in this field, the amount of established, verified factual information accumulated to date is virtually nil. This may be attributed, in large measure, to the fact that no effort has been made to correct several sources of error that in the past have accounted for positive findings. These errors have been both technical and statistical; they have resulted from the tendency to report nonspecific findings; and, in several instances, they arose because of the investigators' failure to take certain crucial variables, involving diet or drug intake, into account.

To illustrate, certain substances may be present in the diet of some patients in a sample but not in the diet of other patients in the sample or in the diet of the control group. Consequently, when these substances are metabolized and excreted, they may give rise to a positive finding. Thus, the presence of phenolic substances in the urine of schizophrenic patients has been traced to their ingestion of coffee, which was not available to the other experimental subjects.

Similarly, the need to control for dietary inadequacies has been underscored by several inaccurate reports of positive findings in the past. Abnormalities in liver function tests, which were postulated as characteristic of schizophrenic patients, were subsequently traced to the low protein diet of such patients and corrected by a high protein, high carbohydrate diet, with added vitamins. Again, the frequently reported finding of depressed thyroid function in schizophrenia has been traced to the low iodine content of the table salt used in hospitals. At present, there is a need to control for adequate vitamin intake in studies that survey the excretion of amino acids by chromatography.

Statistical principles have also been neglected in this area of investigation: if a very large number of substances are sampled by chromatography, some positive results are bound to occur, depending on the level of statistical significance. Furthermore, if one assumes that schizophrenia is not a unitary disease with a stable course and that any group of schizophrenic patients probably represents a heterogeneous population, it may be necessary to compare not only mean values of the experimental and control

data but also the deviance in individual and mean values in each group. Some studies also require observation of variations in individual values over time.

Two of the best known series of studies over the past few years have involved reports of epinephrine and ceruloplasmin that, in all probability, can be understood as a function of low blood levels of ascorbic acid. Originally, these reports claimed an abnormal pathway of epinephrine, with the production of adrenochrome and adrenolutin, which were said to possess psychotomimetic properties. However, the metabolism of isotope-labeled epinephrine does not proceed via these substances in either schizophrenic or normal subjects. Nor could adrenochrome be found in the serum of schizophrenic subjects. At the same time, some reports suggested that epinephrine was metabolized more rapidly *in vitro* after plasma from schizophrenic patients was added. This increased rate of metabolism was thought to be due to elevated levels of ceruloplasmin in such serum. Again, the finding of an increased rate of epinephrine metabolism has since been shown to be a function of low blood levels of ascorbic acid.

Obviously, the finding of an abnormal level of a naturally occurring blood or urine constituent or the presence of an abnormal substance in the blood or urine of schizophrenic subjects does not mean that this phenomenon is specific to schizophrenic illness. For example, in the 1940's some reports appeared in the German literature that serum levels of copper were elevated in schizophrenic subjects, although this finding was not confirmed. However, elevated serum levels of copper are now known to occur in pregnancy and in a wide variety of disease processes, for instance, in chronic infectious diseases, liver disease, malignancies, the collagen diseases, diabetes, adrenal insufficiency, and various blood dyscrasias. Thus, it is crucial in research of this kind to rule out all other disease variables before one can be certain that the elevation of serum copper is a unique characteristic of schizophrenia. Serum copper occurs almost exclusively in the form of the metalloprotein, ceruloplasmin, and in 1957 a rapid test for the presence of ceruloplasmin was developed by Akerfeldt. Shortly thereafter, a number of reports were published that claimed that the test was positive in a large percentage of schizophrenic subjects. Two lines of evidence, however, have since refuted this claim: The confirmed findings of normal levels of ceruloplasmin in schizophrenic subjects, and the finding that a positive Akerfeldt test depends on low blood levels of ascorbic acid. Finally, any abnormal substance found in blood would also have to pass through the blood-brain barrier. Epinephrine, for example, does not do this, according to Weil-Malherbe.

Technical sources of error have probably also accounted for some reports of abnormal levels of constituents of body fluids. For example, Bogoch first

reported that the cerebrospinal fluid of schizophrenic patients contained abnormally low levels of neuraminic acid when boiling whole cerebrospinal fluid with Bial's orcinol reagent. Since this reagent also forms colors with other sugars, one cannot conclude that neuraminic acid alone is being measured. Reports both confirming and refuting Bogoch's findings have appeared. The thiobarbituric acid method to measure the levels of neuraminic acid yields values that are one-third those obtained with Bial's reagent, and these levels are more stable over time. Green et al. have also pointed out the need to control for the age of patients and their control subjects when Bial's reagent is used.

Theories

Genetically inborn error of metabolism. This hypothesis is attractive but has not been confirmed as yet. As concretized by Heath, it links a whole causal chain, beginning with genetic data and proceeding via biochemistry to deviations in psychological functioning, which interact with family and social factors. Each of these processes is a necessary (if not sufficient) condition for onset of the illness. The crucial genetic defect is manifested by the presence of taraxein, which is responsible for an aberration of biogenic amine metabolism.

A variant of this hypothesis is the postulate that epinephrine released by stressful life situations is abnormally metabolized to form hallucinogenic derivatives of epinephrine, adrenochrome, and adrenolutin. However, as noted above, the empirical evidence for this hypothesis has not been verified, and hallucinosis is not pathognomonic for schizophrenia.

Defect in energy metabolism. It has been shown repeatedly that the rates of cerebral circulation and of cerebral oxygen and glucose consumption are normal in schizophrenic patients. Abnormal glucose tolerance curves and the retarded metabolism of lactate, which were frequently reported in schizophrenia in the past, have since been ascribed to a relative deficiency of vitamins of the B group. More recently, defects in oxidative phosphorylation and of the metabolism of phosphorus in erythrocytes have been reported. And schizophrenic patients have been said to own a serum factor producing hyperglycemia, possibly due to an antagonist of insulin present in blood. Finally, in comparison with the plasma of normal control patients, the plasma of schizophrenic subjects is said to contain a substance that, when incubated with chick erythrocytes, increases the lactate-pyruvate ratio in the medium. This finding has not been confirmed by other laboratories; moreover, those who reported it first have since related it to the fact that their subjects engaged in moderate exercise before blood samples were drawn. The mechanism whereby the metabolism of chicken erythrocytes is altered has been worked out recently: human plasma apparently contains an antibody that produces a

complement-linked lysis of chick red cells and an associated stimulation of the cells' aerobic glycolysis. Whether the plasma of schizophrenic patients is unique in containing this antibody remains to be determined; however, there is preliminary evidence that the plasma of nonpsychotic patients may also contain it.

Apart from such considerations, in none of the studies quoted is it quite clear what such findings are supposed to explain about schizophrenia. Are defects in energy metabolism supposed to be etiological of schizophrenia or covariants of the psychological or behavioral state of schizophrenic subjects?

Abnormal serum constituents. The status of work on ceruloplasmin has already been discussed, as has the controversy, which is still unresolved, surrounding the presence and role of taraxein in schizophrenia. Taraxein is said to be related to but qualitatively different from ceruloplasmin. Heath et al. have reported that when taraxein is injected into monkeys, behavioral and electroencephalographic changes occur. And they have linked the taraxein hypothesis to their findings of paroxysmal activity in populations of septal and hippocampal neurons: taraxein is said to impair "enzymatic activity in a pathway related ... to the metabolism of amines," which in turn produce high voltage spike activity in the above-mentioned loci.

There have been reports for many years of the adverse effects of the serum and urine of schizophrenic patients on many dependent variables, for example, cells in tissue culture, tadpole larvae, web construction in spiders, rope-climbing speed and learning and retention in rats, and the pressor response in rabbits following the topical application of epinephrine to the cerebral cortex. The nature of these substances in serum, plasma, or urine has not yet been identified.

Presumably, however, a protein may be responsible for the abnormal antigen in schizophrenic serum, reported by Haddad. Research is underway to determine in what fraction the abnormal protein is found and whether there is a quantitative increase of one or another fraction. Elevations in α_1 -, α_2 -, β -, and γ -globulins have been reported. Another study reports an increase in β -2-macroglobulin in sera drawn from 4 out of 15 schizophrenic patients. Many of these findings lack specificity for schizophrenia, however. For instance, increased globulin levels have been found in delirious states and manic-depressive and puerperal psychoses, and α_2 -globulin elevation was found to be related to agitation, rather than diagnosis. Other investigators have reported that this fraction increases during infectious illness and hypertension, with malignancy, and after trauma.

A form of intoxication. Some psychotomimetic agents, such as mescaline, are methylated congeners of many naturally occurring biogenic amines. Recently, Friedhoff found that the urine of 70 per cent

of his schizophrenic subjects contained the substance 3,4-dimethoxyphenylethylamine, which is related to dihydroxyphenylethylamine (dopamine) and to mescaline (which contains an additional methoxy group). The urine of the normal control group in Friedhoff's studies did not contain this substance, but others have found it in their control groups as well as in their schizophrenic subjects, albeit with less frequency. As Mendelson has pointed out, it has not been possible as yet to determine whether 3,4-dimethoxyphenylethylamine is endogenous rather than exogenous or whether its presence may be correlated with a specific behavioral phenomenon rather than the illness or whether it is capable of producing the characteristic disturbances in psychological function seen in schizophrenia.

That some disturbance in biological transmethylation may occur in schizophrenia is suggested by the research currently underway at the National Institute of Mental Health. Pollin, Cardon, and Kety fed 1-methionine to chronic schizophrenic patients and produced an apparent exacerbation of schizophrenic symptoms. The enzyme *O*-methyltransferase catalyzes the transfer of a methyl group from *S*-adenosylmethionine to dopamine. The source of the methyl group in *S*-adenosylmethionine is 1-methionine. However it is not known whether the exacerbation of symptoms is specific to schizophrenic patients or whether it is due to the nonspecific effects of amino acid intoxication rather than the suspected mechanism.

Deficiency of a central neurohumor. Both Woolley and Gaddum concluded, independently, that a central serotonin deficiency, arising from a metabolic failure, may be responsible for schizophrenia. This hypothesis is based on the fact that lysergic acid diethylamide (LSD) antagonizes the action of serotonin on smooth muscle. Indirect evidence for the hypothesis is the finding that dimethyl serotonin, bufotenin, is a psychotomimetic drug. On the other hand, reserpine lowers the concentration of serotonin in the brain, and the effect of feeding 5-hydroxytryptophan, serotonin's precursor, raises the brain level of serotonin and is said to produce behavioral effects akin to those of LSD. Other contradictory evidence accumulated in this area has been reviewed in detail by Kety.

The hypothesis that schizophrenia is due to a deficiency of serotonin is apparently no longer subscribed to even by Woolley, who reported recently that the blood serum of schizophrenic patients contains a substance, provisionally identified as a ganglioside, with activity as a serotonin receptor, which increases the sensitivity of isolated rat uteri to serotonin. In this manner, the effective concentration of serotonin is increased. It remains to be seen whether this ganglioside is present in the brain of schizophrenic patients. However, this hypothesis is attractive because it shifts attention to the central

nervous system and to a substance with known neurobiological activity.

Alternative theories. Several alternative testable hypotheses might be proposed: for example, certain kinds of ontogenetic experiences might be reflected in altered brain chemistry, which, in turn, might be present locally or be manifested in one or another body fluid. The animal experiments conducted by Krech and Rosenzweig suggest such a possibility. Alternatively, a genetically determined inborn error of metabolism or aberrant metabolic pathway, possibly in the nervous system, might alter the process of personality development in such a manner as to distort or prevent the proper differentiation, integration, maturation, and organization of psychological functions that enable mature adaptation, and, concomitantly, such metabolic errors might alter the processing of real life experiences. There is evidence to suggest that, in a general way, two children may respond to the same experience in quite different ways or to different experiences in the same way. And it is not unusual to find that some adult schizophrenic persons perceive or have perceived the world in idiosyncratic ways.

Obviously, such hypotheses are much too general, in that they fail to specify the possible metabolic error to be investigated. Furthermore, if such an error were identified, one would also wish to understand the mechanism through which it effected changes in psychological processes.

All these hypotheses are plausible. Yet one cannot help wondering how the finding of a specific biochemical substance, for instance, would enhance our understanding of schizophrenia. Presumably, such a substance could be important as a diagnostic aid, that is, as a validating criterion of diagnosis, just as low levels of protein-bound iodine serve as validating diagnostic criteria in myxedema. But such a finding would have no etiological significance per se. Furthermore, a substance or substances might be covariants of some behavioral manifestation. Marked elevations of urinary 17-hydroxycorticosteroid and epinephrine levels were found by Sachar et al. to occur as covariants of acute anxiety and depression in young male schizophrenic subjects. These levels became normal when the patients were independently adjudged to have attained psychotic equilibrium or to have entered a recovery phase.

Future Needs

The main impediment to the formulation of an integrated, coherent theory of the etiology of schizophrenia is the absence of clear cut empirical findings and testable hypotheses. The fact that the proponents of each of the viewpoints reviewed here tend to claim sufficiency and specificity for their particular hypotheses or findings constitutes an additional impediment. This situation is reminiscent of the situation that existed in the field of psychosomatic

medicine some years ago, when specific psychological conflicts or personality types were claimed to be sufficient causes of such diseases as peptic ulcer and essential hypertension. Some clarification was achieved only when Mirsky proposed and proved the hypothesis that neither a specific biochemical or physiological factor nor a specific psychological or social factor was, in itself, sufficient to account for the etiology of peptic ulcer, but that the lesion was the result of the interaction of all three. Such a model might be a useful guide in the search for the etiological factors in schizophrenia and in efforts to account for all the complexity of its natural history. But first, the general principles of biology must be used, linear causal theories must be abandoned, and the interactions and variance in schizophrenia in terms of both heredity and environment must be accounted for. And before that, reliable and valid data on genetic and environmental factors must be collected.

Once this has been done, the nature of the interaction and mechanisms may be investigated. On the basis of the evidence reviewed in this chapter, one is inclined to postulate a model of heredity-predisposition-environmental interaction of some kind, but the links between these agents and the mechanisms of such interaction are, of course, quite unknown. Thus, the genotype may be a predisposition to schizophrenic illness, and the psychosocial environment may set in motion a process that results in the illness. Or the interaction may be more complex. The environment may continuously interact with the genotype to elicit certain kinds of general potentialities and more specific dispositions to react to certain categories of environmental stress that lead to the illness. In brief, genotypic and environmental variables either combine or continually interact and reinforce each other to produce the schizophrenic phenotype.

Suggested Cross References

For further information regarding the various etiological factors that have been proposed for schizophrenia, the reader is referred to Area B, on the basic behavioral sciences, which contains sections on the family and psychiatry, sociology and psychiatry, anthropology and psychiatry, genetics and psychiatry, neurochemistry, and neuropsychology. For further information about the effects of maternal deprivation, see Section 44.1 in Area H, on child psychiatry. Psychoanalytic theory is discussed more fully in Area C, on current theories of personality and psychopathology.

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15.4 SCHIZOPHRENIA. IV: CLINICAL FEATURES

HEINZ E. LEHMANN, M.D.

Basic Aspects

There are no objective criteria today for the diagnosis of schizophrenia. But several basic features of this disease have come to be generally accepted since dementia praecox was first described by Kraepelin as a nosological entity at the end of the 19th century. These basic features have served as a foundation for many new psychopathological perspectives developed in recent years and for a deepened understanding of the many and perplexing facets of schizophrenia.

Bleuler described three general primary symptoms of schizophrenia: (1) a disturbance of associations, (2) a disturbance of affect, and (3) a disturbance of activity. Bleuler also has stressed the dereistic attitude of the schizophrenic—that is, his detachment from reality and his consequent autism—and the ambivalence that expresses itself in his affectivity and initiative. Thus, his system of schizophrenia is often referred to as the "four A's": associations, affect, autism, and ambivalence.

Bleuler derived the name of the disease from his concept of splitting. The initiative is split into a variety of equivalent potentialities, and the individual is thus split off from reality; thoughts and associations are fragmented and devoid of meaning; the affect is no longer adequate or appropriate to the situation.

Kurt Schneider, who has probably had the greatest influence on modern German psychiatry, has described a number of first order symptoms of schizophrenia. They are not identical with Bleuler's primary symptoms, nor do they mean the same thing. To Schneider, these first order symptoms of schizophrenia are in no way specific for the disease. However, when a number of these symptoms are present in a patient in whom other pathology—of organic or toxic origin, for instance—can be excluded, then a diagnosis of schizophrenia is indicated. Schneider's first order symptoms include: the hearing of one's thoughts, auditory hallucinations, somatic hallucinations, the experience of having one's thoughts controlled, the spreading of one's

thoughts to others, delusions, and the experience of being controlled or influenced from the outside.

However, schizophrenia could also be diagnosed exclusively on the basis of second order symptoms along with an otherwise typical, clinical appearance. Second order symptoms include: other forms of hallucinations, perplexity, depressive and euphoric disorders of affect, and emotional blunting.

Gruhle proposes still another array of primary symptoms: hallucinations and illusions, a basic disorder of the feeling of identity, strange impulses, delusions, and disturbances of thought and language. Berze defines as primary symptoms all those manifestations that cannot be explained psychologically, but he distinguishes them from the basic schizophrenic disturbance, which he sees as an "asthenia of psychic activity." For Jung, the schizophrenic is characterized by "the assumption of independence by psychic complexes." Janzarik stresses the central significance of paranoid delusions, which he thinks are, for at least some period, an important component of every schizophrenic episode. Wyrsh speaks of schizophrenia as an attack on the center of the personality, and Stransky has coined the descriptive term "intrapsychic ataxia" for the characterization of the schizophrenic individual.

Symbolism. Unquestionably, one of the most characteristic features of schizophrenia is the pronounced symbolism expressed in the patient's behavior, ideation, and speech. This symbolism may be impossible to comprehend for anyone but the patient himself, unless one takes a great deal of time to analyze it. A highly symbolic nature gives the schizophrenic's behavior its often bizarre character.

Schizophrenia has been referred to as a kind of "psychoma," since it consists, particularly in the acute and subacute phases, of a proliferation of psychic productions, like the increased productivity of a malignant growth. This is to be distinguished from the reduced productivity that characterizes the ideational deficit of many other psychiatric diseases, particularly those caused by organic disturbances of brain structure.

Social withdrawal. Almost without exception, schizophrenic patients are characterized by social withdrawal, by the emotional distance one experiences in their presence, and by a lack of capacity for establishing rapport with others. Empathy and sympathy pose greater problems, both for therapists and for schizophrenic patients, than for other psychiatric patients.

Sensitivity. All schizophrenics are, at least originally, more sensitive than the average person. It is likely that this increased sensitivity and heightened responsivity to sensory and emotional stimulation is present in schizophrenics from a very early age, possibly from birth. In this writer's opinion, schizophrenia is characterized by a genetic hypersensitivity to stimuli.

It has been shown experimentally that the schizophrenic patient is bombarded by a greater number of stimuli per time unit than the average normal person. For example, the critical flicker-fusion frequency of an early schizophrenic is higher than that of normal individuals. All other psychiatric disorders are characterized by a decrease in critical flicker-fusion frequency. The schizophrenic patient thus perceives more visual stimuli in a given unit of time than other persons do, and one may hypothesize that this is also true in other sensory modalities. If the schizophrenic's receptor apparatus of greater than average sensitivity is not matched by a central nervous system with better than average ability to process the mass of information coming in, then jamming of the central nervous system may occur through an overload of stimulus input. The schizophrenic's withdrawal may be explained as a defensive maneuver designed to reduce excessive stimulus input.

Whether or not such a theory is accepted, it is well known to those who have worked extensively with schizophrenics that they are extremely sensitive. They are very easily hurt by slightly aggressive or rejecting behavior by others—behavior that, in most cases, would probably not be noticed by a person of normal sensitivity or, if noticed, certainly would not lead to traumatic experiences. In a figurative sense, this supersensitivity could be compared to the supersensitivity of a badly sunburned skin that cannot tolerate even the usually imperceptible pressure of ordinary clothes.

Loss of ego boundaries. Another characteristic feature of most schizophrenic conditions is the loss of ego boundaries. This peculiar symptom may give the patient the delusional conviction that he is reading other people's minds or being controlled by other people's thoughts. It also renders him extremely vulnerable to any kind of external stimulation. His own identity may fuse with that of any object in the universe around him, and he may suffer greatly when he becomes aware of some object in his environment being attacked. Somebody banging the table 20 feet away may cause him to feel almost physical pain or to become infuriated as a personal reaction to such aggressive behavior. (Such loss of ego boundaries also occurs frequently to people who have taken psychotomimetic drugs such as lysergic acid diethylamide (LSD), psilocybin, or mescaline.) This loss of ego boundaries, and thus of identity, produces feelings of depersonalization, followed by experiences of derealization. The resulting loss of contact with reality is the core symptom of any psychosis.

One particular symptom related to a loss of identity is the uncertainty of many schizophrenics about their gender; a male schizophrenic is often not sure whether he is a man or a woman. This uncertainty may be thought of as a regression to the infantile state, before such a differentiation had been established.

Variability. Another strange but specific character-

istic of schizophrenia is its unpredictable variability or inconsistency. A schizophrenic patient may be incapable at a certain time of carrying on a rational, simple conversation, and yet half an hour later he may write a sensible and remarkably well composed letter to a relative. He may refuse to change his shirt for weeks and offend those around him by his strange behavior, but he may, on the same day, display perfect manners when attending a birthday party. He may be unable to figure the right change for a dollar purchase, yet he may be able to play a sophisticated game of bridge or chess.

Symptoms

Perceptual disorders. A variety of perceptual disorders are seen in schizophrenia. It may be hypothesized that these are the result of the schizophrenic's constant exposure to an excessive influx of sensory stimuli. Although the normal individual has a basic, pervasive feeling of familiarity with the environment to which he has become accustomed and adapted—a necessary aspect of all normal perception—the schizophrenic may experience a basic unfamiliarity with his environment. He experiences this unfamiliarity sometimes as a sudden jolt, at other times as a continuous feeling of strange remoteness, as alienation and a lack of closeness.

Because of the unpredictable variability of the schizophrenic's experiences, the Gestalt qualities of the visual world are broken. He frequently sees objects and people change their dimensions, their outline, their brightness from minute to minute or even from second to second in front of his eyes. *Déjà vu* experiences may intrude and produce an uneasy feeling of spurious familiarity. This instability can be shown in experimental investigations on size and brightness constancy, on critical flicker-fusion frequency, on the figure-ground relationship, and on many other perceptual functions.

Hallucinations. Sensory experiences or perceptions without corresponding external stimuli are common symptoms of schizophrenia. Most common are auditory hallucinations, the hearing of voices. Sometimes the voices are those of God or the devil; sometimes they are the voices of relatives or neighbors; and frequently the patient can neither recognize nor understand them. Sometimes there are two or more voices talking about the patient, discussing him in the third person. This particular form of auditory hallucination often appears in schizophrenics who are also alcoholics. Frequently the voices are threatening or obscene and very disturbing to the patient. They may represent some evil outside power over which the patient has no control. Many schizophrenic patients experience the hearing of their own thoughts. When they are reading silently, for example, they may be quite disturbed by hearing every word they are reading clearly spoken to them.

Visual hallucinations occur less frequently in schizo-

phrenic patients, but they are not rare. Patients suffering from organic or affective psychoses experience visual hallucinations primarily at night or during limited periods of the day, but schizophrenic patients hallucinate as much during the day as they do during the night, sometimes almost continuously. They obtain relief only in sleep. When visual hallucinations occur in schizophrenia, they are usually seen nearby, clearly defined, in color, life-size, in three dimensions, and moving.

Tactile, olfactory, and gustatory hallucinations are less common, but it is interesting that visual hallucinations almost never occur by themselves, but always in combination with hallucinations in one of the other sensory modalities. Many clinicians believe that the presence of olfactory hallucinations is indicative of a particularly malignant nature of the schizophrenic process, although there is no decisive statistical evidence for this.

Schizophrenics often experience cenesthetic hallucinations: sensations of altered states in body organs without any special receptor apparatus to explain the sensations—for example, a burning sensation in the brain, a pushing sensation in the abdominal blood vessels, or a cutting sensation in the heart.

The hallucinations may absorb much or all of the patient's attention and may motivate his behavior to a considerable extent. While listening to voices, he may be preoccupied and oblivious to his environment. He may react with laughter or anger or terror, and he may carry on lengthy conversations with the voices.

However, modern treatment methods, particularly pharmacotherapy and social therapies that engage the patient in various activities and no longer leave him all day to his own preoccupations, have robbed hallucinations of much of their vividness and persistence. Also, many patients today know what hallucinations are and know that their hearing of voices may be considered pathological or foolish. Thus, the present day schizophrenic is much less likely to discuss his hallucinations openly than he was only 20 years ago.

Cognitive disorders

Delusions. By definition, delusions are false ideas that cannot be corrected by reasoning and that are idiosyncratic for the patient, that is, not part of his cultural environment. They are among the common symptoms of schizophrenia.

Most frequent are delusions of persecution, which are the key symptom in the paranoid type of schizophrenia. The feeling of being controlled by some unseen mysterious power that exercises its influence from a distance is almost pathognomonic for schizophrenia. It occurs in most, if not all, schizophrenics at one time or another, and for many of them it is a daily experience. The patient who is convinced that he is being persecuted by powerful agencies also often harbors delusions of grandeur; he must be a very impor-

tant person if so much effort is spent on his persecution.

In connection with their experiences of being physically controlled by unseen forces, many schizophrenics have elaborate delusions that telepathy or hypnotism controls their minds as well. The modern schizophrenic often expresses delusions about atomic power, x-rays, or spaceships taking control over his mind and body. Also typical for many schizophrenics are delusional fantasies about the destruction of the world.

Conrad has studied the development of delusions in the schizophrenic patient. In the first phase of the schizophrenic process, which he calls *trema* (German for "stage fright"), the patient becomes aware that something ominous is happening to him. Somehow the world around him is changing, and he himself feels locked in, harassed, and powerless. He may make desperate attempts to regain control through elaborate schemes of body building and character building.

The following is the schedule a young man, aged 19, had set for himself 3 months before he was admitted to a mental hospital in an acute catatonic stupor:

Time	Activity
7:00-8:00	Cold bath, toiletries, bed, dress
8:00-8:15	Encyclopedia (memorize 3 facts)
8:15-8:30	Handwriting
8:30-8:45	Brisk walk
8:45-9:00	Breakfast (1 apple, 1 dish of bran, 2 glasses of milk, 2 glasses of water)
9:00-10:00	Hearing, sight, and scent
10:00-11:00	European, financial, and sport news
11:00-12:00	Wax floors and clean door knobs
12:00-1:00	Cold bath and exercises
1:00-1:30	Geometry
1:30-1:45	Vegetable lunch (very light)
1:45-2:45	Music
2:45-3:45	Walk as far as Atwater and then back to library
3:45-4:45	Study at library
5:00-6:00	Accounting
6:00-6:20	Cold bath
6:20-6:35	Vegetable supper
6:35-8:05	Accounting
8:05-9:00	Hearing, sight, and scent
9:00-9:30	Strength and Health Magazine
9:30-10:00	Wardrobe
10:00-10:20	Cold bath
10:20-10:40	Study vocabulary (12 words)
10:40-11:00	Undress and toiletries
11:00-11:15	Breathing exercise
11:15-11:30	Note improvement in mental fortitude in diary

During the *trema* phase the patient is anxious, irritable, and often depressed. This phase may last for only a few days, but it sometimes lasts for weeks or months. In the latter stages of the *trema* phase, the patient may be in a delusional mood that makes him see his environment in a new and strange light, under which appearances are changed and familiarity is lost.

The *trema* phase is followed by the *apophany* phase, a Greek expression suggesting sudden revelation. (Conrad postulates two phases following the apophanous: the apocalyptic, during which the patient's world becomes more and more fragmented, and the terminal phase.) In the apophanous phase the patient suddenly becomes sure of certain new "facts." A taxi driver this morning touched his cap with his right hand; this meant that he knew where the patient had been last night. A newspaper was lying on the stairs; this meant that his reputation would be ruined before nightfall. A man was feeding two squirrels in the park, indicating that the patient's future would be decided in 2 weeks. Conrad calls such delusions autochthonous, meaning that they are of a primary and irreducible nature. They appear *de novo* and seem to have little or no apparent connection with the patient's life history or with his specific stresses and conflicts.

Why does the patient believe in the reality of these delusions? What is the evidence for the far-fetched connections he mentions? The answer is always the same: "I know it." This direct, immediate, irreducible certainty responsible for the patient's conviction is the irrational, pathological aspect of the primary delusional experience, which, in this author's opinion, cannot be explained by analyzing the patient's conscious or unconscious psychic contents.

Many leading German psychiatrists (Jaspers, Berze, and Gruhle, for example) have emphasized the difference between the formal aspects of a delusion—the primary pathology that is entirely ego-alien—and the contents of the delusion, which have a distinct psychological meaning based on conflicts, drives, and needs in the patient's personality and life history.

Disturbances of thinking. The schizophrenic disturbance of thinking or conceptualization is one of the most characteristic features of this disease.

Von Domarus emphasizes the fact that the schizophrenic may consider two things identical merely because they have identical predicates, that is, certain identical properties. By contrast, in normal logical thought, identity is based on identical subjects and not on identical predicates. The schizophrenic patient may reason, to quote Arieti: "The Virgin Mary was a virgin: I'm a virgin; therefore, I'm the Virgin Mary." It has been shown, however, that this particular logical error is not specific for schizophrenia and is commonly committed by college students when they are distracted or fatigued. Arieti feels that schizophrenic cognition uses isolated segments and parts rather than the whole of the concept.

Matte-Blanco has drawn attention to the pathological symmetry of schizophrenic logic. A schizophrenic patient might reason: "John is Peter's father; therefore, Peter is John's father." Such symmetrical reasoning is sometimes justified; for instance, John is Peter's brother; therefore, Peter is John's brother. But at other times such symmetrical conclusions are not justifi-

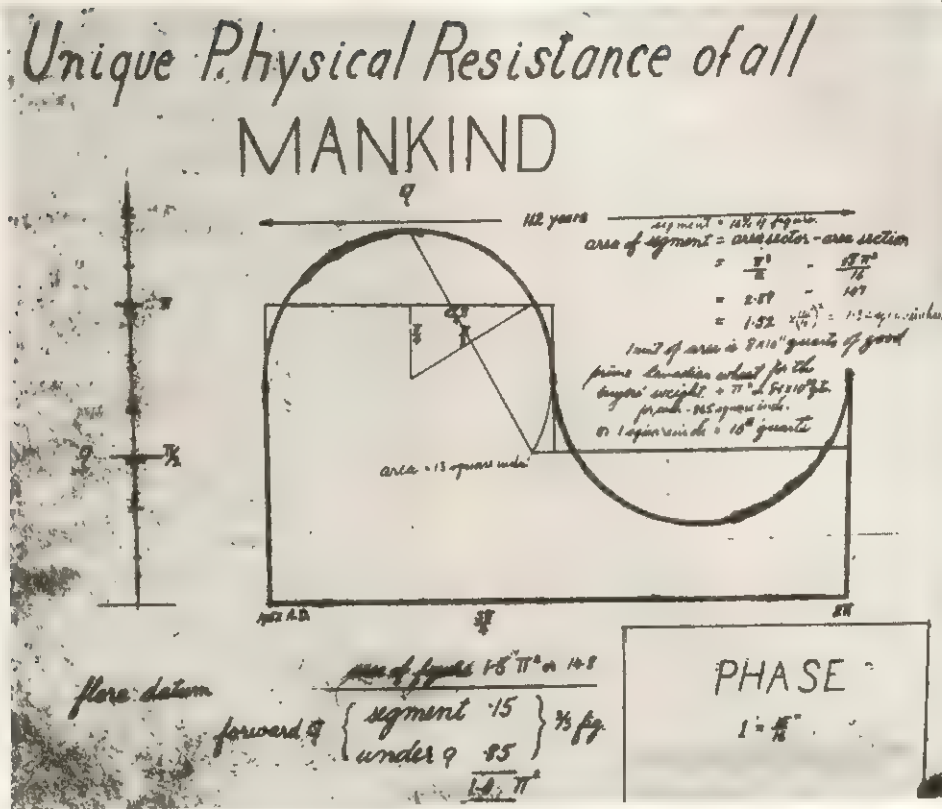


FIGURE 1. Comprehensive graph by a schizophrenic engineer. This shows his retention of engineering information and drafting precision after 10 years of hospitalization while he attempts to reduce many unrelated matters to one simple mathematical scheme. (Courtesy Heinz E. Lehmann.)

fied, and the schizophrenic does not seem to know when he may apply them and when he may not.

The one feature common to all manifestations of schizophrenic thought disorder is that the schizophrenic patient thinks and reasons on his own autistic terms, according to his own intricate private rules of logic. The schizophrenic may be highly intelligent, certainly not confused, and very considerate in his deductions. But his thought processes are strange and do not lead to conclusions based on reality or universal logic.

Storch feels that the schizophrenic uses archaic modes of mystical-magic thinking. Such primitive modes of thinking are closely related to the psychoanalytic concept of primary thought processes that are at work in normal dreaming and allow for condensation, reversal, substitution, displacement, and other distortions of conceptual relationships impossible in rationally controlled thought. Moreau de Tours, in fact, in 1855, compared the psychic processes of a psychotic who is awake to those of a normal person who is dreaming with his eyes open.

Goldstein has described a concretization of thought and a loss of the abstract attitude as typical for schizophrenic thinking. The patient is no longer capable of distinguishing the really important from the irrelevant. He loses his ability to generalize correctly, and he exhibits in the ordering of his concepts a defect

similar to a loss of the figure-ground relationship in perceptual performance. This defect is often brought out by the simple clinical test device of asking the patient to interpret a well known proverb. One schizophrenic interpreted the saying "A stitch in time saves nine" as "I should sew nine buttons on my coat"—an overly personalized and an overly concrete translation.

Cameron has identified overinclusion as a typical feature of the schizophrenic thought disorder. In contrast to the patient whose mental functions are impaired by an organic brain lesion and who tends to omit important items in thought and speech, the schizophrenic tends to include many irrelevant items in his ideational and verbal behavior. This tendency appears to result from a loosening of associations in the schizophrenic patient.

Shakow has demonstrated in a series of experiments that schizophrenics are not capable of holding a set as well as a normal person. This inability becomes evident when schizophrenics are tested for their reaction time in responding to a stimulus that is preceded by a ready signal. In the normal individual the introduction of this ready signal shortens the reaction time to the stimulus that may follow the signal within the next 10 to 15 seconds. But the schizophrenic's reaction time remains the same, whether or not he is warned of

determined by the close procedure, which consists in having other subjects guess words that have been systematically deleted from a continuous speech passage. It is possible to determine the words deleted.

at the beginning of the attack. His prose is cryptic and perseverating, but it has a poetic rhythm and imagery.

At the beginning of the attack, his prose is cryptic and perseverating, but it has a poetic rhythm and imagery.

extract from the writings of a young schizophrenic at the beginning of a catatonic attack. His prose is cryptic and perseverating, but it has a poetic rhythm and imagery.

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writing, script appears to be cryptic, note the recognizable Arabic numerals and English street names (Courtesy Hans E. Lehmann)

really instead of being distinguished from the criminals who kill the soul and commit the crime of homosexuality of destroying the emblem of grand mastery. The attack on the Queen Bore in Masonry comes from an inversion in data in the German spring service in 1903 in the class of masons of this organization, deciding that the Chateau de Chambaud en France was going to be the Castle not of the mint to be, but of the masonry and killing to soul that child many times without the effect desired obtained. As a Compensation we demand de La Roque and the 1300 millions deposited in Quebec since 1793 providing from the Banque d'Etat in France, for Henry King of France whom we name the King of the Chateau de Chambaud in his property and the keys and words should be remitted to him immediately. This is my edict and everybody who does not obey me

The following is an example of what one might call concise abstruseness, which sometimes characterizes the communications of schizophrenics. This patient clearly is trying to say something, but it is so brief and in a way that is so difficult to understand that it is almost impossible to decipher the schizophrenic's meaning. The patient's autistic language

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Neologisms. Occasionally, the schizophrenic creates a completely new expression, a neologism, when he needs to express a concept for which no ordinary word exists.

A schizophrenic woman who had been hospitalized for several years kept repeating, in an otherwise quite

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ing from a serious disease affecting her nervous system; the component "litters" stood for untidiness or messiness, the way she felt inside; "jitterstitters" reflected her inner nervousness and lack of ease; "leelitla" was a reference to the French *le lit là* (that bed there), meaning that she was both dependent on and feeling handicapped by her illness. This single neologistic production thus enabled the patient to express, in a condensed, autistic manner, information about her preoccupations and apprehensions that otherwise would have taken a whole paragraph to explain in common language.

Mutism. This functional inhibition of speech and vocalization sometimes lasts only for hours or days, but not infrequently it lasts for years or decades in chronic schizophrenics of the catatonic type. Many schizophrenics tend to be monosyllabic and answer questions as briefly as possible. They attempt to restrict contact with the interviewer as much as possible without being altogether uncooperative.

Echolalia. Occasionally, schizophrenic patients exhibit echolalia, repeating in their answers to the interviewer's questions many of the same words the questioner has used. For instance: Examiner: "How did you sleep last night?" Patient: "I slept well last night." Examiner: "Can you tell me the name of your head nurse?" Patient: "The name of my head nurse? The name of my head nurse is Miss Brown."

Echolalia seems to signal two facts: (1) that the patient is aware of some shortcomings in his ideation and (2) that he wishes to maintain an active rapport with the interviewer. He acts much like somebody who is learning a new language and who, in answering his teacher's questions, uses as many of the teacher's words in the strange language as he can possibly manage.

Verbigeration. This is a rare symptom that is found almost exclusively in chronic schizophrenic patients. It consists in the senseless repetition of the same words or phrases, and it may, at times, go on for days.

Stilted language. Some schizophrenics make extraordinary efforts to maintain their social relationships in order to maintain their relatively stable adjustment. But they may betray their rigidity and artificiality in all matters of interpersonal relationships by a peculiarly stilted and grotesquely quaint language. The following excerpt from a letter written by a schizophrenic physician who was hospitalized for more than 15 years is an example of such stilted language:

My dear friend and Professor:

A hearty and cheerful, (Please turn the page over) and a real magnanimous good—morning to you on this first Wednesday of our glorious New Year: And I do hope that our great and our good Lord, and our dearly beloved and kind Shepherd, (Kindly read page three, now). Will be gracious unto both me and thee. I am sure that He will be gracious unto both of us; if He has some sound common sense in His being, this morning. . . . I have not yet heard (Kindly turn over to p. 4, now) from any one of my own colleagues when, I am leaving this noble institution of the healing arts; Nor with whom; Nor through which one

of the portals. Though I am sure that you—as much as any (Kindly turn to page five, now) one else—must be able to enlighten me; very soon, my good old friend. . . .

Behavioral disorders. Changes in a schizophrenic's behavior may be quantitative or qualitative in nature. As an example of quantitative change, the patient usually exhibits a general reduction of energy, spontaneity, and initiative, although in the acute stages he may become excited to the point of threatening his own safety and that of the people around him.

Qualitatively, schizophrenic behavior is usually changed in the direction of poorly coordinated, unpredictable, eccentric, or inappropriate behavior. Most schizophrenics convey the impression of awkwardness and stiffness. One of the earliest signs of incipient schizophrenia in adolescents is sometimes a loss of the natural gracefulness of body movements in walk and gestures.

Mannerisms. Mannerisms of speech and movements are typical for many schizophrenics. So is grimacing, which sometimes is barely noticeable and sometimes is carried to a grotesque degree. In its more subdued form, grimacing may appear as ticlike movements, particularly in the perioral area. In its extreme forms, it can be an elaborate and strenuous regular exercise.

Stuporous states. These occur in the catatonic subtypes of schizophrenia. Until the middle 1930's mental hospitals were filled with stuporous catatonics, many of whom would lie motionless for weeks or months, their eyelids flickering, saliva drooling from their mouths, unresponsive to almost every stimulus. Since they would not take any nourishment, they had to be fed by stomach tube twice a day as long as they remained stuporous. Usually they were incontinent of bladder and bowels. But in some cases there was a persistent retention of urine and impaction of the lower bowel, which made it necessary to catheterize the patients and empty their bowels regularly with enemas.

Today modern physical treatment methods permit psychiatrists to interrupt stupors, usually within a few days, either by electroconvulsive treatment or by pharmacotherapy, and the stuporous patient has become a rare phenomenon.

Also rare today is catalepsy, waxy flexibility, or *flexibilitas cerea*, which was present in many patients 30 years ago. It consists of a waxlike yielding of all the movable parts of the body to any efforts made to place them in certain positions. Once placed in position, the arm, leg, or head remains in that position for a long time, sometimes for hours, even if the position is uncomfortable for the patient.

Catatonic patients also used to exhibit the phenomenon of the "psychic pillow": when lying in bed, their head would remain elevated several inches above the pillow as long as they were awake.

Many chronic schizophrenics still show a very pronounced lack of spontaneity and move only rarely or

only when specifically asked to do certain things. However, a patient who shows almost no response to his environment is definitely capable of acutely perceiving what is going on around him. Even a patient in a complete stupor may, several months later, recall every word of a conversation carried on in front of him while he appeared to be in a state of unconsciousness.

Patients who have recovered from such a stupor report afterwards that, although they were keenly aware of everything going on around them, they were unable to make the expected responses they very much wanted to make. It had been as though a strange power was holding them back. If one asks a stuporous patient to perform a certain movement, for instance, to extend his hand, slight oscillating movements of his arm can often be detected. It is as though the patient is caught in a tug of war between the muscles responsible for the extension of his arm and the antagonist muscles, which seem to be innervated at the same time. One might think of this phenomenon as schizophrenic ambivalence expressed in the motor sphere.

Echopraxia. This motor symptom is analogous to echolalia in the verbal sphere: imitation of movements and gestures of a person the schizophrenic is observing.

Automatic obedience. Another symptom sometimes observed in catatonic patients is automatic obedience. A patient may, without hesitation and in a robot-like fashion, carry out most simple commands given to him.

Negativism. The term negativism refers to patient's failure to cooperate, without any apparent reason for this failure. The patient does not appear to be fatigued, depressed, suspicious, or angry. He is obviously capable of physical movement. But he fails to carry out even the simplest request. Sometimes he may even do the opposite of what he is asked; for instance, he will lower his hand when one requests him to raise it, push the spoon away instead of putting it into his mouth.

Most patients presenting these motor phenomena characteristic of the stuporous catatonic are also almost completely mute or very restricted in their verbal productions.

Stereotyped behavior. This is occasionally seen in chronic schizophrenics in the terminal stages of their disease. It may present itself as repetitive patterns of moving or walking, perhaps pacing in the same circle day in and day out. Or it may be the repetitive performance of strange gestures. Or the patient may again and again, sometimes over a period of years, use the same phrases, ask the same questions, make the same comments. Such stereotyped speech should be distinguished from the symptoms termed perseveration of ideas or verbigeration.

Before the advent of effective physical therapies for schizophrenia, Klaesi, in a classical monograph on stereotypies in schizophrenia, concluded that the number of stereotypies observed on a given ward is in-

versely related to the therapeutic care prevailing on the ward. Even without physical treatment methods, stereotyped behavior of schizophrenic patients can be prevented and counteracted effectively by personal attention and social therapies—occupational therapy, recreational therapy, and industrial therapy.

Deteriorated appearance and manners. Schizophrenic patients tend to deteriorate in their appearance. Their efforts at grooming and self-care may become minimal, and they may have to be reminded to wash, bathe, shave, change their underwear, etc. Some schizophrenic men have a particular aversion to having their hair cut or changing their shirt or suit. One schizophrenic adolescent wounded his mother severely with a knife because she kept on nagging him about changing his shirt.

In general, schizophrenics do not have much respect for the social amenities. They may not return a greeting or a smile, they may not carry their part in a conversation, they may exhibit crude table manners and show, in many other ways, their lack of consideration for the presence and feelings of others. Chronic and regressed schizophrenics often masturbate openly in public, which was formerly considered by psychiatrists to be more of a moral and a medical than a social problem.

Affective disorders. As in the sphere of behavioral disorders, affective disorders in the schizophrenic are characterized by quantitative and qualitative changes.

Reduced emotional responses. The quantitative change invariably consists in a reduction of the intensity of emotional responses. Many schizophrenics appear to be indifferent or, at times, totally apathetic. Others with less marked emotional blunting show at least some emotional shallowness or a certain lack of depth of feeling.

Inexperienced observers should, however, be extremely hesitant to make judgments in the highly subjective area of normal emotional depth. What is normal emotional expression in an Anglo-Saxon culture, for example, may suggest a schizoid reduction of emotional response in a Mediterranean culture, and a normal range of emotional expression in a Latin culture may appear to the Anglo-Saxon observer as hysterically exalted.

Although the evaluation of a schizophrenic patient's emotional reaction may serve as one of the most valuable diagnostic criteria, it is also frequently the least reliable of all observed data and should, therefore, be treated with considerable caution by any but the most experienced diagnosticians. On the other hand, the patient himself often offers valuable and valid information about his own gradual decrease in the ability to experience empathy, which he may have observed introspectively long before it became clinically evident.

Inappropriate responses. A typical emotional reaction of the schizophrenic is an incongruous or inappropriate response to life situations. A schizophrenic

patient may talk about his child's death with a broad smile, or he may react with rage to a simple question about how he slept last night. This splitting or dissociation of the affective response from the cognitive content is almost pathognomonic for schizophrenia. It is a dramatic and always disconcerting experience for the observer who regards the appropriate emotional response to a given mental content as one of the most solidly founded aspects of the sane mind.

However, the schizophrenic who expresses an inappropriate emotional reaction does not necessarily experience the particular emotion his behavior conveys. Normal individuals under the influence of LSD frequently report that they find themselves in the frightening situation of being anxious, but not able to express this anxiety properly. Each time they start to describe it, they begin smiling or laughing. This response is similar to the neurological phenomenon of paraphasia, the organic brain symptom that prevents the stricken individual from using the correct words for the concepts he wants to express.

One might consider the inappropriate emotional reaction as simply a breakdown in the translation of the person's private experience into its normal public performance—a parathymia. The possibility must certainly be considered that many schizophrenics who smilingly talk about serious or anxiety-producing subjects experience subjectively a vivid and appropriate emotion but fail utterly in expressing it normally.

The degree of emotional blunting and inappropriateness of a schizophrenic's emotional reaction are among the most telling measures of the extent to which the schizophrenic process has invaded a person's personality. With the exception of a very acute schizophrenic breakdown, an inappropriate emotional reaction indicates that the schizophrenic process has made considerable inroads into an individual's personality structure. Emotional blunting reflects closely the degree of personality deterioration in a chronic schizophrenic. Conversely, appropriate emotional reactions and a well preserved emotional response are always a favorable prognostic sign in schizophrenia.

Abnormal emotions. Schizophrenia not only alters emotional reactions to external stimuli, but it may also induce strange emotions and moods that are seldom, if ever, experienced under normal conditions. For instance, states of exaltation with feelings of omnipotence, "oceanic" feelings of oneness with the universe, religious ecstasies, terrifying apprehensions about the disintegration of one's own personality, anxious moods when the catastrophic destruction of the universe seems to be impending—all of these are emotional experiences occurring in different stages of schizophrenia, but they are most frequently encountered in the acute phases of the breakdown. LSD and other psychotomimetic drugs may temporarily generate similar experiences in normal subjects.

Somatic symptoms. There are no specific somatic manifestations in schizophrenia. However, in the early

stages of the disease, patients often complain of a multitude of symptoms—headache, rheumatic pains in the shoulders, back strain, weakness, and indigestion. They are sometimes treated for months for neurasthenia or are considered to be hypochondriacs or malingerers.

Once the disease is fully developed, a schizophrenic patient is, according to some authors, less likely to develop a psychosomatic disease than the average individual. Schizophrenic patients also seem to suffer less frequently than others from various allergies. On the other hand, they are more likely to develop tuberculosis. Before the days of antibiotic treatment, a high proportion of schizophrenic patients succumbed to tuberculosis. The increased susceptibility of the schizophrenic to tuberculosis may have been due to both constitutional and environmental factors. Many schizophrenics are of the asthenic body build, a type constitutionally more susceptible to tuberculosis than other body types. In addition, the schizophrenic patients' confined and inactive existence in often overcrowded mental hospitals provided an environmental factor that favored the development of tuberculosis.

Many chronic schizophrenic patients, particularly the severely regressed ones, suffer from chronic constipation to the point of developing impaction of the lower bowel, eventually resulting in a megacolon. X-ray pictures of the bowels of these patients closely resemble those of patients with Hirschsprung's disease. With inadequate nursing supervision, such patients may develop acute abdominal complications, for example, a volvulus or paralytic ileus that may not be diagnosed for some time because the patient himself may be so uncommunicative that he fails to express any complaints.

Similarly, uncommunicative chronic schizophrenics may remain ambulatory for days with an acutely inflamed appendix, which may be diagnosed only after the uncomplaining patient has collapsed in the dining room following a rupture of the appendix into the peritoneum. For the same reason, inadequate self-reporting, schizophrenic patients are more likely than others to have silent coronary attacks and myocardial infarction.

A patient suffering an acute schizophrenic breakdown will almost certainly present the autonomic triad of dilated pupils, moist palms, and moderate tachycardia. He also often has a systolic blood pressure 10 to 20 mm. above the norm. These signs of sympathetic excitation may be present even if the patient shows no outward signs of increased emotional tension—another manifestation of prevailing functional dissociation.

It is strange that many acute schizophrenic patients, unless they are extremely excited, sleep well the night following their admission to the hospital. By contrast, few persons suffering from any other physical or mental disease can manage to sleep well during the first night after admission to a hospital.

Acrocyanosis. This condition plagued mental hospi-

tal patients and perplexed their psychiatrists 25 and more years ago. The symptom occurred in many chronic schizophrenic patients, particularly in chronic catatonics, who would sit, stand, or hunch motionlessly all day long. The lower portion of their legs was edematous, cold, and cyanotic; and the same condition often affected their hands.

For a long time, it was thought that acrocyanosis reflected an autonomic disturbance specifically related to the pathological substrate of the schizophrenic process. Later, it was discovered that this condition was simply the result of circulatory stasis, which was, in turn, the result of the patient's almost complete immobility. A similar condition could be produced experimentally in normal volunteers maintaining their extremities motionless for long periods of time.

In modern mental hospitals where most patients are kept active during the day, acrocyanosis has become a very rare phenomenon. Nor does the modern hospital psychiatrist see any more of the ankyloses and kyphoses due to chronically maintained pathological postures in catatonic patients.

Constitutional characteristics. The relationship between body build and personality structure or certain types of mental illness has been intensively studied for many years. Kretschmer was the first to bring convincing evidence of such relationships. He showed that schizophrenia occurred more frequently in persons of asthenic (leptosomic), athletic, and dysplastic body types than in the pyknic type. The pyknic type was more likely to develop manic-depressive psychosis than schizophrenia.

The leptosomic person is characteristically thin, with a long, pointed face, long extremities, a flat chest, and poor muscular development. The athletic person has a broad, bony face, strong jaw, a wide thorax, and well developed musculature. The pyknic person tends to be shorter, round, perhaps even stout, with comparatively small hands and feet but a wide chest and a well developed abdomen. The dysplastics do not fit readily into any of these categories.

Sheldon established more precise methods for measuring the various body types and reclassified the leptosomics, athletics, and pyknics into ectomorphics, mesomorphics, and endomorphics, respectively. In Sheldon's classification, schizophrenics would tend to be ectomorphics, mesomorphics, and dysplastics.

Syndromes

Kraepelin, in carving out the two major diagnostic concepts of dementia praecox and manic-depressive psychosis, distinguished and described three basic subtypes of dementia praecox: the catatonic, the hebephrenic, and the paranoid. Each of these types had previously been described by French or German clinicians as a separate mental disease. Bleuler later added schizophrenia simplex as a fourth basic type of schizophrenia.

These four major subtypes of schizophrenia are no more than a convenient shorthand of behavioral description based on syndromes or symptom patterns. No physical substrates for these reactions are known. In every subtype there may—and usually do—occur a variety of schizophrenic symptoms in addition to those especially characteristic of the given subtype. Many patients change from one subtype to another, from, say, paranoid to hebephrenic, or from catatonic to paranoid. Clear cut examples of the various schizophrenic reaction types are best found among chronic patients who, over many years, have crystallized a distinct form of behavior.

Since Bleuler, many other types of schizophrenia have been named and described. Some of them are officially accepted in the *Diagnostic and Statistical Manual* of the American Psychiatric Association. Others are recognized in the International Statistical Classification. And still others can be found in the psychiatric literature. This section briefly outlines the four basic subtypes and some of the other better known types of schizophrenia and gives case histories to illustrate them.

Many acute schizophrenic breakdowns cannot be properly classified because they show such a wide variety of schizophrenic symptoms. For statistical purposes such patients are classified as undifferentiated schizophrenics. Even among chronic schizophrenics, not every patient can be readily pigeonholed. He may show the silly behavior of a hebephrenic, assume at times catatonic postures, and also harbor a system of paranoid delusions. He would then be diagnosed as undifferentiated, chronic.

The catatonic and hebephrenic subgroups are often referred to as nuclear schizophrenia because their manifestations are most specific for the essentially schizophrenic deviations in affect, association processes and behavior, and because these groups are most regularly associated with the typical preschizophrenic personality. Furthermore, they most frequently end in personality deterioration, which for Kraepelin was the principal criterion of his dementia praecox concept.

Catatonia. Catatonic schizophrenia occurs in two forms: (1) stuporous catatonia and (2) excited catatonia. The essential feature of both forms is the marked abnormality of motor behavior.

Stuporous catatonia. The stuporous catatonic may be in a state of complete stupor, or he may show a pronounced decrease of spontaneous movements and activity. He may be mute or nearly so, and he may show distinct negativism, stereotypies, echopraxia, and automatic obedience. However, even after standing or sitting motionless for long periods of time, perhaps for weeks, he may suddenly and without provocation have a brief outburst of destructive violence. Some catatonic schizophrenics exhibit the phenomenon of catalepsy (waxy flexibility). (See Figure 4.)

A patient in a state of complete catatonic stupor can usually be roused from it in a dramatic manner

by intravenous injection of sodium Amytal or another short-acting barbiturate. Within minutes, the patient's frozen facial expression changes to one of normal animation. He begins to talk and move about normally and in many instances becomes, for an hour or two, relatively lucid. The total inhibition of the patient in catatonic stupor may be the result of excessive cerebral excitatory processes. Like an engine racing so wildly that one cannot put in the clutch, this excess prevents the person from performing and behaving in a normal manner until his excessive cerebral functions have been reduced by a chemical agent that has a depressing effect on brain metabolism. But, spectacular as the immediate results appear to be, the technique has no significant therapeutic value.

A young, unmarried woman, aged 20, was admitted to a psychiatric hospital because she had become violent to her parents, had been observed gazing into space with a rapt expression, and had been talking to invisible persons. She had been seen to strike odd postures. Her speech had become incoherent.

She had been a good student at high school, then went to business school, and a year before admission started to work in an office as a stenographer. She had always been shy, and, although she was quite attractive, she had not been dating much. Another girl, who worked in the same office, told her about boys and petting and began to exert a great deal of influence over the patient. The second girl could communicate with her from across the room. Even when they went home at night, the patient would get voice messages telling her to do certain things.



FIGURE 4. Chronic catatonic patient. This patient is immobile, demonstrating waxy flexibility. Note the uncomfortable position of her arm, which is elevated without support, and her stony facial expression with *Schnauzkrampf* or frozen pout.

Finally, pictures began to appear on the wall, most of them ugly and sneering. These pictures had names. One was named shyness, another distress, another envy. Her office friend sent her messages to knock at the wall so as to hit these pictures.

The patient was agitated, noisy, and uncooperative in the hospital for several weeks after she arrived and required sedation. She was given a course of insulin coma therapy, with no significant or sustained improvement. Later she received several courses of electroconvulsive treatment, which also failed to influence the schizophrenic process to any significant degree. Ten years later, when neuroleptic drugs became available, she received pharmacotherapy.

Despite all these therapeutic efforts, her condition throughout her 20 years of stay in a mental hospital has remained one of chronic catatonic stupor. She is mute and practically devoid of any spontaneity, but she cooperates with simple requests. She will stay in the same position for hours or sit in a chair in a curled-up position. Her facial expression is fixed and stony.

Excited catatonia. The excited catatonic is in a state of extreme psychomotor agitation. He talks and shouts almost continuously. His verbal productions are often incoherent, and his behavior seems to be influenced more by inner stimuli than by responses to his environment. Patients in catatonic excitement urgently require physical and medical control, since they are often destructive and violent to others, and their dangerous excitement can cause them to injure themselves or to collapse from complete exhaustion.

An unmarried man, aged 27, had been working as a teacher and was admitted to a psychiatric hospital because he had become increasingly agitated and irrational following several nights of wakefulness. He was extremely talkative and ran about aimlessly. His behavior became very strange; for instance, he tried to clean everything in the house, moved his wristwatch up to his shoulder, stripped his clothes off, chewed large wads of paper on the grounds that this was good for him, talked about killing himself, then said that he might already be dead.

He heard voices ordering him about incessantly and frequently laughed without any apparent cause. After chewing the paper he would spit in it and then drink his saliva. He rolled into odd postures on the bed with his tongue sticking out. He started to jump and dance when taken to the bathroom by a nursing assistant for a shower and became destructive to the bathroom furnishings. His gait was manneristic. His speech was utterly incomprehensible. He refused to take any medication and had to be sedated by parenteral medication.

He remained noisy, excited, destructive, and irrational in his behavior for a month, then improved in response to high doses of neuroleptic medication and a few electroconvulsive treatments. Three months after admission, he was discharged from the hospital, symptom-free and with good insight into the nature of his illness. For the last 2 years he has been employed as a teacher. He attends a psychiatric after-care clinic every six weeks and is on maintenance pharmacotherapy.

Stauder gave the name pernicious or fatal catatonia to those excited catatonic states that could not be controlled by classical sedation. Patients suffering from this condition would often succumb to it within a week or two. The danger was particularly great in the summer during a heat wave because, prior to the advent of neuroleptics, sedatives in high doses would often interfere with thermoregulatory centers in the hypothalamus, and the patient would die in a state of acute hyperthermia. Losing such a patient in the past was es-

pecially tragic because the psychiatrist knew that his patient had a good chance to recover from his schizophrenia if he could keep him alive for a few months during the critical stage. Today such patients can be carried safely through the critical period of acute excitement with electroconvulsive treatment and modern pharmacotherapy.

Periodic catatonia. A rare but intriguing form of catatonia is the periodic catatonia. Gjessing studied this disease over many years and in a beautifully conceived and systematically controlled investigation proved that motor functions, ideation, and perception in periodic catatonia were closely linked to the patients' changing levels of positive or negative nitrogen balance. Patients affected with this disease have periodic recurrences of stuporous or excited catatonic states. Each recurrence of catatonic behavior is associated with extreme shifts in the patient's metabolic nitrogen balance.

Gjessing also found that relapses in such patients could be prevented by regulating their nitrogen balance through continuous administration of thyroxine. However, these metabolic and therapeutic observations apply only to patients suffering from periodic catatonia, and most schizophrenic patients who present catatonic symptoms do not fall into this category. Most of the cases of periodic catatonia seen in recent years have also responded well to neuroleptic medication, and relapses were usually prevented by neuroleptic maintenance medication.

Hebephrenia. The hebephrenic subtype is characterized by a marked regression to primitive, uninhibited, and unorganized behavior. The hebephrenic patient is usually active but in an aimless, nonconstructive manner. His thought disorder is very pronounced, and his contact with reality is extremely poor. His personal appearance and his social behavior are dilapidated. His emotional responses are inappropriate, and he often bursts out laughing without any apparent reason. Grinning and grimacing are commonly seen in this type of patient, whose behavior is best described as silly or fatuous. (See Figure 5.)

A 15-year-old girl attended a summer camp, where she had difficulties getting along with the other children and developed animosity toward one of the counselors. On her return home she refused to listen to her parents and she heard the voice of a man talking to her, although she could not see him. She rapidly began to show bizarre behavior, characterized by grimacing, violent outbursts, and inability to take care of herself.

Her school record had always been good, and she was fluent in three languages. Her parents described her as having been a quiet, rather shut-in child with no abnormal traits in childhood. Family relations were reported as having been satisfactory.

On admission to a psychiatric hospital, the patient's speech was incoherent. She showed marked disturbances of formal thinking and blocking of thoughts. She was impulsive and appeared to be hallucinating. She stated that she heard voices in her right ear and that a popular singer was running after her with a knife. She also thought that her father was intent on killing her. She thought that she was pregnant because she had hugged one of the residents.

Two months of neuroleptic treatment brought no apparent improvement. She was then given a course of very intensive electroconvulsive therapy and continuous sleep treatment. Over a period of a year she received close to 200 electroconvulsive treatments and 50 subcoma insulin treatments—without improvement. She was then transferred to another mental hospital, where her behavior has, for more than a year and a half, continued to be very disturbed.

She is often incontinent and most of the time neglects her physical appearance. But occasionally she will spend hours dressing herself, looking in the mirror, and putting on excessive makeup. At times she has been seen eating her feces. Occasionally she adopts the roles of a singer or dancer. She makes statements like: "Will I live forever? Nurse, I didn't throw my love away. It is in my stomach and it hurts." In the dining room she attempts to grasp the genitals of male patients. High doses of neuroleptics are continuously required to control her behavior. The ultimate prognosis is very poor.

Paranoid type. The paranoid type of schizophrenia is characterized mainly by the presence of delusions of persecution or grandeur. Paranoid schizophrenics are usually older than catatonics or hebephrenics when they break down; that is, they are usually in their late twenties or in their thirties. Patients who have been well up to that age have usually established a place and an identity for themselves in the community. Their ego resources are greater than those of catatonic and hebephrenic patients. Paranoid patients show less regression of mental faculties, emotional response, and behavior than the other three subtypes of schizophrenia.

A typical paranoid patient is suspicious, guarded,



FIGURE 5. Hebephrenic patient. Posturing, grimacing, and mirror-gazing are symptomatic of the disease.

and reserved. Often he is also hostile and aggressive. Socially, the paranoid patient usually conducts himself quite well. His intelligence in areas not invaded by his delusions may remain high. Paul Morphy, an American chess champion in the first half of the last century and one of the greatest chess masters in history, developed paranoid schizophrenia in his middle twenties and was hospitalized for years. But even many years after he had become ill, he still played an original and masterful game of chess if he could be persuaded to accept the challenge.

An unmarried woman, aged 36, who had held a good position as a secretary for several years became convinced that she was engaged to a man working in the same office. This man was married, but she "knew" that his marriage was to be annulled. She then began to feel persecuted by many people in her environment and started to hallucinate. She was admitted to a mental hospital, where she received insulin coma treatment. She improved but never sufficiently to be discharged from the hospital. Three years later she died from carcinoma.

She wrote a detailed account of her experiences in the early stages of her psychotic breakdown. The following excerpt, reported with almost sober detachment yet without any real insight, is a gripping description of the eerie transformation of the paranoid schizophrenic's world of everyday reality into one of menacing and unpredictable catastrophe.

"This was in the morning. My shoes had been taken across the street to the shoemakers and that evening around five o'clock I went for them and as I came out into the Court way, I heard someone say, who was evidently in one of the apartments 'There she is.' I had to wait quite a while in the store and on coming back into the Apartment House, there were about eight or nine people going out, mostly women. It looked to me as if they thought I was getting in touch with someone and thought they had better leave. I heard a woman say 'you will go crazy yet...'

That night I wrote a letter to my Aunt (in the United States) and mailed it in the Post Office at the corner of University and St. Catherine Streets. I came back home and in about twenty minutes I heard the letter read and discussed from some apartment in the Building. I had mentioned my sister's name in the letter and they wanted to know who she was. I asked my Aunt to mail any letters she sent to me to my sister's house as I felt that the Janitor was helping these people. I heard Mr. B. say 'See what she says about me but never mind I can clear myself.' They also discussed whether they would send it on or not. My Aunt has since told me that she received that letter. My people think this was imagination but it certainly was not. ... I stood in the stairway looking out of the window for a while and I saw a flash as if my picture had been taken. I looked up at the roof to see if there was anybody there and I heard a woman say 'Go ahead look right into it.' I went to go up the stairs to phone for the police when I heard a commotion in the hall. It sounded as if someone was leaving one apartment and going into another. I went back and stood for a while outside the door of Apartment 9. I heard someone say that a letter had been written by someone, who had signed my name, to Mr. D., but she did not have the nerve to send it. Then I rapped on the door very hard and told them to open the door. A woman opened it and I saw a man sitting on the chesterfield. There seemed very little in the house. There was a sewing machine. I had often heard the scissors being put down on the machine when I was in my own apartment. Therefore, it must have been the apartment where the voices were coming from all the time. ... The landlord came then and I told him, and my Mother came down the stairs and they took me back to my apartment. My Mother made the remark to the landlord that 'I was a very sick girl.' I suppose Mr. B. had led her to believe I was going out of my mind.

When my sister and her husband came, her husband asked me not to be angry but that he had telephoned for the doctor. The doctor came and I told him part of what happened. He examined me and then spoke privately to my sister and Mother. I do not know what he said. He asked me if I had been sleeping well. I told him I had not. It had been quite impossible to sleep with all that going on. He gave me a prescription, which my brother-in-law took to the druggist and had filled out. My sister asked me to go to her place which I did. ... Upon retiring I took one pill. ... which seemed to have a terrible effect on my mind during the night. I felt quite ill when I got up the next morning, as I was drugged. I had also been followed to her place and it seemed as if Mrs. D. was somewhere in the Apartment Building. It seemed to me that they had some instrument by which they could look into the house. Then I heard them say something about throwing acid in my face. There was a man and a woman coming up the fire-escapes, giving me the impression that they had acid to throw into the room. I had pulled down the shade of the bedroom, having the impression that they could see into the room, and stood waiting. I heard someone say 'Get down out of there.'

Then my sister told me that the doctor wanted to see me again. I told her I did not want to go but she persuaded me to go. When on the street it seemed to me that a lot of people knew about this affair. I got the impression that they had got my picture and that in some way it had been circulated around. While in the doctor's office I heard someone say 'Well, she don't talk very much anyway.' At the time I took for granted it was some of the men talking. The doctor examined my nose and head a bit. He then suggested that I go and get an X-Ray and sent me to Doctor M. Dr. M. lived in an Apartment House, if I am not mistaken, on P. Avenue. On coming through the hallway to the stair-case I heard a man say 'We are doing all we can.' He came running down the stairs and asked us if we were looking for Dr. M. My sister said 'yes' and he told us where to go. I, of course, was quite upset over this and got suspicious of Dr. M. He showed us different X-Ray pictures. I stood looking at them for awhile and then decided I would not have an X-Ray. I told the doctor so and started to walk out of the office. My sister shoved me towards him and he held me by the wrist. I took his hand off and told him that I was paying for this and would say when I would have it done. I then walked out of the office. My sister stayed back and then I got quite upset over her, thinking he might do something to her. I went back and screamed for her to come out. She came out and on my way home she cried and said she did not know what to do with me. I told her not to force me into anything and when I asked her to come out of a place to please come. I also told her that I was fighting for my life.

When I got back to my sister's apartment, I was sitting in the living room, when I heard some people talking, which sounded as if the voices were coming from the Apartment beneath us, pretending they had again waylaid Mr. D. and that they were taking in some flowers which were supposed to be for me and they were talking about some lies he was supposed to have told. I went to my sister and said 'There, they are at it again.' I opened the door and there were two people standing in the hallway and I heard them say 'They are not for here' which I took for granted they were referring to the flowers. ... I went to see Dr. Z in the Medical Arts Bldg. When getting off the car, I heard someone say 'I am glad she is getting off here.' I went into the office and waited for Dr. Z. The longer I waited the more I felt like walking out of the office. Anyway he came in and started asking me quite a few questions and he led the conversation to Mr. D. I told him that his marriage was annulled and I was going to marry him. He said 'What would you do if I told you his marriage was not annulled?' I told him I thought I would die. I told him that all I needed was a tonic for my nerves. He wrote out a prescription. He said to me that that he wanted to speak to my sister alone. She told me afterwards that he said he could send me to the ... Hospital but that he doubted that he could do anything.

On my way home we stopped at the Drug Store.... On hearing a girl who was standing in the store say 'You are lucky' I felt my life was being threatened and I would not get what the doctor prescribed. I felt sure that they were now anxious to do some bodily harm to me.... On the streetcar on my way home from the doctor's I heard a girl say to the man she was with 'Maybe they will make a monk out of him' and saying something about me being strong. They evidently had expected some results from the pills I was taking and most likely knew exactly what they were. Well, I started for my sister's home and on the streetcar again there were two women talking. I did not know them at all. They were looking my direction and one woman said to the other 'She is always looking for a fight.' They changed their seats to the same side as I was on and I heard one of them say 'He will never marry her.' One of the women followed me into the grocery store. The man at the counter said 'Maybe they will put your heart on a platter.' Saying that out loud but to no one in particular... I seemed to be known wherever I went. When I thought of what I had heard on the streetcar about making a monk out of him, of course meaning Mr. D., I started to cry. My sister asked me what was the matter and at last I told them that 'They were going to make a monk out of him.' They tried to console me and my cousin asked if I would care to go to his place. So we went there. I was quietening down but I think my cousin thought I was going out of my mind and took me to his desk, which was the same style as mine and opened and shut a drawer. I then seemed to have gone into a trance because I had no control over what I said or did. Mrs. D. had made the remark 'Put her into a trance and then she will talk.' This was before I had seen any doctor. I pulled the drawer out and pulled out a paper with a lot of figures on it, which I thought was Mr. D.'s. I was staring at it when my cousin told me it was his and I said 'Oh' and put it back. I went into the living room and called for Mr. D. and I started to talk and could not stop. I said that they made a fool of me in the office. I also said I had to go away but would be back again. I talked pretty near all night. I had the queerest sensation as if something had been applied to my feet, also as if some terrible evil was going on. Then I heard people talking and knew that I was still being followed. I was too nervous to go and get my hair dressed in case they would deliberately burn it. I knew that they could hear everything I said and they bothered me quite a bit with their talking. I asked my Mother to come back to our apartment with me. I tried to whisper it so they would not hear me but she could not understand, so I wrote it. I got so I would not speak very much except to ask her to come home with me. I went to lie down and immediately I did so, I felt as if my mind was being read. I moved my head from side to side trying to make myself stop thinking. I finally went to sleep but got up again telling my sister that I felt I had been hypnotized and started to walk up and down. I knew they could tell what I was thinking, so I started to think things to myself which was not very complimentary to a Roman Catholic. They laughed and said they would tell the Pope. I was talking to my sister in between times and then they started to wonder if I was talking to myself or really carrying on a conversation with someone. I heard someone come to the door to listen. I would have opened it but I did not want to disturb my sister any more than what was already done. After a while I went back to bed when I jumped up again I felt as if something was happening to one side of my face. I looked in the mirror but there was nothing the matter. Sunday morning I started to get ready to go when I again went into something like a trance. I then started to see things, such as the Altar of the Anglican Church and other things and again I started to talk. It seemed as if my future life was being revealed...."

Another paranoid woman who had been hospitalized for 3 years wrote the letter that is reproduced in part below. Like many schizophrenics, this patient is tortured by the experience of being influenced in her

bodily functions through fiendish devices employed by her enemies.

Dear Dr.:

It is with the nurse's knowledge that I write this letter to you, regretting at the same time to trouble you about a maladjustment that need not occur. I am at a loss to understand why, those who are responsible are permitted to indulge in this peculiar pastime. Perhaps those with some authority do not desire to check it, but I realize, in any case, that it is rather difficult to do so inasmuch as when one person is checked, she passes the job on to someone else—and so it goes on, practiced first by one and then another. I refer to this instrument they use that completely locks up the intestines and prevents them from eliminating at all even with a laxative, which is useless to take in such circumstances. It also twists me between my legs occasioning much discomfort, preventing proper rest in bed when my body is so tightened up that it is impossible to relax. I spoke to you several days ago about unexplainable solutions being injected into my body and my rest disturbed continually during the night. You agreed that if any treatments were ordered they should not take place at these hours. I think you said you would find out about any such requirement or order. Well, the hour of interference has changed—interference is the right word to use because the one whoever is responsible is doing a great deal of harm. I am awakened every morning to the exact minute about 5.30. About 6 o'clock I drop off again until 7 am (breakfast not until 8 am) During this interval some person interferes with both passages of my body, and I find myself going around the rest of the day like a tank-full of burning Salt Water but quite unable to eliminate at 5.30. I am quite comfortable but if I arose at that time, I suppose something would take place in the washroom—as these things so often do. The bladder is also interfered with as is indeed every organ in my body with which I have never had any previous trouble. This has taken place nearly every day this week. If they do not get a chance just before I retire, some person in my room, by arrangement I suppose, awaits for me to get out of bed and as soon as I turn my back to them quickly uses this instrument, so as to insure this locked-up condition of the abdominal region. Because of so much interference, it is sometimes necessary for me to encourage the bladder to completely empty by means of the application of heat in the form of towels rung out in hot water and this is only effective in a standing up position—There is obviously some solution injected and as soon as I have withdrawn it in this manner I am very comfortable, but am not allowed to remain that way long. Something has also taken place this week which has been done once before on this ward and once in West House where it was frowned upon after discovery. I have been fixed up—temporarily I hope if the above results are going to continue—with two separate outlets for urination, which almost appears to come through two holes in the pelvic bone. All these months, as the previous nurses know, I have had to endure endless damage by interference with the pelvic. Perhaps they have got tired of that at last—and now it has to be something else, and when they get tired of that what next?... There are other means of displacing the intestines, not only by instruments in the hands of other inmates, but by other mechanical tricks probably operated by the same people. Why I should be locked up at all I cannot imagine, since my tendency is to the reverse nor have I yet experienced any weakness of the bladder. Some of the people in my room do not give others much peace, but it is also done by others elsewhere on the ward. When they see me taking a laxative at the first opportunity they lock me up so as to prevent any results which there would be and....

In both of these reports, sexual conflicts have clearly influenced many of the patients' delusional and hallucinatory experiences. In the second report it is not difficult to detect repressed homosexual conflicts.

Repressed homosexuality is, according to psychoanalytic theory, primarily responsible for the need to employ the defense of projection, through which the paranoid psychotic elaborates his delusions of persecution.

The term paraphrenia is often used to describe chronic schizophrenic conditions characterized almost entirely by the presence of well systematized delusions that often remain unchanged in content for years. Paraphrenic patients are distinguished from nonschizophrenic chronic paranoids by the unrealistic, fantastic, sometimes bizarre, and never plausible nature of their delusions. The personalities of paraphrenic patients, on the other hand, are usually well preserved, and the patients are often quite happily adjusted to their life situations. In fact, many paraphrenics seem to derive considerable satisfaction from their delusions, which are more often of a grandiose than of a persecutory nature.

A 33-year-old unmarried woman had an acute psychotic breakdown characterized by many rapidly changing delusions of persecution. She showed a moderate response to insulin coma therapy, but she has remained hospitalized for more than 15 years.

Visitors to the hospital regularly consider her to be one of the hospital staff members. She holds an important and responsible position in the dietician's department, where she is one of the most competent and reliable workers. She is very helpful to the nurses on the ward. She is an excellent organizer of major social functions for the patients. She writes clever poems to be read at good-bye parties for staff members who leave the hospital employ after long service.

In short, she is a happy, constructive, and productive person with a good deal of charm, but she has been convinced for more than 10 years that she is married to a French count, that she owns property worth many millions of dollars, and that she came to the hospital in order to teach the patients ballet.

Simple type. The simple schizophrenic's principal disorder is a gradual, insidious loss of drive, interest, ambition, and initiative. He is usually not hallucinated or delusional, and, if these symptoms do occur, they do not persist. He withdraws from contact with other people, tends to stay in his room, avoids eating or meeting with other members of the family, and stops seeing his friends. He stops working. If he is still in school, his marks drop to a very low level, even if they were consistently high in the past.

The patient avoids going out into the street during the day but may go for long walks by himself at 2:00 and 3:00 in the morning. He tends to sleep until noon or later, after staying up alone most of the night. During the early stages of his illness, a patient may have many somatic complaints, variously diagnosed as fatigue, nervousness, neurosis, psychosomatic disease, or laziness. They are often treated for a year or more before the correct diagnosis is made. Later, many simple schizophrenics turn into tramps, hoboes, or beatniks. They become increasingly shallow in their emotional responses and are quite content to drift aimlessly through life as long as they are left alone.

Although the patients appear to be indifferent to

their environment, they may react with sudden rages to persistent nagging by members of their family. The immediate reason for admission of a simple schizophrenic to a hospital is often an outburst of violence directed against his mother for a very trivial reason. Further questioning invariably brings out the fact that the parents had been greatly upset over the patient's neglect of his personal appearance and his peculiar way of life and had many times admonished him, sometimes with threats, to conduct himself in a more acceptable manner.

An unmarried man, 27 years old, was brought to the mental hospital because he had on several occasions become violent toward his father. For a few weeks he had hallucinations and heard voices. The voices eventually ceased, but he then adopted a strange way of life. He would sit up all night, sleep all day, and become very angry when his father tried to get him out of bed. He did not shave or wash for weeks, smoked continuously, ate very irregularly, and drank enormous quantities of tea.

In the hospital he adjusted rapidly to the new environment and was found to be generally cooperative. He showed no marked abnormalities of mental state or behavior, except for his lack of concern for just about anything. He kept to himself as much as possible and conversed little with patients or staff. His personal hygiene had to be supervised by the nursing staff; otherwise he would quickly become dirty and very untidy.

Six years after his admission to the hospital, he is described as shiftless and careless, sullen and unreasonable. He lies on a couch all day long. Although many efforts have been made to get the patient to accept therapeutic work assignments, he refuses to consider any kind of regular occupation. In the summer he wanders about the hospital grounds or lies under a tree. In the winter he wanders through the tunnels connecting the various hospital buildings and is often seen stretched out for hours under the warm pipes that carry the steam through the tunnels.

Simple schizophrenics may resemble pathological personalities of the inadequate or schizoid type. But the distinguishing fact is that simple schizophrenia makes its appearance at some time during or after puberty and from then on, as a rule, goes on to pronounced deterioration; personality deviations usually commence earlier and then remain the same over the years.

Schizoaffective type. In the schizoaffective type of schizophrenic reaction there is a strong admixture of either depressive or euphoric affect with an otherwise definitely schizophrenic symptomatology. Schizoaffective patients may be deeply depressed, retarded, and suicidal; at the same time, they may express absurd delusions of persecution, complain of being controlled by outside forces, and have a distinct schizophrenic thought disorder. Or patients with similar schizophrenic symptoms may be euphoric, playful, distractible, and overactive. In the diagnosis of these cases the schizophrenic symptomatology takes precedence over the affective symptoms.

The prepsychotic personality of patients falling into the category of schizoaffective psychosis is not always typically schizoid. The prognosis of patients diagnosed as schizoaffective is generally better than that of other schizophrenics and generally worse than the prognosis of manic-depressives.

Latent reaction and residual state. Latent schizophrenia is diagnosed in those patients who may have a marked schizoid personality and who show occasional behavioral peculiarities or thought disorder, without consistently manifesting any clearly psychotic pathology. It is also known as borderline schizophrenia.

Residual schizophrenia is similar to latent schizophrenia. But latent schizophrenia is the stage prior to a schizophrenic breakdown, and residual schizophrenia is the state following the attack. Residual and latent schizophrenia are also known as ambulatory schizophrenia.

Childhood schizophrenia. Childhood schizophrenia is diagnosed when schizophrenia makes its appearance before puberty. Schizophrenia can occur in very young children and can even be diagnosed in infants. The prognosis for persons who develop schizophrenia before puberty or in their early teens is poor. Fortunately, this type is relatively rare.

Childhood schizophrenia presents somewhat different symptoms from schizophrenia in later life. It often manifests itself in young children as autism. Autistic children often show certain abnormalities of motor behavior and muscular tone in their 1st year of life and become arrested in their development during their 2nd or 3rd year. The most pronounced feature of infantile autism is a lack of normal communicative behavior. In spite of normal intelligence, autistic children may not learn to speak until they are 5 or 6 years old, and they never play normally with other children. They often do not respond normally to their mothers' affections or to any tenderness. They cannot clearly distinguish between animate and inanimate objects and consequently lack the normal childhood interest in pets and other animals. Their behavior is often repetitive and stereotyped.

Most schizophrenic children have a disturbed body image; they may, for instance, literally not know where their feet are. They may show poor motor coordination and many exhibit peculiar motor behavior, such as spinning and twirling. For Bender, schizophrenia in childhood is characterized primarily by a primitive plasticity, that is, uneven development caused by a maturational lag at an embryological level. According to Bender, much of the patterning of the schizophrenic child closely resembles that of the fetus. In childhood schizophrenia, homeostatic mechanisms are deranged to an even greater degree than in adult schizophrenia. In contrast to adult schizophrenics, the sleep of schizophrenic children is frequently disturbed. Older schizophrenic children who are not autistic are sometimes intellectually brilliant and precocious, but they fail to establish normal relationships with people and objects in the world around them.

Stephen was an alert baby but easily startled and perplexed. He started to talk at 10 months but did not walk until he was 21 months old. He had a hard time getting along with the

other children in kindergarten. The teacher thought his hearing was impaired. This was investigated and it was established that his hearing was normal. In school it quickly became evident that he could not attend regular classes because of his restless and peculiar behavior; he poked other children without any reason and kept repeating senseless phrases.

The boy went to special schools, but even there he failed to adjust. He easily lost his orientation and was liable to wander out onto the street and get lost. He was always careless in traffic. He tore his hair out compulsively. His parents were unable to control him. He compulsively had to touch people, often broke out into silly laughter and then became verbally aggressive without any apparent reason. He would hit his head against the wall, and occasionally he broke windows or tried to break the television set.

In spite of intensive psychiatric therapy and residential treatment in special schools, he made no progress and at the age of 15 was admitted to a mental hospital, where, over the last 5 years, he has received intensive courses of pharmacotherapy and electroconvulsive treatment as well as individual psychotherapy and milieu therapy. All these approaches have resulted only in insignificant improvement. He is now less impulsive and not quite so repetitive in his behavior, but he still pulls his hair out, tends to wander about aimlessly, repeats certain phrases stereotypically. He is much friendlier than he used to be, but he still fails to establish normal relationships with other people.

Late schizophrenia. Although schizophrenia is typically a disease of adolescence and young adulthood, it may, particularly in its paranoid form, make its first appearance in the 5th, 6th, or even 7th decade of life. Roth has described a group of late paraphrenias, functional psychoses that occur in aged individuals and in many ways resemble paranoid schizophrenia. German psychiatrists classify as late schizophrenics many psychotics who, in America, would be diagnosed as suffering from involutional psychosis.

Pseudoneurotic schizophrenia. In 1949 Hoch and Polatin described a clinical variety of schizophrenia to which they gave the name pseudoneurotic schizophrenia. Pseudoneurotic schizophrenics are, as the name implies, patients who present predominantly neurotic symptoms and who are usually treated for years as psychoneurotics. But on close and careful examination, they may reveal schizophrenic abnormalities of thinking and emotional reaction. Sometimes these are so well compensated that it is all but impossible to demonstrate them in clinical examinations, in psychological tests, or even in the history.

The pseudoneurotic schizophrenic is characterized by: (1) his lack of response to years of psychiatric treatment that would have produced improvement in most psychoneurotics, (2) a strange, all-pervading anxiety and a constant preoccupation with sexual problems. The diffuse pan-anxiety is probably the most specific diagnostic criterion.

Pseudoneurotic schizophrenics may have phobias, but these are not fixed and may amorphaously affect all areas of life over a period of time. Unlike patients suffering from anxiety neurosis, the pseudoneurotic schizophrenic's anxiety is always free-floating and hardly ever subsides, even temporarily.

The existence of this diagnostic category of schizophrenia has been contested by some psychiatrists, but

it is widely accepted on the North American continent. Its acceptance may have the practical value of re-orienting the therapeutic strategy in certain patients from unsuccessful psychotherapy to physical treatment methods, in particular, pharmacotherapy.

A 34-year-old single man has been hospitalized in a mental hospital for 1½ years. His main complaints are: "I feel panicky and very upset inside.... I am afraid something inside me might explode; and I might do something bad.... I feel depressed all the time.... I couldn't hold a job now if I did get one.... My head feels funny inside.... I always feel tense, sometimes I feel like two persons, sometimes I feel that everybody's against me...."

He was one of four children born into a family where all the members had fairly close relationships with each other and no major problems seemed to exist. Although he was always bright and considered to be the most talented of the four children, he failed his 3rd year of high school and blamed his difficulty on one teacher. He went to a special tutorial school and later obtained his B.S. with honors in chemistry at the age of 24. He got along well with his peers and participated actively in boxing, swimming, and singing.

In the 7 years after he graduated from college, he held at least nine different jobs. Several companies where he worked were sufficiently impressed with his ability to offer him special training. Various reasons were offered for the termination of his employment—not getting along with other staff, poor work, better prospects elsewhere, accidents to company cars, simply leaving the job, and personal difficulties. He was often unemployed. On one occasion he worked as an orderly in a hospital.

In spite of his apparently good social adjustment as a child, he says that he has never really enjoyed life and that he is always anxious with people. However, he has never manifested any clearly psychotic symptoms such as hallucinations, delusions, thought disorder, or irrational behavior.

At the age of 27 he felt acutely ill for the first time, following an episode of intense petting with his girl friend. "I was afraid of exploding.... afraid of doing something awful. Just generally tense." He was treated for a few weeks at a psychiatric clinic. Then he went to another city and worked for a short time but soon had to return home and to the psychiatric clinic. He now complained of a pulling sensation in the left side of his head.

Since then he has had 2 years of intensive psychotherapy, several courses of continuous sleep treatment, somnolent insulin therapy, several courses of electroconvulsive treatment, and prolonged treatment with a variety of minor and major tranquilizers.

He is now under close observation because of repeated suicidal threats and a few superficial suicidal attempts. He is convinced that he has some physical brain disease that is responsible for his constant tension, and he insists that some neurosurgery should be done to correct this. (Repeated neurological investigations have not revealed any lesion.) His spontaneous activity consists solely in reading the paper and watching television. He says he is too anxious to remain in any occupational setting for longer than a few days, after which he either asks for a new assignment or claims he is too weak to work at all.

Onciroid states. Oneiroid states in schizophrenic patients were first described by Mayer-Gross. In the oneiroid state the patient feels and behaves as though he is in a dream. (*Oneiros* is the Greek word for dream.) He may be deeply perplexed and not fully oriented in time and place. During this state of clouded consciousness, he may experience feelings of

ecstasy and rapidly shifting hallucinated scenes. Illusionary distortions of his perceptual processes, including disturbances of time perception, are common, and the symptomatic picture may resemble that of an hysterical twilight state. It is during such oneiroid reactions that the observer can most clearly observe the schizophrenic's peculiar "double bookkeeping," as Bleuler has called it. Here, the patient may be convinced that he is travelling through space on a satellite and, at the same time, conscientiously follow the regular hospital routine. The oneiroid schizophrenic will acknowledge everyday realities but will give priority to his world of hallucinatory and delusional experiences, whereas the normal person with a vivid fantasy life will always give priority to contingencies of reality. Oneiroid states are usually limited in duration and occur most frequently in acute schizophrenic breakdowns.

A 35-year-old married man was treated in a psychiatric hospital for an acute schizophrenic breakdown, from which he recovered in 2 months. Later he gave the following description of his experiences: "I had a horrible waking nightmare. I saw a large figure of a crude Stone Age man. It seemed to be a spirit figure. This frightened me, and I got out of bed and ran. As I got to the figure, I passed out. I found myself floating in the air in a spiritual body. I was terrified. In the morning I found myself at the foot of a stairway with no idea how I had gotten there. Then new very strange visions appeared. I had always had a very good imagination and an excellent talent to build pictures in my mind. Now I found life was changed completely. Before, it had been full of beauty and color. Now it was dull and uninteresting. Dreams were all nightmares. They were all about murder, suicide, and similar things. I found I could forecast the future and had many spiritual experiences. The impossible had become commonplace in my life. I was sure that any thought I had would affect somebody."

After a 20-year-old woman, a college student, had recovered from her schizophrenic breakdown, she wrote the following description of her experiences during the oneiroid phase:

This is not how I remember it. The road has changed. It is twisted and it used to be straight. Nothing is constant—all is in motion. The trees are moving. They do not remain at rest. How is it my mother does not bump into the trees that are moving? I follow my mother. I am afraid, but I follow. I have to share my strange thoughts with someone. We are sitting on a bench. The bench seems low. It, too, has moved. "The bench is low," I say, "Yes," says my mother. "This isn't how it used to be. How come there are no people around? There are usually lots of people and it is Sunday and there are no people. This is strange." All these strange questions irritate my mother who then says she must be going soon. While I continue thinking I'm in a kind of nowhere....

There are no days; no nights; sometimes it is darker than other times—that's all. It is never quite black, just dark gray. There is no such thing as time—there is only eternity. There is no such thing as death—nor heaven and hell—there is only a timeless—hateful—spaceless—worsening of things. You can never go forward; you must always regress into this horrific mess....

The outside was moving rather swiftly, everything seemed topsy-turvy—things were flying about. It was very strange. I wanted to get back to the quiet very badly but when I got back I couldn't remember where anything was (e.g. the bathroom)....

Suicide and Homicide

Suicide. Suicide in schizophrenia is a danger that must never be forgotten. More schizophrenics than manic-depressives commit suicide, despite the fact that the risk of suicide is relatively greater among manic-depressives. A schizophrenic may commit suicide because he is deeply depressed, for instance, during a schizoaffective reaction. Or he may kill himself simply in response to relentless commands he is receiving from his hallucinatory voices. One schizophrenic who had jumped to the street from a third floor balcony sustained several fractures but lived to tell us that for many days a man's voice had told him persistently to jump out of a window. He did not want to die, and he resisted the voice as long as he could, but he finally had to yield to its demands.

Some chronic schizophrenics have unpredictable suicidal impulses during brief spells of dejection. In a large mental hospital one or two chronic schizophrenics a year will make serious—and often successful—attempts at suicide. In many cases the psychiatrist and the nurses who had known the patient for a long time are unable, in retrospect, to recognize any change in his condition that might have been considered a warning of the impending tragedy.

Probably the greatest number of schizophrenic suicides occurs among those suffering from incipient schizophrenia. Sometimes, when the disease is in an early stage of development, even the victim's family and best friends have virtually no inkling of the terrible problem with which the patient is grappling. Many of the unexplained suicides among students on a university campus are probably committed by young persons who have become aware of a malignant, insidious process that threatens to destroy their minds. Rather than seek psychiatric treatment or confide feelings of uncontrollable disintegration to their friends, they choose to end their lives.

The following is an example of an unpredictable suicide in a schizophrenic who had been responding to psychiatric treatment:

The patient had been an autistic child and did not speak until he was 7 years old. He had responded well to psychiatric treatment, and at age 13 his I.Q. was reported as 122. At age 17, he became violent toward his parents, shaved all his hair off, and made such statements as, "I like bank robbers knocking people unconscious" and "I think tough gangs are funny because they beat down people." While saying this, he laughed loudly. He was admitted to a mental hospital, where he responded with definite improvement to pharmacotherapy and psychotherapy, and he went home regularly for weekends.

He left various notes on his desk before committing suicide. Among these notes was an 8-page list giving 211 "inexcusable mistakes throughout my life." Each one was dated, for example, "1952, 2nd of November: throwing up in my friend's house on a shoe-box. 1953, 17th August: accidentally wearing a watch that wasn't water-proof in the bath-tub. 1956, 23rd of September: slamming back-door of Meteor after getting in."

He then proceeded in his notes to give "the causes of the mistakes": "Montreal having a mountain; I have a receding hair-line; my height since I was nine years old; Canada having

two languages..." He also wrote: "My feeling of tension since 1962 is getting worse most of the time. I planned the date of my death without the slightest trace of emotion..."

The boy hanged himself at age 18 in the family garage. An experienced psychiatrist who had repeatedly interviewed him noted no signs of depression only a week before.

Homicide. One of the most serious problems a psychiatrist may have to face is the assessment of the possibility or probability that one of his patients may commit homicide. This dilemma has few parallels in medicine because it involves the life of other healthy persons as well as the welfare of his own patient.

This writer, in reviewing nearly 25 years of psychiatric practice devoted primarily to the treatment of psychotics, has found that 25 persons have been killed by psychotic patients he had either known or treated personally. This averages to 1 healthy person per year killed by psychotics, most of whom were schizophrenics. Even if one keeps in mind that some psychotics killed 2 or 3 victims and that the population from which this sample of homicidal psychotics was drawn numbers about 10,000 psychotic patients, this figure is still frighteningly high.

Unfortunately, it is exceedingly difficult to prevent most schizophrenic homicides, since there is usually no clear warning. Most of them come as a horrible surprise. Patients who are known to be paranoid with homicidal tendencies are not allowed to move about freely as long as they retain their delusions and their aggressive tension. But, like the patient who hanged himself without previously manifesting any observable tension or depression, the homicidal schizophrenic patient may appear to be relaxed, even apathetic, and within a day or two kill somebody without any clear warning.

A schizophrenic man who had been going home on weekends for many months was told by his sister that she would not ask for permission any more to take him out of the hospital if he would not do his part with the housework in the future, for instance, help with the dishes. On the next weekend visit, the patient killed his sister and mother. He had shown no signs of disturbance whatsoever during the preceding week, had been sleeping well, and had been attending occupational therapy classes as usual. If anything, he had appeared somewhat more indifferent than usual.

A 19-year-old boy who had been discharged from a mental hospital in what appeared to be a residual state of chronic schizophrenia of the undifferentiated type stabbed his father to death when the latter, during a state of intoxication, told the patient that he was too much of a bother around the house and that he might as well return to the hospital.

Another schizophrenic, whose condition had not yet been diagnosed, complained to a general practitioner about various physical ailments. When the physician finally told him that he should not come anymore because there was nothing else he could do for him, the patient quietly left the office but returned a few hours later and killed the doctor.

Rejection. A careful analysis of these unpredictable suicides and homicides leads one to conclude that the most significant single factor in many of them was a traumatic experience of rejection. The schizophrenic's pathological sensitivity makes him extraordinarily vul-

nerable to all common life stresses. Rejection, particularly by members of his own family, seems to be more traumatic to him than most other stresses. The act of rejection may seem very trivial and is often not deliberate on the part of those who reject the patient. They are, in fact, practically never aware of it, and the patient may not show any immediate reaction to the rejection at the time.

The schizophrenic patient who committed suicide in his family's garage killed himself during a weekend when his parents had gone away for a 10-day trip. They had at first promised to take him along. Then they reversed their decision and went alone. The patient was interviewed about the effects of this particular disappointment and did not reveal any particular reaction to it. In retrospect, however, it appears that his parents' implied rejection of him may have been at least the precipitating factor for his suicide.

It may be significant that three of the schizophrenic patients who committed homicide harbored the delusion that their parents were foster parents rather than real parents. This delusion in itself seems to reflect a deep-seated feeling of rejection by the parents.

Changing Symptoms

Do schizophrenic patients behave in the same way all over the world? Do schizophrenic symptoms change as times change? These interesting questions are being studied by the new discipline of comparative or transcultural psychiatry.

In 1904 Kraepelin studied the manifestations of dementia praecox in a mental hospital in Java and came to the conclusion that the incidence of schizophrenia was as high in Java as it was in Europe. But its clinical manifestations were distinctly different. The Javanese natives showed fewer paranoid symptoms and had fewer auditory hallucinations. Kraepelin attributed this finding to cultural differences and to the fact that at that time the abstract thinking of most natives in Java was still relatively undeveloped.

Today it is generally accepted that cultural influences determine to a significant extent the actual manifestations of a mental illness. Cultural differences are distributed in two dimensions: geographical and historical.

Geographical differences. In some European countries, the catatonic form of schizophrenia is the most common form; in the United States, paranoid schizophrenic reactions are the most common. In Brazil and in Africa there is a remarkably low incidence of the paranoid form of schizophrenia and a much higher incidence of hebephrenic schizophrenia than in Europe and the United States. In general, it appears that paranoid reactions prevail among schizophrenics from more differentiated cultural spheres, and catatonic reactions occur more frequently in less developed cultures.

Murphy et al. reported that visual and tactile hallucinations seem to be more common among the

schizophrenics of the Near East and Africa. The same authors found that religious delusions are noted most frequently among Christians, less frequently among Buddhists, and least frequently among Hindus. Catatonic mannerisms and catatonic stupor are more often seen in rural populations than among urban dwellers. Ideas of grandeur and delusions about the end of the world also occur more frequently in the rural population, particularly among schizophrenics belonging to the Christian faith. These studies established that hebephrenic reactions are comparatively common in Japan and Okinawa and that the simple type of schizophrenia is more common in Asia than in the European-American sphere. Catatonic negativism and catatonic stereotypies are more prevalent in India and South Africa than in European and American countries.

Spitzer compared hospitalized schizophrenic patients in Kentucky with matched samples of schizophrenics in New York. He observed that schizophrenics in Kentucky were more likely to present symptoms of decreased communication, denial of illness, and impaired grooming; schizophrenics in New York clearly showed more affective symptoms than the less sophisticated sample of schizophrenics in Kentucky.

Historical differences. Recent studies have established clearly that the changing *Zeitgeist*—the historical changes in philosophical, religious, technical, moral, and political value systems—has a significant influence on the relative frequency of individual schizophrenic symptoms. Several investigators have observed, for example, that the catatonic form of schizophrenia is gradually becoming less frequent in the United States.

Lenz analyzed the case records of 430 patients who had been hospitalized in Austria during the period between 1856 and 1955. His findings show a decrease of religious guilt feelings in schizophrenia in the second half of this period, although the total proportion of guilt feelings, including those toward other persons, had not changed. The frequency of hypochondriacal ideas and preoccupations did not change throughout the whole period and remained quite stable, at about 25 per cent, among the schizophrenics.

On the other hand, schizophrenics today are definitely less aggressive than they were 50 years ago. It is not clear whether this reduced aggression reflects a true change in the character of schizophrenia or whether it is the result of more effective, early therapeutic control methods. Visual hallucinations decreased, and auditory hallucinations increased significantly in the last half of the period. Delusions of grandeur increased for a while during the First World War and again during the Second World War but have been in a general decline over the years. Delusions of witchcraft and other magic influences have become less frequent, and ideas about being hypnotized or being influenced by radiation and electricity

have definitely increased in frequency in recent years. In the same study it appeared that experiences of being passively influenced by anonymous agencies—"They are reading my thoughts"—have become more frequent in recent times, but delusions of having a mission or being a martyr are less frequent today. In general, there is apparently a definite tendency for the contents of delusions to become more realistic, sober, plausible, and anonymous.

In a similar study on schizophrenics in Finland, Achte compared the psychopathology of 100 schizophrenics in the years 1900, 1930, and 1960. He found that negativism, mutism, and stupor had shown a marked decrease in every 30-year period, from 22 to 2 per cent in the 60 years covered by the study. Religious delusions decreased from 20 to 10 per cent. But physical and technical delusions increased from 12 to 31 per cent. Achte also found an increase of delusions involving telepathy and hypnosis. The same investigator examined 200 schizophrenic case histories between 1933 and 1955. He found that the paranoid form of schizophrenia had significantly increased and the catatonic form decreased during these 22 years, but the percentage of hebephrenic reactions had remained the same.

Examining a group of recently hospitalized schizophrenics in 1942 and a comparable sample in 1962 in the Montreal area, Lehmann et al. observed that the incidence of delusions and hallucinations had not changed, but suicidal preoccupation had significantly decreased in the later group.

Most researchers agree that delusions of being controlled or being poisoned have not been influenced by historical or cultural changes. They seem to represent a stable core of schizophrenic pathology that remains the same in various parts of the world and in different periods of time.

Even if not all of these findings are valid, there seems to be little doubt about certain general trends. These would include a decrease of catatonic reactions and an increase of paranoid reactions among schizophrenics belonging to more sophisticated cultural groups, a decrease of supernatural delusions and an increase of delusions involving modern technical and scientific apparatus. In the Middle Ages delusions of persecution were invariably attributed to witchcraft and the devil; in the 19th century they involved magnetism and mesmerism; later they centered on hypnosis and telepathy; still later, x-rays, radio, and radar came into the picture, followed by television and finally, atomic rays from artificial satellites. The thread linking all of them is that they involve mysterious, invisible forces operating from a distance.

Diagnosis

There are no objective criteria for the diagnosis of schizophrenia. Few psychiatrists anywhere would disagree on the diagnosis of severely regressed, chronic, or very typical acute schizophrenics. But there are

many psychotic patients in whom there remains at least some doubt about the diagnosis. Certain schools of thought, theoretical or philosophical biases, and even diagnostic fashions may have an important influence on the diagnosis. European psychiatrists accuse their North American colleagues of making the diagnosis of schizophrenia too frequently. They have even referred to this penchant as "schizophrenomania." Epidemiologists are puzzled by the fact that in the United States the incidence of manic-depressive psychosis has greatly decreased in the last 20 years, but it does not seem to have changed significantly in the rest of the world. Does this development reflect the influence of some unknown factors that have brought about a true decrease of manic-depressive psychosis in the United States? Or is it because in recent years it has become customary in the United States, unlike most other countries, to diagnose schizophrenia more frequently than it was diagnosed previously?

It cannot be denied that there is in North America a greater tendency to diagnose schizophrenia than in other countries, which could easily explain the decrease in numbers diagnosed as manic-depressive. This tendency may, in turn, be explained by the fact that many psychiatrists take it for granted that a patient who is hallucinating or expresses paranoid delusions must be schizophrenic if no organic brain disease can be detected. Yet, the presence of delusions and hallucinations confirms the diagnosis only of psychosis, not of schizophrenia. These symptoms indicate a serious loss of contact with reality, a principal criterion for the diagnosis of a psychotic condition that may or may not be schizophrenic. However, it is well known that between 15 and 25 per cent of manic-depressive patients may have hallucinations or delusions. Weibrecht has recently reviewed the confusing situation relative to the psychopathology of schizophrenia and depression and has drawn attention to the fact that symptoms of definite schizophrenic coloring today quite frequently occur in cyclothymic depressions. There are other nonschizophrenic psychiatric conditions—such as paranoid states, involutional psychoses, hysterical twilight states—where delusions and hallucinations may also occur.

To diagnose schizophrenia simply on the presence of delusions and hallucinations is like making the diagnosis of a coronary occlusion only on the basis of pain in the chest or the diagnosis of typhoid fever only on the presence of a sustained pyrexia. Single symptoms should certainly *suggest* the diagnosis of conditions in which such symptoms frequently occur. But unless there are specific, conclusive tests for the existence of certain disease processes, a final differential diagnosis must be based on the whole clinical picture.

Unfortunately, the diagnosis of schizophrenia cannot be made solely on the basis of observation or reasoning or measurement. It still involves a careful and comprehensive clinical evaluation. Such an evaluation must take into account the presence or absence of cer-

tain schizophrenic key symptoms, the patient's prepsychotic personality, the physical findings, the genetic family history, the various aspects a good, clinical anamnesis might reveal about the natural history of the disease and any possible precipitating factors.

Key symptoms. The presence of some key symptoms for schizophrenia as described by Bleuler and Schneider—for instance, blunting of emotional responses or a strikingly inappropriate emotional response—would weigh heavily in favor of a diagnosis of schizophrenia. But what is "emotional blunting," and what is an "inappropriate emotional reaction"? Is the embarrassed adolescent's sheepish or defying smile an inappropriate emotional reaction, for example? It requires considerable clinical experience to be certain about the presence of such symptoms.

Perceptual disorders. What other factors can serve as the basis for a diagnosis of schizophrenia? Sensory and perceptual disorders, such as hallucinations, may give good diagnostic clues. However, not all hallucinations indicate a schizophrenia. There are very important qualifications regarding the modality, the time, and the content of the hallucination. Experiences of being controlled by outside forces or of having strange, continuous, somatic (cenesthetic) hallucinations or auditory hallucinations, particularly if the voices are coming from God or the devil, may indeed support a diagnosis of schizophrenia. Perceptual distortions of time or objects in space point toward a diagnosis of schizophrenia, but only if they have been present at least several days; otherwise, they may well be of toxic origin. The same time factor applies to the symptoms of loss of ego boundaries, the experience of being fused with the universe and of having one's thoughts spread to others.

Loosening of associations. The loosening of associations—the specific thought disorder of the schizophrenic—is, perhaps, one of the most valuable diagnostic criteria. But a good knowledge of psychopathology is required to be sure of its presence and to avoid confusing it with other forms of disturbed thinking, such as manic flight of ideas, confused disintegration of thought processes, and impaired reasoning due to fatigue or distraction. It is obviously not sufficient to ask a patient the meaning of a proverb and then, on the basis of one's personal impression, declare that the patient has a pronounced schizophrenic thinking disturbance.

Delusions. The presence of delusions provides strong presumptive evidence for schizophrenia if these delusions have strange, magical, esoteric, or bizarre contents. A person who is convinced that he is deliberately discriminated against by his foreman at the factory or that his wife is running around with other men, or even that his wife is trying to poison him may have paranoid delusions, but they are not necessarily due to schizophrenia. On the other hand, a man who is convinced that he is the victim of a Pentagon-directed plot to destroy his brain by special death rays beamed

at him from space satellites or that he is the Virgin Mary expresses delusions that, by their very bizarre character, point definitely in the direction of schizophrenia.

Bizarre behavior. The patient's behavior may furnish significant clues for the diagnosis of schizophrenia. Bizarre postures and grimacing certainly are characteristic of schizophrenic conditions, but what constitutes a bizarre posture is not always easy to establish unequivocally. Religious rituals and special praying positions or rock-and-roll dancing or ataxia with which the observer is not familiar might be called bizarre. On the other hand, true catalepsy may be almost pathognomonic of schizophrenia. A stupor is highly suggestive of catatonic schizophrenia, but hysteria or a depressive stupor must be carefully ruled out in the differential diagnosis.

Deterioration of social habits, even involving smearing of feces, is certainly not sufficient grounds for the diagnosis of schizophrenia. Such deterioration can occur in various toxic and organic psychoses, temporarily in hysterical twilight states, and even at the peak of a manic attack in manic-depressives.

Pronounced social withdrawal also occurs under many conditions ranging from simple sulking to anxiety and depression. Sustained passivity and lack of spontaneity should suggest the diagnosis of schizophrenia only if organic and depressive conditions can definitely be ruled out.

Stereotypies and verbigeration strongly suggest schizophrenia. But they occur almost exclusively in chronic conditions. Frequent and lengthy staring into a mirror and other odd mannerisms are also highly suggestive of a diagnosis of schizophrenia.

Praecox feeling. Rümke insists that the only valid diagnostic criterion is the "praecox feeling." This feeling consists in an intuitive experience by the examiner that determines whether or not it is possible to empathize with the patient. Rümke believes that only those patients whose emotional distance makes it impossible to establish an empathic rapport should be diagnosed as schizophrenic; all other conditions should be regarded as schizophreniform. The acceptability of Rümke's approach was demonstrated in a study of 1,000 psychiatrists, in which 54 per cent declared that the praecox feeling was a reliable criterion for making a diagnosis of schizophrenia.

However, at this stage of our knowledge it would appear to be unwise to substitute a single subjective approach for a whole range of other traditional, clinical skills. It would be equally unwise to follow a purely actuarial approach to the question of diagnosis by relying entirely on factor analysis and cluster analysis of rating scale items or test results.

Prepsychotic personality. A clinical evaluation must always consider the patient's prepsychotic personality. The typical but not invariable history is that of a schizoid personality: quiet, passive, with few friends as a child; day-dreaming, introverted, and

shut in as an adolescent and adult. The child is often reported as having been especially "good" because he was always obedient and never in any mischief. In school he was good in spelling but poor in arithmetic. He made few friends as a child, and his deficient friendship pattern was particularly noticeable in adolescence. The typical schizoid adolescent has few dates, does not learn to dance, and, as a rule, has no close boy friends or girl friends. He is not interested in petting or other heterosexual activities but is often disturbed about masturbation. He avoids all competitive sports, but he likes to go to the movies, watch television, or listen to hi-fi music. He may be an avid reader of books on philosophy and psychology.

The work history of many schizophrenics is characteristic. They may have had many different jobs but held none for long. It is usually difficult to ascertain why they did not stay longer in any position. The reasons given are usually vague, and neither the patient nor, in many cases, the employer can explain exactly just what happened. But it appears that everybody—the patient, his employer, the people with whom he worked—were all somehow uncomfortable while he was working. Perhaps the patient was careless in his work, came in late, and made frequent mistakes. He may have made an unfavorable impression at times when there was not much to do by failing to create at least the appearance of being busy. Or maybe he simply could not stand the presence of the people with whom he had to work; they irritated him or made him anxious or suspicious. It is not unusual in these cases for a patient to change jobs 10 or more times in 1 year.

Origin and outcome. Two of the principal criteria that Kraepelin established for his diagnosis of dementia praecox—its endogenous origin and the outcome in deterioration—are still valid, although limited in their applicability. An endogenous origin may be obscured if stressful events precipitated, but did not cause, the final breakdown. In most cases a psychiatrist must make a diagnosis before the patient has deteriorated.

The concept of schizophreniform psychoses that Langfeldt introduced—splitting schizophrenia into schizophreniform psychoses and true process schizophrenia—seems to amount to a return to Kraepelin's old dementia praecox concept. It is certainly not justified to change the diagnosis of a patient diagnosed as schizophrenic simply because he recovered from his symptoms after 2 or 3 weeks of therapy. Even the 3-day schizophrenias—acute, psychotic breakdowns with schizophrenic symptoms that remit in a few days—may well be benign but *true* forms of schizophrenia rather than pseudoschizophrenic reactions, as they are sometimes called.

Rado sees schizophrenia as a breakdown of adaptive struggles and interprets the clinical forms of schizophrenia as developmental stages of schizotypal behavior: compensated, decompensated, disintegrated, and deteriorated. In compensated schizotypal behav-

ior, patients may go through life without a breakdown. Decompensated schizotypal behavior is similar to the clinical picture of pseudoneurotic schizophrenia. Disintegrated schizotypal behavior manifests itself as an overt, schizophrenic psychosis. Finally, deteriorated schizotypal behavior is marked by a progressive cessation of function and an almost complete withdrawal from the adaptive task.

Differential diagnosis. A clinical evaluation for the purpose of establishing a diagnosis should take into account four major parameters: (1) the patient's prepsychotic personality, (2) the endogenous origin, (3) the typicality of the psychotic symptoms, and (4) the outcome.

For instance, in a patient whose personality structure has not been schizoid and whose breakdown occurred in close relation to some traumatic experience, the symptomatology should be very typical if a diagnosis of schizophrenia is to be made. Since the outcome of the psychosis is not yet known and the prepsychotic personality and endogenous origin are not clearly established, schizophrenic symptoms must be particularly convincing.

On the other hand, if the history is that of a typical shut in personality, in whom the psychotic breakdown occurred without any preceding stress situation, the symptoms would not have to be extremely characteristic in order to defend a diagnosis of schizophrenia. Of course, if there is already evidence of personality deterioration after the acute symptoms have subsided and a year or two have passed, the outcome would be the overriding parameter in the diagnostic evaluation. A less skilled observer may be confused by the presence of a number of common but nontypical symptoms accompanying schizophrenic breakdowns.

Hysterical symptoms, for example, are not uncommon in acute schizophrenic breakdowns; thus the presence of hysterical dissociative or even conversion symptoms does not rule out a diagnosis of schizophrenia. Every schizophrenic breakdown is preceded by a period of marked tension and anxiety, which may last only a few days or may extend over many months. During the acute and subacute stages of a schizophrenic attack, anxiety and depression may color the clinical picture significantly, again without excluding the overruling diagnosis of schizophrenia, which in such cases has not yet diminished the patient's emotional reaction to the onslaught of the psychotic attack. Obsessive symptoms are commonly observed in schizophrenic conditions and an obsessive-compulsive clinical picture can develop into schizophrenia.

The differential diagnosis between schizophrenia and manic-depressive psychosis should, as a rule, not present many difficulties. The behavior of an excited catatonic patient is directed primarily by his own qualitatively disordered mental processes. His actions are unpredictable and appear senseless, his affect is difficult to understand, and his verbal productions may be irrational and incoherent. A manic patient, on

the other hand, is always distractible, and most of his actions are determined by his immediate environment. His activity resembles that of an excessively busy person, rushing from one superficial job to another. His affect is clearly one of playful euphoria or angry irritability, but always outgoing and expansive. His verbal productions are accelerated and increased in number, and they reveal a quantitative disorder of association processes rather than the intrinsic, qualitative thought disorder of the schizophrenic.

Similarly, depressive conditions should never be diagnosed as schizophrenic unless there are also some unmistakably schizophrenic symptoms present. To illustrate, in schizoaffective reactions, which resemble manic-depressive conditions, the presence of clearly schizophrenic symptoms, such as schizophrenic thought disorder, places these reactions in the diagnostic category of schizophrenia.

The author's own observations do not confirm the widely accepted psychiatric teaching that a diagnosis of manic-depressive psychosis is often changed later to one of schizophrenia but that the opposite never occurs. During more than two decades at a psychiatric hospital serving the entire English-speaking population of the bilingual Canadian province of Quebec, he has many times changed an early diagnosis of schizophrenia made during the first one or two attacks into a diagnosis of manic-depressive psychosis during subsequent psychotic breakdowns.

Any psychiatric disorder that occurs during adolescence assumes a certain schizophrenic coloration, since many of the features characteristic of nonschizophrenic adolescent turbulence—exaltation, intense preoccupation with abstract ideas, unpredictable variations of mood, day-dreaming, introspection, shyness—are often seen in schizophrenia. Therefore, it is not unusual to misdiagnose a manic or depressive phase of manic-depressive psychosis as schizophrenia if the patient's first attack occurs in late adolescence. Also, the usual rule that manic-depressive psychosis does not occur at this early an age simply does not always hold true. Later recurrences of this mental disease may cease to display symptoms resembling schizophrenia, and the correct diagnosis can then be made.

Finally, the patient's body build, prepsychotic personality, and family genetics are also helpful in making a differential diagnosis.

Psychological Tests

Psychological tests may serve as valuable aids in the diagnosis of schizophrenia, although they can hardly ever establish this diagnosis by themselves, that is, divorced from the clinical findings. There are no psychological tests for schizophrenia comparable to the definitive biological or immunological tests for pregnancy or syphilis. There are only psychological tests which are more or less *compatible* with a diagnosis of schizophrenia, making the diagnosis more or less probable.

It must be remembered that the clinical psychologist uses his test instruments to arrive at diagnostic classifications which were originally derived from purely clinical observation. The clinical psychologist's tests differ from clinical observation by the fact that, unlike the psychiatrist's observation and interview, the method of test administration is uniform and the final evaluation of the test findings is based on statistical standardization. At least, this is true for psychometric test instruments. Projective tests are much less objective and, therefore, also less reliable, although they may provide more valuable information than psychometric tests.

The specific diagnosis of schizophrenia is made by the clinical psychologist on the basis of a composite of test results. Certain specific patterns of psychological dysfunction carry a high diagnostic index value for schizophrenia. Some single components of the over-all test pattern may be almost pathognomonic for schizophrenia, e.g., bizarre confabulations, and others may only have some supportive value in a general pattern of malfunctioning, e.g., lack of concentration.

In most clinical centers certain psychological test batteries are routinely employed to indicate, confirm, or rule out a diagnosis of schizophrenia. These test batteries are usually composed of projective tests as well as psychometric tests. The most frequently employed projective tests are the Rorschach Test, some drawing tests, and the Thematic Apperception Test (TAT). The most commonly employed psychometric tests are The Wechsler Adult Intelligence Scale (WAIS) and some tests that probe concept formation and the organization of thought processes.

The special value of projective test procedures lies in the richness of dynamic material that they often provide, thus giving the clinician considerable insight into the associations, imagery, preoccupations, conflicts, and defense mechanisms of the tested person. Experimental psychologists criticize projective techniques because of their low reliability and the highly subjective methods employed in their interpretation. The TAT, in particular, seems to be not one, but many instruments. Its scoring is less well standardized than the scoring of the Rorschach Test, and, therefore, the TAT is, at the present time, probably more a research instrument than a diagnostic tool.

The diagnostic validity of the Rorschach Test is better established. However, it has been found that the diagnostic validity for schizophrenia established with the Rorschach in one sample of patients can sometimes not be reconfirmed in a different sample at another place. Content analysis of the Rorschach seems to give more reliable findings than diagnostic evaluation based on the formal structural "profile" of perceptual, conceptual, and organizational characteristics. Attempts to derive a diagnosis from the presence or absence of certain "signs" in the Rorschach data have definitely been unsuccessful, and prediction of overt behaviour based on Rorschach data has also met with

only very limited success. The most valid and reliable results are obtained by experienced clinical psychologists who are basing their diagnostic conclusions more on a global, clinical approach to the Rorschach Test findings than on a structural analysis of the data.

For a more detailed discussion of the theory and practice of clinical psychological testing, the reader is referred to the extensive literature on these subjects and also to Section 12.1 in this text. However, for the psychiatrist who simply wishes to understand on what diagnostic findings a clinical psychologist bases his diagnostic impressions of schizophrenia, some of the more significant test findings in schizophrenia will be listed here.

Rorschach Test. In the Rorschach Test the most specific, almost pathognomonic findings are confabulation and contamination responses; e.g., a schizophrenic patient gave the response "terrestrial sex" to one of the Rorschach ink blots where he had perceived one part of the blot as a penis and the rest as a geographical map. But such perceptual-conceptual incongruities are not observed frequently. The schizophrenic's thought disorder as well as his perceptual disturbances are more commonly reflected in poorly perceived form responses and in a perseverating repetition of the same concept. There is usually also a lack of human movement responses and an inability to integrate colors effectively into percepts with the result that the colored objects which are perceived by the schizophrenic tend to have a crude and raw quality, e.g., "a bloody thigh," "a pile of feces," "fire and explosion." The schizophrenic's deficiency in social adaptation is often reflected in the unusually small number of so-called popular responses he gives to the blots. These are responses which are quite frequently evoked by the ink blots in normal individuals—e.g., "two men bowing to each other" in the third card, "a bat" in the fifth card, "two animals" in the eighth card—but which the schizophrenic patient is unable to see.

Thematic Apperception Test. The TAT, although it does not contribute significantly to the diagnosis of schizophrenia, can, nevertheless, provide important information about the specific dynamics involved in individual schizophrenic symptoms, and the test findings might thus give valuable aid to the planning of a therapeutic strategy for the individual schizophrenic patient. The stories the patient invents might, for instance, reflect his disturbed relationship with his mother or his pervasive fears of persecution.

Drawing tests. The two most commonly used projective drawing tests are the House-Tree-Person (HTP) and the Draw-a-Person Test (DAP). In the first test the subject is asked to draw a house, a tree, and a person; in the DAP he is only asked to draw a person. General expansive and regressive trends are quite regularly noted in the representative drawings of schizophrenics. More specific for schizophrenia are the gross distortions of the body image appearing in the drawings of persons, the grotesque deformities of ob-

jects, the manneristic style of drawing, the fragmentation or bleak emptiness which often characterize the graphic productions of schizophrenic individuals. These features may be so typical that an experienced clinician may occasionally be able to make an accurate diagnosis of schizophrenia after seeing only one or two of such drawings by a patient. However, it is hardly necessary to point out that such diagnostic stunts, based on one or two single manifestations of pathology, are neither a practical nor a reliable method of arriving at a clinical diagnosis in psychiatry.

Wechsler Adult Intelligence Scale. The WAIS is most suggestive of schizophrenia if there is a pronounced scattering of the various subtest scores. Such a scattering reflects pathological variability and unevenness of intellectual functioning. Quite regularly, the verbal I.Q. of schizophrenics is considerably higher than the performance I.Q., and within the verbal part of the test there are configurations which are highly suggestive of schizophrenia, e.g., a low similarity score associated with a high vocabulary and information score. This configuration reflects an imbalance between a well preserved memory function and impaired abstract reasoning. Schizophrenics usually score low on the picture completion subtest. This subtest requires careful observation and concentration in order to discover certain details which have been omitted in the pictures of some familiar objects. An occasional finding in schizophrenia is the combination of a high similarity with a very low picture completion score. The digit span, which tests immediate memory, remains, as a rule, relatively intact in schizophrenia, at least more so than in acute anxiety states, organic psychoses, depressions, and manic states. Mental arithmetic, however, is characteristically poor in schizophrenics, another manifestation of impaired concentration in this disease. The picture arrangement score is low in schizophrenia, probably because of the schizophrenic's impaired social adaptation, since this subtest calls for the ordering in sequence of several pictures representing human activities.

Finally, there are now a number of standardized tests which can give quantitative information about disorders of conceptualization and overinclusive thought processes. These tests may require the patient to pick from a list of words those which denote things that are essential components of a wider concept, or they may present the patient with a number of objects which he is asked to classify into certain groups. Other tests in the same category require a sorting of cards into groups according to certain characteristics, such as color, shape, size, or other general qualities.

In summary, a diagnosis of schizophrenia is supported by psychological tests if these reflect unusual or bizarre perceptual and conceptual processes (Rorschach; TAT; drawing tests; WAIS, particularly the similarity subtests). Other typical findings are variability and an uneven scattering of test scores (WAIS) and disturbances of concept formation, in particular,

overinclusive and autistic thought processes (object sorting and concept formation tests).

Prognosis

It has been known since Kraepelin and Bleuler that the hebephrenic and simple types of schizophrenia have the poorest prognosis, that paranoid reactions have an intermediate prognosis, that acute catatonic reactions have the best prognosis, but that catatonic patients who go on to chronicity usually continue to regress and become markedly deteriorated.

Modern pharmacotherapy with neuroleptics has changed many of the old prognostic patterns. Today a paranoid schizophrenic's chances to make a good recovery are at least equal to those of an acute catatonic. Even hebephrenics nowadays often have good remissions after a few months of pharmacotherapy. The simple schizophrenic is still the least responsive to modern physical treatment methods.

The more acute the onset of a schizophrenic attack, the better are the chances for a good remission or complete recovery. If a precipitating event has clearly triggered the breakdown, the chances for a favorable outcome are also relatively better.

The younger a patient is at the onset of his schizophrenic psychosis, the worse is his prognosis, as a rule. Patients who break down in childhood or early puberty seldom recover completely. Married schizophrenics have a better prognosis than single, divorced, or widowed patients: the fact that they are married is evidence that interpersonal bonds may serve as a bridge for a return to the community.

A history of good social, sexual, and occupational adjustment prior to the breakdown also indicates a favorable prognosis. A patient who relates easily to people in his environment and who is capable of emotional warmth and natural emotional reactions has a good chance for reintegration. Conversely, sustained emotional withdrawal and aloofness or shallow and inappropriate affective responses are ominous prognostic signs.

The patient's family plays an important role in his prognosis. A number of studies in recent years have established the fact that most schizophrenics come from deeply disturbed families. Important questions to be answered before making a prognosis are: Is the patient accepted by his family? Is the family schizophrenogenic, with a domineering, overpossessive, and overprotective mother and a cold or ineffective father? Is the dynamic pattern of communication within the family adequate or does it produce double bind messages?

If the patient has a job waiting for him after he leaves the hospital, his prognosis is favorably influenced.

A new prognostic factor has emerged in the last few years: the patient's cooperation and degree of conscientiousness in following prescribed drug maintenance therapy. Many schizophrenic patients today

can be rendered symptom-free within a few weeks or months, but they can only be maintained in this condition with continued drug therapy after they have been discharged into the community. The more often a patient neglects to take his maintenance medication, the more likely he is to suffer a relapse, and the more likely he is to deteriorate and to develop finally a permanent personality defect.

The risk of personality deterioration increases with each schizophrenic relapse. Schizophrenic recoveries are often called remissions because many of the patients later relapse. Although they may remit again, there is with each schizophrenic attack a greater probability of some permanent personality damage. This risk of personality deterioration increases rapidly after the second relapse.

On the other hand, some schizophrenics have five or more psychotic attacks, usually of the catatonic type, without suffering any definite personality damage. Because of the increased risk of the development of a schizophrenic defect after each additional schizophrenic attack, today's therapeutic challenge is to use all available measures to prevent relapses.

Final Outcome

A schizophrenic patient's chances for a favorable outcome of his psychosis are today estimated to be about four to five times better than they were only 50 years ago. Emil Kraepelin reported in 1913 that nearly 13 per cent of his patients with dementia praecox recovered from their first attack, but most of these later relapsed. Altogether, only about 15 per cent ultimately had passable, social remissions, usually with slight to moderate personality damage.

A more optimistic picture emerged from an important study by Manfred Bleuler, the son of Eugen Bleuler, who had been the first to describe the clinical picture of schizophrenia. Manfred Bleuler's comprehensive study of relative frequencies of outcome for a large sample of schizophrenic patients was undertaken before the new neuroleptic agents came into widespread use. Thus, his findings would still understate the favorable prospects that now exist for the schizophrenic patient.

Today fully 40 to 50 per cent of patients who have suffered acute schizophrenic breakdowns can be discharged back into the community symptom-free within 6 months to a year. In all, 75 to 80 per cent will be able to go home and live reasonably successfully, despite certain symptoms or personality defects some of them may retain.

With follow-up therapy and maintenance drug treatment, only some 10 to 15 per cent of patients in remission will relapse within a year. This should be compared to about 35 to 40 per cent who would relapse during the same period without such follow-up treatment.

There are five possible outcomes for the schizophrenic patient: (1) full and permanent recovery, (2)

full remission with one or more future relapses, (3) social remission with personality defect, either capable of self-care and self-support or dependent on protection and supervision, (4) stable chronicity, and (5) deterioration to terminal stage.

Deterioration to a terminal stage. This vegetable-like existence is a rare phenomenon among schizophrenics who have become ill during the past 15 years. Modern physical and social treatment methods are in most cases successful in preventing at least the terminal stage of deterioration, which was the most probable outcome of schizophrenia in Kraepelin's time and which was probably due more to the ravages of institutionalization than to schizophrenia.

In the modern mental hospital, it is increasingly difficult to find patients who illustrate this terminal stage of schizophrenia. Almost all cases to be found with the symptoms and signs of extreme regression of behavior, affect, and ideation were admitted 20 or more years ago.

Stable chronicity. There are still many schizophrenics who, despite all intensive therapeutic efforts, remain in a state of stable chronicity, although they do not regress to a terminal stage of deterioration. Their psychotic symptoms may make it necessary to keep them hospitalized, or, if the symptoms are not severe, they may reside outside the mental hospital. But they will remain definitely incapacitated with signs and symptoms of active mental disease.

It is difficult to estimate how many schizophrenics today will end up in this category of stable chronicity. But under ideal therapeutic conditions the proportion almost certainly will not exceed 25 to 30 per cent. The remainder of the schizophrenic patients will either remit or recover.

Remission. The majority of schizophrenics today will emerge in the categories of social remission with personality defect or full remission with further relapses.

Schizophrenic personality defects or schizophrenic residual states are characterized by a reduction of ambition, initiative, available energy, and emotional responsiveness. A person in this state may be more withdrawn, more aloof, and more selfish than he was prior to the onset of his illness. He may neglect his personal appearance, and he will almost certainly go down on the occupational ladder. A professional person may at first still hold a professional position, but with reduced responsibility and less scope for personal initiative. He may eventually end up doing menial work well below his educational level. A person with a schizophrenic personality defect cannot readily assume any responsibility. He cannot cope with competitive pressure and cannot tolerate time pressure. He is best suited for quiet, routine work he can perform independently from others and at his own pace. Some former schizophrenics, therefore, prefer to do night shift work because it is less demanding and permits them to work alone.



FIGURE 6. "Schizophrenic Withdrawal." (This prize-winning contest photograph is by Sid Bernstein, Research Facility, Orangeburg, New York.)

The degree of personality defect may be so pronounced that the patient is not capable of taking charge of his own affairs but requires continuous protective supervision and sheltered work conditions. If the personality defect is less pronounced, the patient may be capable of living independently and of supporting himself, although at a lower occupational level than before his illness. Often the personality defect is so slight that only the patient's family and close friends recognize the subtle changes that have taken place: a diminished capacity for enthusiasm, a lessened spontaneity, decreased initiative, and a decline in creative imagination. In most daily life situations, the patient may, even socially, function at an apparently normal level.

Full and permanent recovery. The prospect of full and permanent recovery from a schizophrenic attack is considerably brighter than it was a half century ago, when the odds for such complete recovery were only 2 to 4 per cent. The neuroleptic drugs now permit the prevention of relapses that could not have been prevented before the advent of these drugs. Previously, it was possible to terminate attacks, eliminate symptoms, and bring about rapid remission of acute schizophrenic breakdowns by use of insulin coma and

electroconvulsive treatment. But only with maintenance drug therapy is it possible to prevent relapses and thereby greatly reduce the risk of personality deterioration.

This possibility constitutes a major stride in the therapeutic battle against the destructive effects of schizophrenia, a stride that certainly promises to lengthen even further as the full potentials of new treatment methods are developed in hospitals and laboratories.

Suggested Cross References

For further discussion of the symptoms described in this section, see Linn's chapter on psychiatric symptoms (Chapter 13) in Area E, on psychiatric assessment. Childhood schizophrenia is described by Eisenberg in Section 42.1. Basic concepts of perception, cognition, and communication, psychological functions that are disturbed in schizophrenia, are discussed in Sections 3.1, 3.2, and 3.6, respectively, in Area B, on the basic behavioral sciences. Other syndromes related to schizophrenia are discussed by Lehmann in Section 32.1, on unusual psychoses.

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EDITORS' NOTE ON TREATMENT OF SCHIZOPHRENIA

The etiology of schizophrenia is not yet clearly understood; consequently, treatment is largely empirical. For didactic purposes, in this textbook, the

treatment of schizophrenia has been discussed from two viewpoints, the organic and the psychological. However, clinical experience has shown that the most effective regimen for the treatment of schizophrenia is an integrated effort, combining organic, psychological, and environmental modalities in a unified therapeutic approach, which is carefully individualized for each patient.

For example, the value of antipsychotic medication has been confirmed by many clinical studies. These drugs have been found to be effective in relieving symptoms of acute psychosis and in enabling the patient to maintain his therapeutic gains; studies have shown that such medication may also prevent further psychiatric deterioration of the chronic patient. On the other hand, the prognosis in acute as well as chronic cases is stated by some to be even more favorable when the therapeutic program includes psychological, as well as pharmacological treatment. Such psychotherapeutic techniques as the establishment of a supportive relationship, strengthening of the patient's psychological defenses, and help with reality testing may facilitate recovery by helping the patient to improve his tenuous adaptation and overcome his emotional isolation. Psychotherapy has been advocated by certain clinicians for protection against subsequent psychotic episodes. During hospitalization, the organization of a specially structured therapeutic environment may expedite recovery and limit the deterioration of the schizophrenic patient. After discharge from the hospital, the use of such resources as the sheltered workshop often facilitates his return to the community. Schizophrenia is as yet not curable; however, the judicious use of these different, but complementary treatment methods offers many patients a good prognosis for social remission.

15.5 SCHIZOPHRENIA. V: PSYCHOLOGICAL TREATMENT

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Present psychiatric knowledge does not permit the formulation of a precise, detailed account of the theory, technique, goals, and expectations of a psychotherapeutic approach to the problem of schizophrenia. It is possible to outline certain characteristics of the disorder, the therapeutic relationship, and major difficulties in treatment, but the intricacies of the work reflect peculiarities of therapist and patient (their backgrounds, value systems, and personalities)

and of the culture (hospital and community) in which the program is carried on. The therapist has experience, training, and skills that identify him as a professional. The patient displays behavior (signs and symptoms) that identify him as one in need of help. The therapeutic transaction, however, includes not only the meeting of a professional and a patient but also the developing relationship of two human beings, aspects of which tend to remain private—defeating observation, reporting, and formulation into meaningful communicable roles. Psychotherapy continues to be, to a large extent, both subjective and an art.

The therapeutic approach is a result of the ways in which the therapist conceives of human personality in terms of growth and development, his view of the modes of operation and significance of behavioral patterns labeled pathological, and his use of technical procedures. Every therapist works with ideas—perhaps convictions—regarding these areas of interest. It is not necessary that theories be right in all respects, but it is important that the therapist be aware of his theories, be able to attend to their defects as well as their virtues, and be willing to encourage change and growth when a system of ideas is found to be unsatisfactory, limited, or restrictive. In brief, the therapist will find it useful to formulate concepts relevant to what he is doing professionally; otherwise, his work may be disadvantaged by motivations—private and unsystematized—that operate outside of his awareness.

There are a number of opinions about the nature of schizophrenia and the appropriateness of various therapeutic approaches. In this section on treatment, attention is devoted to the history of the concept of schizophrenia and to the onset and development of the schizophrenic process, thereby suggesting that the therapeutic approach is properly derived from the way in which the disorder is conceptualized.

History of the Schizophrenia Concept Relevant to Therapy

People's ways of living are simply human, whatever the form of their expression may be, and the performances of the mentally disordered are to be comprehended in terms of the commonplace activities of any one of us. The term "schizophrenia" describes complicated or sometimes overly simple patterns of behavior devised to make possible a person's continued existence with his fellows, and these patterns may have been used—unhappily and with varying success—from the earliest days of men's living together. Behavior suggestive of what is today called schizophrenic has been described in times long past and is not a phenomenon of recent or, perhaps, even historical times.

Psychiatric history continues to live in the present in the sense that theories and practices of the past are maintained in the present, long after they might have been expected to become obsolete. Thus, concepts of

schizophrenia as the reflection of evil living or devil possession or as the mysterious expression of a never to be comprehended fate still live with us. Nevertheless, whatever the explanation given at various periods in the development of a concept, the underlying concern is with making sense of phenomena that are troublesome to man or that otherwise attract his attention. Throughout the history of schizophrenia runs the thread of man's persistent need to explain and find significance in the universe and his ways of dealing with it. Alongside this need there is the confidence of at least some people that human behavior has meaning, is goal-directed, and is subject to understanding.

What is now generally called schizophrenia was termed "dementia praecox" by Benedict Morel in 1860 in his description of an adolescent boy's withdrawn, melancholic behavior, considered to be the early transitional steps toward an irrecoverable state of personality disorganization. This pessimistic prognostic view was in keeping with Morel's conception of psychiatric disorders as being expressions of degenerative processes of the central nervous system, possibly set in motion by hereditary weaknesses, toxic influences, and unidentified brain diseases.

Although dementia praecox, catatonia, hebephrenia, and paranoia were not considered to be related to one another functionally, it was suggested that they all arose from unknown constitutional or hereditary defects or from destruction of brain tissue by toxic agents or unspecified degenerative changes. It was thought that they always led to an irreversible state of organic and habit deterioration that was unresponsive to any mode of treatment.

In 1896 Emil Kraepelin suggested that there was a relationship among the catatonic, hebephrenic, and paranoid states and included these as subgroups under the general rubric of dementia praecox. Emphasis was placed on the supposed outcome of disorder—deterioration—and favorable changes in some patients were thought to be instances of faulty diagnosis. Attention was turned to problems of diagnosis and a search for etiology in the realms of anatomy, chemistry, tissue pathology, and physiology. Treatment was not generally related to the personality of the patient, who seemed to be doomed by his diagnosis, being institutionalized and becoming one of the living dead.

In the early years of the 20th century this grim view of dementia praecox began to be altered, although it should be noted that the earlier concepts of progressive organic deterioration secondary to metabolic or other defects continued to be highly regarded. Sigmund Freud spoke of psychotic behavior as reflecting a conflict between the ego and the environment; there is a regression of the personality to an earlier developmental era, as in infancy. Although the standard psychoanalytic procedures were not considered suitable for the treat-

ment of the schizophrenic person because of the difficulties in developing a communicative relationship, such concepts as regression, transference, and the unconscious opened the way to the psychological study of schizophrenia and the development of psychotherapeutic techniques.

In 1911 Eugen Bleuler used the term "schizophrenia" to describe what he called a "splitting of the psychic functions." He suggested that the psychosis arose from organic disturbances that had been shaped by psychogenic events.

Adolf Meyer, in 1910 and later, suggested that dementia praecox was not a disease entity in the usual sense of the term, but was a complexity of behavioral patterns developed by the organism in efforts to deal with its progressive difficulties in adjusting to the demands of its environment. Unable to cope with his life situation, such a person withdraws into rumination and day-dreaming, turning away from further social involvement. Meyer emphasized the organism's struggle in working out a satisfactory adaptation to the culture and the physical world. He was critical of the concepts of constitutional, organic, and toxic etiology.

In the 1920's Harry Stack Sullivan emphasized the influence of the culture in the forming of a human being's characteristic ways of behaving. He described schizophrenia as arising from a background of disturbed interpersonal relations within the family and insisted that behavior could not be understood adequately without reference to the social situations from which it arose and in which it was currently displayed.

History of Treatment of Schizophrenia

Early treatment theories. Once schizophrenic behavior was looked on as something other than a mysterious representation of occult influences, attempts were made to deal with it in terms of the classical medical model. The patient's activity was thought of as reflecting changes in the central nervous system; these changes were, in turn, the results of biological inadequacy or attack by various noxious agents. The patient was described as *having* a disease that could be identified by signs and symptoms related to a causative agent and associated with demonstrable structural changes. The symptoms, such as hallucinations, might be without meaning other than their connection with organic dysfunction, and the physician's task was to identify the disorder and attempt to remove it from the patient by treatment, thus restoring him to a state of health clearly defined and previously enjoyed. Should the difficulty be the result of a progressive degeneration of the brain, etiology unknown, there was little to be done. Under the influence of such theories, psychotherapy of the psychoses was not likely to flourish.

Recent treatment theories. In recent years man has been pictured as less instinct-bound than he was

once thought to be, and attention has been turned to his involvement with the culture which he creates and by which he is, in a social sense, created. Through his unique ability to devise and use symbols, man has the remarkable capacity to be educated in terms of recorded racial experience; he can modify what he is by reference to his past, his present, and, through the use of foresight, his future. Human behavior can be conceived of as reflecting a given biology—usually of much greater potential than is realized in a lifetime—molded by interpersonal and cultural experience into patterns that more or less satisfy biological and social demands. Troublesome deviations from approved standards may be variously labeled as criminal, sick, and wicked. When the deviation is called psychiatric illness, or mental disease, its possible meaning must be sought for not only within the body or the mind but also in the social transactions in which the person has, does, and expects to carry on his living.

From this point of view, psychiatric disorder may be thought of as arising largely from participation in social fields and as having significance in terms of past, present, and future involvements in such fields. Since the troubled behavior has to a great extent been learned and has purpose and thus meaning in a symbolic sense, it is, theoretically at least, subject to change through the discovery of its goals and meanings and through the application of techniques that will promote modification of inefficient and harmful modes of operation and open the way to new learning. With the formulation of such concepts, the psychotherapeutic approach to schizophrenia is seen to make sense. The patient is no longer seen exclusively from the perspective of being biologically defective or the carrier of a disease reflected in odd and meaningless behavior. Rather, he is seen as a human being who acts as he does in order to be able to continue living with his fellows and at the same time maintain a semblance of self-respect and a feeling of security—motivations that often appear to him to be mutually incompatible.

Development of a psychotherapeutic approach.

Prior to the 1920's there was little written about the psychotherapy of schizophrenia and little interest in this sort of enterprise. In the 1920's Sullivan reported his work with male schizophrenic patients at the Sheppard and Enoch Pratt Hospital in Towson, Maryland, and in the 1930's, Fromm-Reichmann presented her observations of therapy at Chestnut Lodge in Rockville, Maryland. During the past 20 years there has been a marked increase in this form of therapy. The range has been broadened to include studies of the families of schizophrenic people, cross-cultural studies, and family and group therapy. At present there is a growing concern with the therapeutic influence of the milieu in which the patient lives and with the extension of community facilities

for treatment outside of hospitals—a development referred to as social psychiatry.

Therapists. When one thinks of those who have had much experience in the psychotherapy of schizophrenia, he turns to those who have reported what they have done, although some of the most gifted and effective therapists do not write or speak publicly about what they do. The personalities and reported techniques of various prominent therapists vary one from the other, but there are certain common qualities in what they do.

Harry Stack Sullivan was a quiet man who was remarkably alert to what was going on in the therapeutic field. Insistent on precision in observation and reporting, he had little patience with theorizing not closely tied to repeatable observation. Although he had great respect for the influence of past events on the current scene, in treatment he focused on the here and now, the area in which patient and therapist were both participant and observer. Placing great reliance on man's tendency to make use of simple and effective modes of behavior once he has an adequate understanding of his own and others' motivations, Sullivan sought to further such knowledge by bringing obscurely perceived motives and impulses into awareness.

Frieda Fromm-Reichmann, a small but determined woman, had an unusual empathic responsiveness to the needs of the gravely disordered and a deep appreciation of and respect for the assets of her patients. She epitomized the healer without losing a useful, cool objectivity.

Paul Federn suggested that the schizophrenic patient be dealt with in such a fashion that repression was encouraged and regressive tendencies prevented. Every effort was made to develop the patient's trust in the therapist, who was advised to be supportive and completely sincere. The male therapist was aided in his work by a woman helper, and this use of a co-worker or assistant was also advocated by Rosen.

Marguerite Albert Séchehaye pictured the schizophrenic person as suffering from frustrated satisfaction of essential needs early in life. She devised a therapy to fulfill these needs in part, though she used a form of symbolic realization in which current responses to the patient symbolized responses that would more appropriately have been given to the patient in his early childhood or infancy. Her approach involves not only understanding, but the creation of a maternal and protective environment with a deliberate modification of reality demands.

John Rosen uses a direct and forceful approach to the patient, quickly asserting himself as both a realistic and magical powerful figure with whom the patient cannot avoid relating. He fearlessly and directly confronts the patient with interpretations of the patient's unconscious motivations, reinforcing his position with trained assistants who work in close conjunction with him.

Harold Searles, as a result of many years of intensive therapy with chronically ill schizophrenic patients, emphasizes patience and the paying of attention to the therapist's own feelings and impulses as clues to those of the patient. He relies on interpretation of the patient's behavior and a confrontation of the patient with the intensity of his involvement with the therapist.

Therapeutic approach. Of particular concern here are the common qualities in the therapeutic approaches of various therapists—those mentioned above and others. Although it is difficult to learn how a therapist works from even the frankest written reports, the therapists of schizophrenic patients do seem to have the following attitudes in common.

1. The patient is not viewed as hopelessly diseased or as some inferior caricature of a human being. His behavior, however seemingly incomprehensible, is thought of as having purpose and as being subject to understanding, although there is no insistence that everything be understood.

2. Behavior is seen as related to past experience, but emphasis is placed on the comprehension of therapist-patient interaction in the mutually observable present.

3. Attention is paid to the symbolic significance of nonverbal as well as verbal activity.

4. Reliance is placed on a developing human relationship as a major factor in reducing anxiety, advancing insight, and providing opportunities for learning and for further expression of the personality.

5. The therapist has respect for his patient and develops a fondness for him that is not restrictive but permits growth and includes a recognition of eventual separation with the conclusion of treatment.

6. The therapist has hope and the expectation of improvement and will not be defeated or driven away by the patient's behavior.

7. The therapist insists on attempting to define his relationship with his patient, refusing the patient's attempts to avoid such definition by his withdrawal or his insistence that he can never change, that there is nothing the matter, and that the therapist is of no significance to him.

8. The therapeutic involvement is viewed as a transactional and interactional process in which both patient and therapist are required to observe and participate, in which both will learn, and in which both will be subject to anxiety and will experience personality change and growth. This does not imply that the therapist is no different from the patient. By experience, training, and certain healthier qualities of personality, the therapist is the expert; he must lead the way and, to a considerable extent, be in control of what occurs in treatment.

Operational Definition of Schizophrenia Relevant to Treatment

Although it may be desirable to do so, it is not possible to give a precise definition of schizophrenia

that would be satisfactory to all those interested in the disorder. The purpose of attempting a definition at this juncture is to remind the reader that one's concept of behavior influences his ways of dealing with and treating it. The author's conception of schizophrenia follows.

As used here, schizophrenia is the name of a process of behavioral patterns extending from early infancy and developed largely through interaction with other human beings whose care and companionship are needed but whose motivations are often unclear and conflicting to the schizophrenic. The instability of such patterns may be revealed at times of interpersonal stress when anxiety is increased to the point of panic with an accompanying disruption of previously dependable ways of behaving and personality disorganization. Such states of panic may be resolved through the formation of overly simplified, chronic caricatures of human living, such as the hebephrenic and paranoid developments; through the redissociation of disturbing systems of ideas so that a fragile adjustment is gained, marked by lack of insight and by a cautious avoidance of situations that might favor a recurrence of disaster; or through a reorganization of personality in which resocialization and learning can occur with resultant personality growth and increasing security from further collapse. The concern here is with the patient's past and current behavior in a variety of social fields. It is in the past that personality was structured and in the present that the interpersonal operations called schizophrenic can be observed and modified.

The difficulties that may eventuate in schizophrenia are thought to originate in the infant's interpersonal contacts before he attains a clear definition of himself and those around him and before he acquires skill in the use of speech. Should these early experiences be particularly devastating, development may be so arrested that the infant lies in a marasmic state or survives to become autistic or a childhood schizophrenic. In each instance the individual's in-born drive to exist is markedly reduced by his early contacts with those who care for him. He can reach chronological adolescence without major disaster, although in retrospect his earlier adjustment may appear to have been precarious and marginal. His failure occurs in solving the adolescent tasks of identification, including the finding of satisfying interpersonal intimacy and the dependable patterning of sexual behavior. Faced by such requirements, he reveals defects in acculturation, learning, and the use of necessary interpersonal skills. There develops an increasing personal and social estrangement, marked by disturbances in communication, autistic thinking, and complicated forms of behavior devised to keep anxiety at a minimum and to avoid the intrusion into awareness of disturbing ideas that somehow seem unsuitable to the person's public image and concept of himself. With a failure of dissociation, such ideas enter awareness in dreams and hallucinations. The

attendant anxiety and sense of loss of personal identity may be dealt with through such restitutive devices as delusion and denial.

In attempting to deal with problems such as these, the therapist is interested in the degree of interpersonal security the patient has developed in his growing up and in the ways he manipulates symbolic expression in his seeking to reduce anxiety, to establish a required minimum of communication, and to maintain sufficient human contact to enable him to live.

Onset and Course of Schizophrenia

The structure and goals of psychotherapeutic endeavors can be understood best by considering what the patient may be attempting to deal with—to accomplish—through his disordered behavior. The purposiveness of actions that often seem to occur without design or goal may be illuminated by reviewing events characterizing the onset of the difficulty, the emergence of the well defined psychotic process, and the movements toward its resolution.

As used here, the term “schizophrenia” refers to behavior appearing late in a series of increasingly complicated and unsatisfying adjustive efforts made in response to situations that the person experiences as intolerable and beyond his capabilities to meet. They may not seem threatening to someone less handicapped by earlier life events. Often such efforts go unnoticed, or their significance is not recognized. In the early stages the behavior may not be widely divergent from the norm; it may seem natural in the setting in which it occurs, and observers may seek to avoid their own anxiety by failing to extend the implications of their observations.

Time of onset. It is often difficult to identify the time of onset of disorder—the period in which increasingly maladaptive behavioral patterns are to be labeled schizophrenic. The beginnings of the psychotic disturbance are perhaps to be found in the interpersonal experiences of the infant, when he is forming early concepts of identity and is developing skill in the use of language and the manipulation of other symbols. It is assumed as a working hypothesis—to be tested by direct observation of growth and development in human and other organisms—that the infant deals with the exposure to recurrent severe anxiety by the avoidance of behavior and the dissociation of concepts that threaten to disturb the continuation of the needed supporting relationship with those who care for him, particularly the mothering person. Although such an infant may survive, he fails to develop the confidence and trust in himself and others that will enable him to make adequate use of later opportunities for learning. This infant may become a “good” child in that he is compliant and appears to adjust well to the conventions of his group, but the process of dissociation and the failure in trust go unnoted and uncorrected.

The eventual revelation of trouble and the need for psychiatric care may come as a surprise to those who supposedly have known the patient well. This suggests (1) that the illness was an acute process without known antecedents; (2) that its earlier manifestations were too obscure to be observed; (3) that the developments could have been noted but that the implications of the behavior were felt to be distressing and threatening, and thus much of importance was ignored, or (4) that the ailing person's social role differed markedly from his personal concept of himself and that in certain vital respects he was a stranger to his fellows despite his seeming conventional success. The third and fourth points are relevant to the thesis presented here.

The diagnosis of schizophrenia is often made only after the exhibition of behavior that is disturbing or unacceptable to others and that could readily be labeled by the nonexpert as crazy. Much of the patient's earlier behavior may have been close enough to conventional norms to go unnoted or to be looked on as transient peculiarities of little significance. From this point of view, there are no clear cut, fundamental distinctions between what we call normal, neurotic, and psychotic phenomena; these may best be understood as existing on a continuum in which one merges, often imperceptibly, into another.

Early life experiences. Faced by the acutely disturbed schizophrenic person, the psychiatrist might make the following crude and oversimplified conjectures about his earlier experiences.

Despite reports of apparent stability, the family in which schizophrenic behavior develops is marked by anxiety and by gross contradictions and obscurities in communication. In such a setting, the identities and relationships of the various family members are poorly defined, and complicated forms of behavior are elaborated to make seeming sense of incompatible motivations and demands. What eventually appears to be crazy behavior may have been devised as the only way to maintain a semblance of relatedness and normality in a crazy family.

The personality defects incurred in earlier life experiences were not corrected adequately through experiences in later years but were not so severe as to interfere grossly with socially acceptable performances in childhood and adolescence.

In early adolescence a person is required to move rapidly in establishing his public identity and his self-concept, there ideally being an approximation of one with the other. At that time he must define his sexual interests, be able to engage in an intimate and communicable relationship, begin an emotional if not geographic separation from his family, identify himself with a vocation, develop predictable patterns of behavior with a variety of people, and elaborate a meaningful system of values. In all these activities the adolescent must relate to other people. It is in this interpersonal area that the preschizophrenic individual

is handicapped by the anxiety that close contact with another person rouses in him and by his persisting low self-esteem, exaggeration of his destructiveness, and devaluation of his abilities.

In an effort to cope with a feeling of social and interpersonal inadequacy, the young person may withdraw from others, unwittingly substituting simpler but socially acceptable behavior—such as day-dreaming, absorption in reading and the watching of movies and television, and preoccupation with hobbies carried on without the help of others—for activities requiring more direct interpersonal associations. Thus he may desire friendship but not take the action and accept the risks in finding a friend. With increasing cultural demands, the threat of anxiety grows, and the oversimplification of experience is no longer adequate, as it carries with it the painful cost of growing isolation. For a time the problems may be dealt with through the use of complex patterns of behavior, both overt and covert, substituted for more simply goal-directed processes and still in keeping with approved cultural requirements. Socially approved “good” behavior may substitute for more direct expression of sexual and other needs. Obsessional thinking and action may reinforce the defenses against the exposure to anxiety. For most people, such defensive activity does not resolve basic difficulties. The presence of anxiety is revealed in disturbing dreams and the person’s discomforting feeling that, unless he moves with great caution, some strange and evil aspect of himself will be revealed to his great disadvantage. Careful observation of someone on his way to becoming openly schizophrenic will lead one to feel great respect for the courage and psychological dexterity displayed in attempts to maintain some sense of security in human relationships in the presence of ever threatening anxiety and chronic uncertainty regarding a sense of personal identity.

Development of overt schizophrenia. As withdrawal and the accompanying feeling of isolation increase, autistic and distorted perceptions of other people are not corrected through discussion with friends. In attempting to maintain needed human relationships despite mounting anxiety, the patient to be replaces the more direct and conventionally acceptable adjustive processes used earlier with complex behavioral patterns no longer in keeping with accepted systems of social ideals. Such behavior—convenient forgetting, rationalization, the transfer of blame to others, and selective inattention to potentially troublesome events—is, despite its usefulness in attenuating anxiety, dangerous in that it invites social disapproval and may lead to further estrangement. By this time there often appears a variety of somatic complaints, such as fatigue, headache, changes in body weight, and restlessness. Sleep is disturbed by dreams, the remembered fragments of which suggest impending disaster; and the

mood may resemble a combination of anxiety and depression.

The person caught up in this situation knows that he is troubled but is unable to define his difficulties and cannot ask for help. His position is complicated further by his long avoidance of intimacy, by his concern that self-revelation may be disastrous, and by his expectation that one is more likely to be hurt than benefited in a human relationship. The inability to formulate a statement of the problem and to communicate this to others is reinforced by friends who overlook evidences of distress and meet poorly expressed requests for help with reassurances that “everything is all right” and that the complaints are “nothing more than a part of growing up.”

This pattern of behavior suggests that important aspects of past experience required for the integration of satisfying human relationships are not available to the patient’s awareness; that is, they are dissociated or repressed. Such systems of ideas may symbolize episodes marked by intense anxiety and not clearly comprehended or formulated into communicable gestures, such as speech. Ordinarily, the content of awareness is restricted to refined referential processes that can be organized and communicated, symbols of disturbing events being kept from awareness by a variety of behavior patterns described as defensive and designed to maintain a sense of security from the threat of anxiety. In the schizophrenic person, the time comes when awareness can no longer be confined to those more precise thought processes that can be validated with others, and frightening representations of earlier troublesome experiences become part of the content of consciousness. These intrusive ideas appear as puzzling, threatening generalities, the meaning of which is unclear; they are difficult to bring into personal focus despite the implication of their personal significance. Such phenomena are heralded by increasing anxiety, a vague apprehension of impending disaster, and disturbing dreams. The appearance of auditory hallucinations is a clear cut expression of a dissociated system of ideas, reflecting both past and present interpersonal involvements. The complex of ensuing psychotic behavior may be viewed as an attempt to solve a problem and also as a metaphorical statement of the patient’s role in his struggle with family members and others.

As the patient’s ability to communicate fails, he is imperiled by the growing sense of isolation, experienced in its extreme as a loss of the sense of self, as a disintegration of the personality, as the destruction of all human relatedness, and as a disappearance into a chaotic, horrifying universe devoid of form and meaning. Panic, a state of disorganization with a loss of personal and object identities, is intolerable and requires rapid resolution. In efforts to bring definition, meaning, and termination to a state of chaos, the patient may take violent action,

such as assault and self-injury, and make elaborate pseudo explanations of events, whereby he publicly reveals himself as psychotic.

Forms of behavior. As noted earlier, the state of panic may be resolved through the development of forms of behavior of variable social acceptability and utility. In brief, some possibilities are these: (1) Further dissociation is established, former defensive operations being put to use and reenforced. (2) Experience is reformulated to fit oversimplified and stereotyped explanations of living, which are often uncomfortably similar to the hostile, prejudiced, suspicious views of many who are not formally looked on as ill. This is the paranoid solution. (3) There is a retreat into an apparent preoccupation with fragmented ideas and bodily processes, accompanied by a deterioration of conventional modes of behavior, including patterns of speech. This is the hebephrenic solution. (4) Unstable adjustments may be developed, the patient being recurrently beset by panic and hallucinatory episodes, apparently unable to structure a more durable method of harmonizing personal and social demands. (5) In some instances a human relationship may be established in which confidence in self and others is increased, anxiety allayed, autistic ideation and perceptual distortions modified, opportunities for new learning provided, and a restructuring of the personality made possible. It is with this last possibility that the psychotherapist is concerned.

Concept of Psychotherapy of Schizophrenia

Both the psychiatric disorder and the therapeutic intervention may be thought of as special instances of social processes, reflecting past and dealing with present interpersonal relationships. In the disorder, old patterns of action may be repeated again and again with little useful modification; they are retained not only because of their usefulness in reducing anxiety but because the person concerned has become accustomed to them. They have been learned so well that they seem to be a natural part of the individual, and alternatives to them are not considered or seem to be unimaginable. In the therapeutic situation, such old patterns are also repeated, but in a setting that, in order to be useful, differs significantly from the patient's past. The therapist displays his expertness by helping the patient recognize the form, goals, and origins of his destructive actions and by dealing with these in a more benign fashion than have many people in the patient's earlier life. Limits are set so that there need be no fear of the possible consequences of expression of impulses, and a controlled setting is provided, wherein there is an opportunity to observe and modify the illness.

From this point of view, the illness is looked on as a complex way of behaving developed throughout the years in response to anxiety-provoking, often obscure and threatening interpersonal relationships. The therapeutic encounter is also an interpersonal relation-

ship, but it is structured not only to permit the exposure of reflections of past experience, learning defects, and developmental deficiencies but also to offer a new form of relationship that will favor the reduction of anxiety and the promotion of learning.

The therapeutic task. The intricacies of psychotherapy cannot be precisely defined or demonstrated, and so it is not possible to design a therapeutic system of techniques to be applied impersonally to someone labeled a schizophrenic patient by someone else designated a therapist. The psychotherapeutic intervention is an involvement of two people (with the aid and hindrance of both real and illusory others)—a therapist with certain experience and expertness, and a patient who is anxious, frightened, hostile, shy, subject to shifting perceptual impressions, and burdened with a sense of identity that is at best unclear and at worst derogatory. About the proposed treatment situation, some general recommendations can be made with assurance. The application and the modification of these recommendations will be functions of the peculiarities of the patient, the events in which he is involved, and the personality and skills of the therapist. In other words, there are as yet no fixed rules for charting such a human encounter.

Here consideration is given to therapy with the more acutely disturbed schizophrenic patient. The therapeutic task with the chronically disordered patient, such as one who has settled into a hebephrenic or paranoid way of existence, is complicated by the patient having found a solution that, unsatisfactory though it is, he is loath to give up when he has no assurance that he will find something better. A further complication is the problem of chronicity, the patient having become so imbedded in the institutional environment that the problem is no longer schizophrenia alone but is also one of bringing hope and motivation to a human being sunk in a quagmire of hopelessness and despair.

Characteristics of the schizophrenic patient.

It may be useful to review briefly some of the characteristics of the person who becomes a patient and attempt to predict how he may behave in treatment. On the basis of views regarding the development of the disorder and the significance of the behavior, it should be possible to work out a rational therapeutic approach consistent with these views. To do so is an improvement over the setting up of rules or prescriptions to be followed blindly.

Despite the vicissitudes of his living, the acutely disturbed schizophrenic person is bound to people by strong and enduring ties, suggesting that there were positive as well as negative aspects to his early life experience. Although relationships were marked by anxiety and he often acted as if he expected to be hurt, he has persisted in having something to do with people. Having learned not only that he needed people but also that he was made anxious by them,

he was faced by a common dilemma—how to avoid the extremes of both anxiety and loneliness.

The patient's efforts to establish meaningful, lasting relationships were complicated by the dissociation of certain motivations and systems of ideas that would be brought into awareness, with attendant anxiety and perceptual distortion, as intimacy grew. Additional handicaps were provided by the persistence of autistic concepts difficult to communicate, defects in the acquisition of social skills—such as how to cope with envy and jealousy—and the anticipation that entering a relationship eventually leads to one's being revealed as inadequate and repulsive.

In the therapeutic situation the patient is brought into contact with that which he both needs and fears—a human relationship. The usual ways of dealing with anxiety are to flee its apparent source, to destroy its source, or to erect and strengthen psychological defenses against its experience. In treatment the first two are blocked, and the necessity for the latter is explored, with the intent of usefully modifying the psychological defenses. As limits are set to the patient's activities through hospital restrictions or, when less disturbed, rules to which he must conform, his anxiety will increase and his ambivalent attitude toward people will be revealed. Periods of the patient's seeming growth of confidence in the therapist will be replaced by times when the patient doubts the therapist's motives and usefulness. The relationship is characterized by approach and withdrawal, trust and suspicion, hope and disappointment. As the patient moves toward greater intimacy, he may express his growing discomfort by complaining about being controlled and dominated, by discovering that the therapist is (as the patient generally expects people to be) dishonest, destructive, evil, and in various ways like significant people in the patient's past. As dependency increases, so also will the need to take flight or to attack. These tendencies being restrained, dissociated impulses may reappear, apparent improvement being swept aside for a time by psychotic behavior. The perceptual distortions of others and of self will frequently be so great that the therapist will find it difficult—if not, for the time being, impossible—to identify, define, and trace distortions to their origins or comprehend their functions in the current scene. Each participant will often be uncertain about the roles in which he and the other are at the moment involved.

As the patient becomes caught up in a closer relationship with the therapist, other complexities may arise. The patient may then fear that he will kill or somehow magically destroy his therapist, drive him insane, or cause him to take flight. He may feel that he himself must take care of the therapist, who is experienced as being weak and frightened by the patient's increasing self-sufficiency. The patient may repeat with the therapist aspects of his relationship with members of his family, who may have become

so involved with him and his sickness that he believes they will be hurt or demolished if he asserts his independence and turns his attention to interests other than theirs. The patient may feel that forming new relationships and becoming healthy will make him a murderer of his therapist and relatives, whom he envisages as requiring his continuance in his sick role in order to insure their physical and psychological survival.

In other words, the patient may become concerned that his own emotional development will be a source of discomfort to his therapist and that dependency—so difficult to achieve and accept—will be encouraged by the therapist, who is pictured as needing people to be dependent on him. The patient must then learn that the dependency of childhood is a useful and necessary preliminary phase in gaining the independence and relatedness of adult life and that a major task of both parent and therapist is to take pleasure in forwarding a child's and a patient's growth and ability to separate as each creates, as best he can, his own existence in accord with his abilities and opportunities.

Social components of the schizophrenic's behavioral disturbance. As presented here, schizophrenia is not a disease entity in the conventional sense; it is a complex of recurrent behavioral patterns originating and manifested in a variety of social fields. The disorder does not exist *within* a person and treatment is not *given* to him. What is observed and modified are interpersonal transactions, such as (1) the patient-therapist relationship, (2) transactions in the ward-hospital milieu, (3) the family relationships of the patient, and (4) interactions with the larger culture within which these exist.

If the patient lives outside the hospital, the therapist may have little or no contact with the patient's associates, and so he must rely on what takes place in the therapeutic sessions for the data required to carry on the work. If he decides that contact with someone else (for example, the family) would be advantageous, he should arrange for the desired interview after discussing his plans with the patient; at times he should include the patient in these other meetings.

If the patient is hospitalized, his exercise of responsibility for himself is greatly curtailed, and he becomes a part of the institutional social system, subject to control by hospital personnel and the influence of significant family members. The therapist cannot ignore the various forces affecting his patient's living; what is done in the individual therapeutic sessions may be advanced or hindered by what occurs elsewhere. The patient's behavior will influence and be influenced by the activities of other people; that is, shifts in one part of a social field will require accommodations in other parts, although the relationship of these changes to each other may be obscure and go unnoted. For example, supposedly desirable

improvement, reflected in increasing independence and self-assertiveness, may provoke a relative to arrange the patient's transfer to another hospital on the grounds that matters are getting worse. The change in a patient requires a reciprocal alteration in the relative or, to put it more accurately, in the social field of the family. For example, a mother accustomed to looking on her son as a weak, ineffectual, hopeless hospital patient will have to alter her behavior in order to respond appropriately to him when he no longer finds the psychotic role necessary or desirable. If it is easier for her to accept her child's chronic illness than to make the required adjustment to his improvement, she may remove him from the therapeutic situation, which seems to threaten her by producing healthy changes in the patient.

Psychotherapy is not carried on in a vacuum, and no amount of discussion will correct all of the disasters in the patient's life. Unnecessary difficulties arising in the social fields of the hospital and the family should be recognized and prevented. It is advisable for the therapist to have direct contact with the patient's family and those who care for the patient on the ward. To avoid complicating involvements, the therapist can be helped by the nurse, the social worker, and the ward administrative physician.

The use of adjuncts to individual therapy in the form of family, group, and milieu therapy will not be discussed here. It should be evident however, that in an institution these various modes of treatment must be coordinated. And since social organizations are marked by the presence of envy, jealousy, competition, cruelty, and misunderstanding, efforts to bring about the coordination of various workers to produce a therapeutic environment present interesting and vital problems in communication and cooperation.

Initial interview of the patient. The first meeting with a patient is designed to create a situation in which mutual observation can occur without the arousal of great anxiety and in which there can be a demonstration in miniature of some of the major features of the course of psychotherapy. To avoid becoming unnecessarily prejudiced, the therapist will often choose to learn what he can directly from the patient, consulting case records at a later date.

If the patient is mute and withdrawn, the therapist may be content to sit quietly nearby, occasionally speaking about the hospital setting and his function in it and speculating about the purpose of some of the patient's more obvious behavior. As the therapist does not know a great deal about the patient and his troubles and has no ready solutions to offer, a quiet and modest attitude would seem to be suitable to the occasion. The therapist should show that he is willing to give time to observing what goes on and learning something from it.

Should the patient be assaultive, precautions must be taken so that neither participant will be injured.

When fear is a major factor in an interview, there will be little learned, and there should be no hesitancy in telling the patient directly that physical violence cannot be tolerated and must be controlled. Sometimes the presence of one or more assistants in the room will make both patient and therapist feel more secure. It is well to remember that the patient may feel threatened by the therapist and, from his point of view, also require protection. Occasionally the patient may be restrained in a sheet pack, the therapist sitting close by and well within the patient's range of vision so that he can watch the therapist's movements and not be frightened by the thought that things are going on without his knowledge.

If the patient is hospitalized but can come more or less willingly to the office and talk with the therapist, it is well to set aside 2 to 3 hours for the first meeting, the exact time to be adjusted to the needs of the participants. After introducing himself, the therapist asks the patient to describe what he considers to be his ailment, interrupting the ensuing account only to clarify any obscure aspect of it. After the patient has had the opportunity to express himself fully—a period varying from a few minutes to perhaps an hour—he is asked to talk about his growing up. Thus the therapist obtains a general history of the patient through a seemingly casual discussion rather than by following a chronological outline. As before, questions or comments should be used only to prevent possible misunderstanding.

After completing the outline of the history, the patient is again asked how he views his ailment. This second description of what disturbs him may vary from the earlier one, since he now knows the therapist better, may be more at ease, and can consider his troubles in light of the review he has just made of his past. The therapist may then ask how the patient views him (the therapist) and what he thinks can and should be done to alleviate the difficulties described. In return, the therapist succinctly sums up his conception of the patient's predicament, using language that makes sense to both parties.

Throughout the interview the therapist observes movements of anxiety in himself as well as the patient, attempts to identify the events associated with the anxiety, and acts to keep it within tolerable limits. "Searching" interpretations, more often designed to display a therapist's brilliance than to illuminate a patient's problems, are to be avoided, but an effort is made to establish tentative connections between certain current behavior and past experience. Gross perceptual distortions are pointed out, their correction being more likely to occur when the event can be observed in the present by both participants.

In concluding the interview, the therapist briefly explains the plan for further meetings and invites comments and questions, to which he responds as clearly and simply as he is able. If the therapist does

not know the answer to a question, he should say so; it is not useful for the therapist to attempt to give the impression that he knows everything or that he is being evasive or hypocritical. Following the session, the therapist should write as detailed a report as he can, commenting on his own reactions of anxiety, annoyance, liking, and so on, and making a prediction about the course of treatment without feeling bound to honor it in the sense that he must make it come true. No notes are taken during the interview; to do so would interfere with both observation of and participation in the therapeutic field.

Course of therapy. The beginning psychotherapist need not immediately equip himself with the impedimenta of technical rules and scientific descriptions of disorder. He will probably have some acquaintance with these, but it will be useful for him to sit on the ward of a psychiatric hospital for long periods during the day and the night, trying to make sense of what he observes, without reference to what others say he ought to see. First, he learns to look at the scene, discovering how difficult this task is when one is anxious. Having looked, he notes what seems to make sense and what doesn't, including in this judgment the behavior of staff members as well as of patients.

Next, he might sit in a room with a schizophrenic patient without being required to do anything; he doesn't have to know it all, need not set about curing a mental patient, and should not be required to protect his self-esteem by putting on demonstrations of being a better therapist than someone else. Relieved of some of the burdens associated with the attaining of certain personal and professional goals, the therapist has the opportunity to observe events in ways that will never be available to him again; knowledge and sophistication may increase his ability, but they will also alter the freshness of his outlook. Occasionally he may discover that his respectful presence and his willingness to learn without the need to enforce the acceptance of his own views may be accompanied by favorable changes in the patient's behavior. Should this occur, ambition and professional zeal must not be allowed to replace modesty; if they do the patient may again retreat.

In this short account there can be no detailed description of treatment. There follow a few problems that commonly occur in psychotherapy with schizophrenia. The ramifications of therapy can be dealt with more effectively in seminars and in discussions with other therapists, reinforced at times by the study of recorded interviews, transcriptions, and motion pictures and by the use of one-way screens.

The therapist as the object. In the early stages of treatment and to some extent throughout its course, the patient acts as if he were caught up in a cage with a strange, puzzling, and fearsome object—the therapist. The patient is restricted by the hospital, the office, or the rules of the game; he cannot escape,

and he is prevented from destroying that which he fears. No matter what he does, he is placed in contact with another human being in an effort to develop a communicative relationship.

Much of what happens in these early stages can be talked about in terms of the patient's need to explore this object, finding out how it works and what its potentials are for good and evil. The course of the relationship will often be uncertain, seemingly unpredictable, and marked by sudden changes. The following are examples of the vicissitudes of this aspect of treatment and possible therapist responses—not always suitable or necessarily correct.

1. The patient may not wish to meet with the therapist in his office—or anywhere. Fundamental to psychotherapy is the meeting of the participants at frequent intervals for long enough periods of time to permit emotional arousal and to make an impact on each other. At the beginning of treatment it is useful to hold five to seven hourly sessions each week, the frequency and length of meetings being altered in accordance with the patient's needs. Should the patient be too anxious to remain in the office, the therapist may go to his room on the ward. Should any room be experienced as too confining, therapist and patient may sit in the hallway, walk across the fields, or ride in a car. As mentioned earlier, companions or a pack may be used when assault is a threat. Although ataractic drugs may be of use in some instances, in the author's opinion it is wise to attempt to form a psychotherapeutic relationship without a chemical modification of perception.

The purpose of the regular, frequent meetings is to provide a situation in which relational bonds can be established between the participants. When two people meet recurrently over a period of time with the accompaniment of emotional arousal, ties are formed between them. It is the task of the therapist to prevent the development of an attachment that is crippling or destructive, remembering that people can be bound to each other by hatred and anxiety as well as by affection.

2. The patient may question the therapist about himself, his antecedents, and his current purposes, thus displaying an interest in him. At other times he may appear to be indifferent to him, turning his back, reading a book, looking out the window during long silences, or walking ahead of him on rambles as if he were not present. At other times he may turn on the therapist with a vindictive verbal, if not physical, attack, often being painfully accurate in his observations of personal idiosyncracies and clumsiness. Periods in which tenderness and a semblance of regard for the needs of the therapist are shown are frequently interrupted by withdrawal and a reemergence of doubt, fear, and suspicion.

The patient's questions about the therapist may be answered briefly and without evasion, but involvement in detailed self-revelation should be avoided.

The patient has too many worries of his own to tolerate being burdened with the therapist's history or personal analysis.

During silences and periods marked by the patient's apparent indifference, the therapist need say little, occasionally questioning or speculating about what he thinks may be going on but avoiding elaborate interpretations based on inadequate data and more likely to be wrong than right. The therapist should avoid being thought of as reading minds. Sometimes, in a silence, the therapist may look at a book without becoming lost in it; that is, he keeps his attention available but not unremittingly focused on the patient, who may be discomforted by excessive close observation. Although one does generally encourage speech, sound is not always better than silence; there may be profit in silence if the therapist observes when it occurs, what happens during its presence, and its possible significance.

When being criticized, the therapist should listen carefully, as this is an opportunity to learn how the patient views him and others. Credit should be given for accurate observations, and the therapist should not deny some mistake that he may have made, although he should not continue to cry *mea culpa*, as neither he nor the patient will profit from an immersion in guilt. When the patient is in error, this should be pointed out with some questioning as to the basis for his entertaining such views. Possibly the patient will discover that his attack on the therapist is excessive and motivated more by previous experiences with other people than by happenings in the sessions, in which case he can learn how perceptual distortions are brought about by anxiety and the influence of past events. Should the patient deny that he is in error, the therapist need not argue but may simply say "so be it," agreeing that the patient does hold a certain view for the present, without accepting this view as necessarily final. One should be encouraged by this evidence of the patient's ability to express himself.

The therapist may be pleased when things go well—when there is a temporary lull in the storm—but he should avoid responding with cheers and delight. In so doing, he might, by rushing in, crush the transient appearance of a trace of self-esteem. At such times, searching explorations of motivations are not useful, although it may be advantageous to discuss the happenings of more disturbed periods, unless anxiety is thereby markedly increased. The reappearance of psychotic behavior is evidence that the patient has become more anxious, and this is no time for the therapist to be critical or disappointed. Rather, he should attempt to find out what the upset is about. He may discover that, when the patient begins to feel more at ease, he may at the same time become apprehensive that he will be attacked then, when his guard is down. Then the patient must learn that the therapist will not attack, that is, will not willfully

provoke anxiety, and that, although the therapist may at times get angry, he will not retaliate because of the patient's criticism.

3. At times the patient may act as if he expected the therapist to be extraordinarily powerful and evil, insisting that any kindly and tolerant behavior is only a facade that poorly conceals a poisonous destructiveness. On occasion he may withdraw in disgust and loathing, briefly exhibiting psychotic behavior, all of which will suggest that the developing relationship is bringing to awareness and integrating dissociated representations of earlier painful experience.

At such a juncture the therapist should attempt to identify himself clearly by talking or shouting, by interrupting the progression of events if he can, by pointing out who he is, and by spending additional time with the patient. The therapist cannot sit silently by while the patient moves toward a state of panic. Panic is a painful experience no one wants to repeat. No useful learning occurs in it, and there is no guarantee that one will recover from a profound regression. No patient will feel kindly toward a therapist who carelessly or deliberately permits such a condition to develop. Interpretations on these occasions are seldom useful because the patient is too anxious to make sense of them and the therapist can only guess what referents are being symbolically expressed in the patient's behavior. Thus the focus should be on the you-me relationship in the here and now.

The fear of destruction. As the attachment between patient and therapist grows, the patient will at times recognize his affection and need for the therapist but may then become anxious and withdraw. The relationship is characterized by advance and retreat. The patient may say that the therapist is attempting to control him, to foist an unwanted system of values on him, and to make him a slave. In more disturbed periods, he may say that the increasing closeness will bring with it destruction of one or both participants. This reveals the patient's fear of his own aggressiveness—a fear that he may kill the therapist or drive him mad—in which case he may seek to preserve himself and his companion by getting out of the relationship. Then he is faced by the fear of abandonment and isolation.

This behavior is evidence of increasing intimacy in the therapeutic relationship, which is feared by the patient as a return to an anxious, symbiotic attachment (as with a mother) in which the sense of self will be lost and from which there is no escape save through destruction. The patient needs assurance that the relationship will continue despite the intensity of emotion aroused in it. Limits must be set to destructive behavior, and it should be demonstrated that neither patient nor therapist will be hurt or driven away. When the patient indicates a feeling of increased personality disorganization (a loss of the

sense of self, in which the boundaries between himself and other objects seem unclear), the therapist may take pains to help the patient distinguish what is properly his and what is someone else's, in terms of body, mind, thoughts and values.

The therapist tries to find out why the patient acts as if he both fears and needs control and domination; frequently it is discovered that a parent wanted to live aspects of his life out through the child, with the result that the child assumed that he could not preserve the needed relationship with the parent unless he gave in to him, took on his values, and became something of a puppet. The therapist makes it clear that he has his own life to lead and that the patient is not required to take responsibility for it. The patient must learn that, although the therapist can take pleasure in the patient's abilities and in his growth, he does not have the need to envy him or to keep him dependent. The patient also learns that he does not have to take care of the doctor—that is, that the doctor will not become unduly dependent on him—and that, although eventual separation is necessary, it is not necessarily destructive. These matters briefly outlined here are worked over again and again, in both action and verbal discussion, throughout the duration of treatment.

Transference or perceptual distortion in treatment. The early, often vague and confused, view of the therapist held by the patient develops into a concept of him that in some respects resembles figures in the patient's past. The therapist may be identified as the patient's father, for example, or, in less intense reactions, as being like the father. That is, in the early stages of the work the patient may find in the therapist aspects of earlier life relationships that may have been troublesome but that could to some extent be defined in conventional terms; in many instances the relationship with the father fits this definition. Later, as the therapeutic relationship is consolidated and established as durable, more diffuse and disturbing distortions of perception may appear, seemingly related to infantile, preverbal experiences with a mothering person. At such times the patient becomes more withdrawn and overtly psychotic.

If the patient insists that the therapist is someone other than himself, the therapist may show some impatience, indicating that the patient is grossly mistaken. If the patient says that the therapist is *like* someone else, the therapist wants to know what evidence there is for the alleged resemblance, thus opening the way for further investigation of past experience. Throughout this study of the patient's views of himself and the therapist, there is an interplay between the presentation of reality that can be consensually validated (and requires acceptance and confirmation) and distortion (that requires correction). The patient's correct estimates of a situation are encouraged, and the incorrect, anxiety-driven ones are subjects for study and modification.

In all this work, long commentaries are seldom heard or recalled by the patient, and anxiety interferes with accurate listening. Therefore, when the therapist has something to say, he should be reasonably sure that it is relevant to the patient's concerns at the moment, that it is spoken when anxiety is not so great as to prevent his being attended to, and that it is stated briefly.

The therapist. The therapist will often be unsure of himself in this work and will at times be anxious to the point of wanting to abandon it. A personal psychoanalysis is recommended for anyone who plans to do intensive psychotherapy; the experience of anxiety and the insights gained in a developing controlled interpersonal relationship can be informative about one's own therapeutic interventions. It is particularly important that the therapist not be governed by major motivational systems outside of his awareness: they may lead him into destructive behavior with his patients. The therapist should consult regularly with a colleague, presenting an account of the course of treatment and discussing the implications of what he describes. Such presentations may be embarrassing at times, but it is easier to recover from embarrassment than from serious misadventure in a treatment procedure.

In the therapy of a schizophrenic patient, the therapist experiences intense emotions that may not seem suitable to him in his role as a physician. He may feel anger, disgust, despair, rage, lust, and other sentiments that reflect past experience, the present encounter, and the increase of anxiety. He finds that he must attend to more than the verbal exchanges between himself and his patient, rediscovering modes of communication—odor, taste, and touch—that may never have been clearly in his awareness, that have been forgotten, or that seem somehow unsuitable to adult living. Often the therapist is dismayed by observing that he seems to mean nothing to his patient; despite his efforts as psychiatrist, physician, and well-intentioned, kindly human being, his patient turns from him or, worse yet, does not seem to be aware of him. In brief, the therapist often suffers from a lack of confirmatory feedback from his patient and may attempt to wring from him some indication that treatment has significance and that there is value in what is being done. All people want to be assured, on occasion, that they and their efforts are valued, but the therapist cannot rely consistently on his patient for such reassurance. When he does not find it, he should not withdraw from the situation; rather, he must continue with confidence that a human relationship, however obscure its form may appear to be, has meaning and can offer hope and a way to useful change.

There are times when therapeutic efforts miscarry, long periods of endeavor being revealed as more destructive than helpful. The therapist must face this possibility, as must any physician. He will discover

that he cannot escape the memory of his failures. He will also discover pleasure in what he does, and this pleasure he will do well to acknowledge and treasure.

Only suggestions regarding the psychotherapeutic experience with the schizophrenic person have been presented here. Each therapist must expand such an account through reading, discussions with others, and his own experiences as therapist and human being. No matter what occurs in the therapeutic venture in which he participates, the therapist is required to observe it as best he can and attempt to learn from it, refusing to be dismayed or falsely overjoyed by what he finds. In a sense, each encounter with a patient has within it the opportunity for research as well as therapy, no person being quite like another.

Suggested Cross References

In this section the nature and etiology of schizophrenia are discussed from a purely psychodynamic frame of reference. Alternate viewpoints may be found in Section 15.3 on the etiology of schizophrenia by Weiner and in Sections 15.1 and 15.4 by Lehmann. Different hypotheses regarding the etiology of infantile autism are presented by Eisenberg in his section on childhood psychosis (Section 42.1). Additional information regarding the effects of maternal deprivation and on the role of the family in psychiatry are contained in Sections 44.1 and 4.3, respectively. The author's views on the inadvisability of the use of antipsychotic medication for acute schizophrenic reactions are controversial. Alternate viewpoints regarding the use of organic treatment methods in schizophrenia may be found in Fink and Itil's section on the organic treatment of schizophrenia (Section 15.6) and in the discussions of the organic treatment modalities used in psychiatry to be found in Chapter 35.

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15.6 SCHIZOPHRENIA. VI: ORGANIC THERAPY

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In the absence of defined etiologies for the varieties of schizophrenia, treatment is empiric and dedicated to alleviating the patient's symptoms and reducing tensions and disturbances in the patient's family. Besides milieu therapy and psychotherapy, the organic therapies are currently used in the treatment of schizophrenia.

The organic therapies of schizophrenia have introduced optimism where isolation and incarceration existed as the principal prospects for the mentally ill less than 30 years ago. These therapies also provide a special impetus to studies of the pathophysiology of schizophrenia, with much effort being focused on the neurophysiological and neuropharmacological processes.

Although much has been learned about the role of cerebral dysfunctions in psychosis, much more has been learned about normal cerebral mechanisms. Studies in schizophrenic subjects have yielded information about the localization of functions in the limbic, frontal, and temporal lobes and the relation of neurohumors to behavior. The significance of central cerebral structures in disorders of sleep-wakefulness and vigilance and the relation of changes in scalp-recorded electroencephalograms (EEGs) to the effects of psychotropic drugs have been especially illuminating subjects of study.

The ways in which the organic therapies of schizophrenia are associated with alterations in behavior are unclear, but it is to the changes in brain function that much attention has been directed. The efficacy of organic therapies is dependent on the type, degree, and duration of the induced alterations in brain function. The changes in brain function are most readily measured in scalp-recorded electroencephalograms, as changes in dominant frequencies, amplitude, pattern, and variability.

EEG studies have recently achieved a special promi-

nence in the treatment of schizophrenia. In induced convulsions and in the psychotropic drug therapies, the EEG changes are useful indicators of the adequacy of treatment. When changes in the EEG are minimal with conventional treatments, the changes may be augmented by increasing the frequency of seizures or the dosages of drugs. Such increases may provide the changes in brain function necessary for therapeutic results.

Until specific treatment methods related to the cause of psychotic disorders are developed, these neurophysiological concepts and the EEG studies now in progress provide the most useful guideline for understanding the organic therapies of schizophrenia.

Ways to Induce Changes in Brain Function

Although the organic therapies of schizophrenia have peripheral and central nervous system components, the changes in brain function and the alterations in consciousness are the aspects receiving most study. Changes in cerebral function may be induced by many means, and pharmacological, electrical, and surgical methods that may be safely used to alter brain function have been pressed into service at one time or another.

Pharmacological agents induce relaxation or sleep (barbiturates, bromides, soporifics, anesthetics), decrease psychomotor activity with little change in consciousness (reserpine, phenothiazines, butyrophenones), or alter consciousness for prolonged periods (insulin). Some agents increase motor and mental activity (amphetamine, monoamine oxidase (MAO) inhibitors, imipramine) or induce hallucinatory states with marked changes in consciousness (atropine, scopolamine, piperidylbenzilate) or with minimal change in consciousness (lysergic acid diethylamide (LSD), psilocybin, mescaline). Some agents are used to induce seizures (intravenous pentetrazole or the inhalant, hexafluorodiethyl ether).

Electrical methods to alter brain function are used to obtain relaxation or sleep when low voltage electrical stimulation is used (electrosleep, electronarcosis) or to induce loss of consciousness and seizures as in convulsive therapy.

Surgical methods include the separation of a part of the brain, as in the operations of lobotomy, leukotomy, topectomy or orbital undercutting, and stimulation through implanted electrodes. Specific central brain structures may also be modified for prolonged periods by cautery or freezing.

The selection of a specific treatment is made difficult by the absence of suitable comparative studies and lack of knowledge about modes of action. Each method appears successful to the extent that it produces changes in brain function, the results varying with the type and duration of the induced changes. But the brain exhibits both a resistance to persistent change and an ability to recover, so most of the in-

duced changes, even after extensive treatments, may be measured for only a few days to a few weeks.

The present view is that the treatments are non-specific in the schizophrenias and that the selection should be based on prior clinical experience and the physician's attitude regarding the safety and efficacy of the various methods in each psychopathological syndrome. Since psychotropic drug therapies are generally considered safer than induced convulsions and more effective than insulin coma, atropine coma, and cerebral surgical procedures, treatments are usually prescribed in that sequence.

Indications

Although duration of illness, length of hospitalization, type of onset, previous treatment, age, social class, and educational level influence the selection of treatment, the use of organic therapies is related chiefly to the clinical diagnosis and specifically to the individual's predominant symptoms. The psychopathological symptom cluster approach is proposed in this section. As the specific techniques of treatment and usual adjuvants are described elsewhere, the treatments and daily dosages noted here are presented as guidelines.

Excitement and overactivity in acute schizophrenia. The excitement, agitation, restlessness, and hyperactivity of acute schizophrenic reactions are frequently modified by organic treatment. In mild states, sedatives and hypnotics (as barbiturates, paraldehyde, or chloral hydrate) are temporary expedients. In active states, the phenothiazines are the principal agents used, with dosages that are often high, for example, chlorpromazine, 600 to 1,200 mg.; thioridazine, 400 to 600 mg.; trifluoperazine, 20 to 50 mg.

In Europe and Canada, a wider variety of psychotropic drugs have been found efficacious and safe than are used in this country. In acute excitement states, levomepromazine (150 to 300 mg.), haloperidol (4 to 15 mg.), and prothipendyl (80 to 160 mg.) are widely used.

In severe excitement states, psychotropic compounds may be administered parenterally, with frequent applications necessary early in treatment. Dosages are often higher than in other conditions, for example, chlorpromazine or promazine, 50 to 100 mg. four times a day intramuscularly. When the state of excitement is poorly controlled by phenothiazines, concurrent electroconvulsive therapy has been applied, with the frequency of treatments varying from three times a week to three times daily.

When agitation and restlessness are prolonged and the patient is poorly responsive to these measures, a continuous state of sleep and sedation maintained by barbiturates or artificial hibernation using lytic cocktails for 1 to 4 weeks has been recommended. The subsequent administration of phenothiazines has been reported as producing a prolonged modification of the psychosis.

Disturbance of thought content and perception.

In acute reactions marked by delusions and hallucinations, as in paranoid or undifferentiated schizophrenia, the phenothiazines (particularly those of the piperazine group) and induced convulsions have been found effective. High dosages are generally not required, although the medication must be maintained beyond the period of the disappearance of symptoms.

When these states become protracted, various other treatments may be required. High doses of phenothiazines, especially butaperazine (30 to 120 mg.), perphenazine (8 to 32 mg.), and trifluoperazine (20 to 50 mg.), have been successfully applied. It is in such subjects that prolonged insulin coma therapy has been most used. In one technique, insulin is administered daily for a 2-month period, and the coma state is maintained at the level of absent corneal reflex, absent deep tendon reflexes, and miotic pupils for a minimum of 1 hour (40 to 50 comas). Comas may be interrupted by the administration of sugar (glucose) or glucagon.

There is considerable dispute as to the merit of insulin therapy, since the usual treatment differs little in clinical efficacy from chlorpromazine therapy or barbiturate sleep. Better clinical results in schizophrenia have been reported in those subjects in whom prolonged organic-type reactions have occurred during deep coma therapy.

Induced convulsions have also been recommended, but these are reported as less successful unless applied as regressive electroshock. In this treatment, grand mal seizures are induced daily with the occasional administration of two to three seizures a day, spaced at 10- to 30-minute intervals. Patients develop a confusional amnesic state, from which recovery occurs 2 to 6 weeks after the last treatment. Special claims have recently been made for the intravenous induction of seizures by hexafluorodiethyl ether or pentetrazole.

Combinations of psychotropic drugs have recently been recommended, as in the simultaneous administration of chlorpromazine (200 to 300 mg.) or thioridazine (300 to 400 mg.) with chlordiazepoxide (50 to 80 mg.).

Apathy and withdrawal in hebephrenic or simple schizophrenia. The anergic state in residual schizophrenic disorders, characterized by apathy, withdrawal, and disinterest, is often treated with piperazine phenothiazines, such as trifluoperazine, 5 to 15 mg., or butaperazine, 20 to 60 mg.

When phenothiazines with a marked sedative component are used, such as chlorpromazine and promazine, anergy and apathy may be intensified or induced. This state may be responsive to the simultaneous administration of imipramine (200 to 300 mg.) or anticholinergic agents (procyclidine, 5 to 20 mg., benzotropine, 2 to 4 mg.) while the phenothiazine treatment is continued.

Among the more novel treatment approaches now

under study in Europe is the technique of symptom provocation, which has been used in patients with chronic apathy, withdrawal, and anergy without florid symptoms. In this method, a more active psychotic process is produced by the repeated administration of imipramine (100 to 300 mg.), hallucinogens (Ditran, 5 to 15 mg., LSD, 100 to 300 μ g.), or MAO inhibitors (phenelzine, 100 mg.). When a more active psychotic state is induced, treatment is then continued with the phenothiazines or butyrophenones.

Stuporous states in catatonic schizophrenia. The posturing, rigidity, and tension of catatonic states may be reduced by such phenothiazines as high doses of chlorpromazine (600 to 1,000 mg.), thioridazine (400 to 600 mg.), trifluoperazine (20 to 50 mg.), butaperazine (30 to 120 mg.) reserpine (5 to 10 mg.), or haloperidol (10 to 30 mg.) administered parenterally. Intravenous barbiturates (as amobarbital and thiopental) or induced convulsions by chemical or inhalant methods are also occasionally successful. These agents may alleviate the acute catatonic state, but continued treatment generally requires phenothiazines or insulin coma therapy.

Catatonic excitement may be responsive to the same measures as other excitement states. Because such patients are prone to physical debilitation, tube feeding and continuous sedation may also be necessary.

Affective-emotional states. Disorders in affect and emotion often accompany pseudoneurotic or schizoaffective states. When the depressive components without agitation are in the foreground, treatment with imipramine (200 to 300 mg.) or amitriptyline (50 to 100 mg.), either alone or combined with phenothiazines (thioridazine, 200 to 300 mg., and chlorpromazine, 200 to 600 mg.) is suggested. When patients fail to respond to such combined treatment, measures similar to those described for the therapy of the anergic state are applicable.

When anxiety is prominent, induced convulsions or psychotropic drugs with marked sedative components may ameliorate the symptoms. Failure to respond is treated as described for the therapy of excitement states.

Schizophrenia with obsessional states. Severe obsessional features in schizophrenia are associated with poor prognosis. When obsessional features are prominent, high doses of piperazine phenothiazines with or without induced convulsions may be useful. Protracted obsessional states with marked tension or obsessional psychosis have been treated with cerebral surgical procedures or insulin coma.

Contraindications and Limitations

The risks in the somatic therapies are small, and there are few contraindications. Induced convulsions appear to provide an unusual cardiovascular stress, so elderly patients with cardiac disease require special care. Patients with known metabolic diseases, especially those affecting the liver, or hematological

disorders may also require special care when phenothiazines are recommended.

Secondary Effects

The side effects of induced convulsions, insulin coma, and psychosurgery are described elsewhere. Extrapyramidal symptoms, akathisia, and restlessness frequently occur with many psychotropic drugs. They are prominent with those compounds that are particularly effective in reducing florid psychotic manifestations. These symptoms are considered side effects by some authors but are also viewed as necessary accompaniments to successful treatment with present medications. These effects are readily inhibited by antiparkinsonian drugs, and the treatment of schizophrenic patients is not ordinarily interrupted because of these symptoms.

Suggested Cross References

Additional information regarding the organic treatment modalities, such as electroconvulsive therapy, the psychotropic drugs, and psychosurgery, may be found in Chapter 35 in Area G, on psychiatric treatment. Psychological treatment of schizophrenia is discussed by Will in Section 15.5.

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Chapter 16

Psychotic Disorders. II: Paranoid Reactions

16.1 PARANOID REACTIONS

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History

Paranoia is one of the oldest terms in medical literature, dating back at least 2,000 years to the ancient Greeks. By *paranoia*, which could be translated as "thinking beside oneself," they meant something equivalent to our lay and legal term "insanity." It seems to have disappeared from the literature around the 2nd century, A.D. For a while in the 18th century it was revived and enjoyed a short-lived popularity as a class name for delirious and delusional disorders. When Pinel reformed the then florid Linnean nomenclature of psychiatry shortly after the French Revolution, the term "paranoia" again became current, especially among those following Heinroth's classification in 1818.

Heinroth followed the influential philosopher Kant in dividing mental disturbances into those of the intellect, those of the will, and those of the feelings. Paranoia he regarded as essentially a disorder of the intellect. This attitude has its parallel today in psychiatrists who speak of "thinking disorders" in paranoia, paranoid states, and paranoid schizophrenia. Heinroth also introduced the term *Verrücktheit* into German psychiatry, where it is still often used as the equivalent of what we call paranoia.

Kahlbaum in the latter third of the 19th century also made use of the Greek term paranoia but in a much more definitive way to signify a delusional state. Kraepelin gave to paranoia its present precise formulation, reserving the term for cases of chronic, highly systematized, incurable delusions but without general personality deterioration. This conception applies clinically to an extremely rare syndrome. Kraepelin also recognized the existence of paranoid personalities.

Unfortunately, Kraepelin confused the situation greatly by including a large section, entitled *Die Paranoiden Verblödungen (Paraphrenien)*, alongside his famous section on dementia praecox under the

general heading of "endogenous deterioration." It is said that he intended paraphrenia to lie midway between paranoia and dementia praecox or schizophrenia, but there is nothing in his four-volume eighth edition of *Psychiatrie* to support this belief. Meanwhile, Bleuler, in 1911, published his monograph *Dementia Praecox or the Group of Schizophrenias*. Bleuler gave a definite and important place to the group of paranoid schizophrenias; but, naturally, he did not allude here to paranoia or paranoid states.

Another line of development began with Freud, who in 1896 described a case of paranoia as being the product of a defense mechanism. He thus departed both from the Kantian philosophy and from the descriptive Kraepelinian psychiatry to place paranoia on a par with hysteria and obsessions. He conceived of the principal paranoid defense as projection, that is, the rejection from consciousness of some intolerable accusation against oneself, originating in one's own unconscious, and the localization of it among other persons, known or unknown. This, even today, seems not merely to describe what we see happening in persons who become paranoid, but to make their delusional misinterpretations intelligible. It places paranoid delusions close enough to the misinterpretations of every day life and to the ancient, universal practices of finding scapegoats to make it seem worthwhile to study and work with the paranoid human being, instead of merely labeling him. Fifteen years later, Freud followed up this early study with an analysis of the autobiography written by an eminent jurist, Daniel Paul Schreber. Freud called Schreber's disorder "Dementia paranoides"; but today it is considered to have been a florid case of paranoid schizophrenia. Nonetheless, Freud's brilliant interpretation of the paranoid components has since held the major attention of psychiatrists.

Early in the century, Adolf Meyer, working no less courageously but on a more descriptive level, stressed that paranoiacs seem incapable of adapting their thinking to the consensus; they try rather to bend objective reality to accord with their delusional thinking. He emphasized that they are excessively concerned about what others think of them and that they show a progressive inability to validate or invalidate

their suspicions or to correct their conclusions in personal matters.

Bleuler came out with a second edition of an earlier monograph that, in sharp contrast to the first edition, showed the influence of Freud—who gave seminars at Bleuler's clinic—in clearly relating paranoia to affectivity. He insisted, however, on the basis of a lifetime of experience, that paranoid developments are not matters of impulse but occur only in certain kinds of persons. He did point out that ordinary errors and misinterpretations are related to delusions.

Kretschmer in 1927 delineated a hypersensitive characterological type of person with strong tendencies to self-reverence. He considered such persons especially vulnerable to paranoia and paranoid developments. Cameron in 1943 ascribed the origin of both the hypersensitive, asocial person and the development of paranoid delusions to a failure of the person in childhood to acquire minimal social skill in role taking and especially to an inability to take the perspectives of other persons for the practical purpose of comparing these consensual perspectives with his own. Later experience led him to the concept of the pseudocommunity and its probable relationship to a failure in early life to develop basic trust.

Although nearly all modern conceptions of paranoid developments emphasize the personal environment of the disturbed individual, none of them assumes that there may not be congenital differences among infants that render some more susceptible to such failures than others.

Definitions

The Committee on Nomenclature and Statistics of the American Psychiatric Association grouped paranoia and paranoid states (or paranoid reactions) as psychoses without known brain pathology. It defined them as cases showing persistent delusions, generally persecutory or grandiose, and ordinarily without hallucinations. Emotional responses and behavior are consistent with the ideas held. Intelligence is well preserved. This category, the Committee went on, does not include those reactions properly classifiable under schizophrenic reaction, paranoid type.

The Committee stated that paranoia is extremely rare and is characterized by an intricate, complex, and slowly developing paranoid system, often logically elaborated after a false interpretation of an actual occurrence. The patient frequently considers himself endowed with superior or unique abilities. The paranoid system is practically isolated from much of the normal stream of consciousness. There are usually no hallucinations. The personality is relatively intact and remains preserved in spite of a chronic and prolonged course.

The Committee defined paranoid state, which is usually called paranoid reaction in the current literature, as characterized by delusions. It lacks the logical nature and systematization seen in paranoia, yet it

does not manifest the bizarre fragmentation and deterioration of schizophrenic reactions. It is likely to be of short duration, although it may be persistent and chronic.

The Committee did not recognize or include the paraphrenias, although sometimes one still meets this term in the literature. In the early 19th century, Guislain used paraphrenia synonymously with folly, and both appear to have been equivalent to our modern concept of schizophrenia. Kraepelin used it in a special sense, as intermediate between paranoia and schizophrenia. With his usual flare for subdivision, he described four kinds of paraphrenia. Freud occasionally used paraphrenia as an equivalent of schizophrenia. Hinsie and Campbell stated that its most common usage is "to denote a disorder characterized by phantastic, absurd, paralogical delusions without deterioration, dementia, or loss of contact with reality except in the area of the delusional system." There seems to be no good reason for retaining paraphrenia within our nosological system.

What has just been said about the paraphrenias applies with even greater emphasis to what the older psychiatrists called monomanias. A century ago, paranoia was occasionally called intellectual monomania, and in such a designation the old time Kantian distinctions of intellect, will, and affect come clearly through. Intellectual monomania has no place in modern psychiatric thought.

Epidemiology

There are no reliable statistics concerning the incidence of paranoia and paranoid reactions. Classical paranoia, as defined by the Committee on Nomenclature and Statistics of the American Psychiatric Association, is extremely rare. Tyhurst, using Miller's tables, found that paranoia and paranoid conditions together make up about 10 per cent of hospital admissions. There seems to be no good evidence of an age distribution. Tyhurst thinks that hospital admissions represent more the age at which paranoid reactions become intolerable to others than the age at which they begin to be recognizable.

Earlier evidence that paranoid reactions seemed to be commoner among males than females has been contradicted by more recent statistics indicating that the female incidence is more than twice that of males. As to marital status, delusional psychoses appear in hospitalized patients more frequently among divorced or separated individuals. This may represent an intolerance of the intimate relationship involved in marriage, but there is no reliable evidence to justify this conclusion. The same reservations must apply to conclusions regarding education, socioeconomic status, and religion. There may be significant differences, but we do not have reliable evidence of them yet.

There is some evidence that more persons with paranoid reactions come from urban than from rural areas. This may be because in the country it is easier

to get away from other human beings than in a city. To a certain degree, there is a greater tolerance for oddities in rural than in urban areas, particularly for the hypersensitivity and threatened aggression that many people display during a paranoid episode. A man may go armed with a rifle and be prepared to shoot to protect his lawful rights to his share of irrigation in the wilds of New Mexico. No one could do the same thing in a city. The fact that no one intends to cheat this man of his irrigation rights does not seem to affect the neighboring people. That is simply the way he is. Nobody interferes. Nobody wants to interfere.

There is also some evidence that paranoid reactions are more common among migratory and immigrant groups than among the more permanent or resident population. Even severe paranoid reactions may disappear when a paranoid immigrant is returned to his own country. Migratory workers and minority groups, of course, have no such choice; they are living in their own country. A spontaneous hostile attitude toward migratory workers and minority groups seems to be near the surface, even in the absence of trespass or violence, not only in the United States but almost everywhere. It seems to come from some biological origins like those that make ants from one nest senselessly slaughter inoffensive ants from some other nest, which they have been doing for millions of years. It is often overlooked, for example, that the fate of the gypsies in Nazi Germany was as savage as that of the Jews, even though neither was plotting treason against the state. They were simply identifiable minorities.

Reliable statistics with regard to the incidence of paranoid reactions may be lacking because the reactions are often regarded as justified and reasonable, even to normal persons; therefore, a paranoid person may not seek or get the help he needs. There have been many instances in which a paranoid person, and occasionally a severely paranoid person, has succeeded in convincing judges or juries that his delusions are fact.

A great many persons experiencing a paranoid reaction have always had unusual difficulties in making close, meaningful relations with other persons. They anticipate that they will have the same difficulty with a therapist, as a rule correctly, and they are not venturesome enough to make the attempt to seek help. They sweat it out alone, join some movement, or move away—escaping both therapeutic assistance and the statistics.

Etiology

Biological inheritance appears to play no part in the development of paranoid reactions. One review of 400 hospitalized patients with paranoid reactions revealed that paranoid trends were present in only eight ancestors. A person who, as an adult, develops a paranoid reaction, may never have been regarded as

having a paranoid personality. However, it can be assumed that, for some reason, he has developed a predisposition to mistrust others and to project on to these others his own feelings whenever he is under stress. He is presumably more vulnerable to this kind of defensive maneuver, disowning projection, than to other forms.

Nor are there any known neuropathological bases or neuropathological concomitants of paranoid reactions. The exaggerated usage of the defenses of denial and projection in paranoid reactions suggests a distortion of early childhood development, but this seems to be related to the family structure of which the patient has been a part rather than to his own neurophysiology.

Paranoid reactions and homosexuality. Freud developed the thesis that paranoia arises when homosexual trends escape repression. It has for a long time been taken for granted that a person developing a paranoid reaction is basically homosexual and that his homosexuality arises from a fear of castration. Nevertheless, when the clinical evidence is examined, difficulties arise concerning these assumptions.

In the first place, Freud's key patients would unquestionably be regarded today as schizophrenic. The most famous of these, and probably the most famous case in all of psychiatric history, was that of the gifted jurist Daniel Paul Schreber. This remarkable man wrote an autobiography, *Memoirs of My Nervous Illness*, in which he described his imaginary transformation from a man into a woman. One interesting thing about Schreber was that he made no attempt to repress his homosexual aspirations. Rather, he made them into a kind of religion, albeit a glorified and personal religion. Although Freud had no contact with Schreber, who was the patient of the famous neurologist Flechsig, he studied Schreber's autobiography and made a masterful analysis of its paranoid contents. Freud's conclusion from this study and from his own and his colleagues' experiences was that paranoid reactions and homosexuality were inseparable.

However, clinical evidence within the past 40 years has not consistently supported Freud's thesis. It is perhaps fitting that most of the clinical reports include hallucinating paranoid schizophrenic patients, since this is what Schreber certainly was himself. Such clinical reports have come from persons within the American Psychoanalytic Association (like Henrietta Klein) and from persons outside it. They simply state the fact that clinically one does not find paranoid reactions necessarily related to homosexuality. As a matter of fact, Schreber's case is a far cry from contemporary views of paranoid reactions.

W. G. Niederland succeeded in uncovering some of the old writings of Schreber's father, Dr. D. G. M. Schreber. He was apparently a very well known health educator as well as a physician. This health educator father seems to have been an unconscious

sadist. He invented all kinds of rigid physical restraining devices to be worn by boys and girls as they studied. In his many books, the elder Schreber described these various artifices of his in terms of improving children, but the illustrations, some of which Niederland has reproduced, make it abundantly clear that they must have made the helpless child feel exceedingly uncomfortable. There is also evidence that the elder Schreber was a forceful, overpowering man who ran an orthopedic institution, where the younger Schreber had to live out his childhood. It is inconceivable that the younger Schreber could have escaped the wearing of his father's contrivances.

Niederland and others have called attention to the many similarities of terminology in the elder Schreber's books on health education and his psychotic paranoid son's account of his own psychosis in his *Memoirs of My Nervous Illness*. Some of these similarities have helped to clear up previous obscurities in the younger Schreber's account. Schreber's memoirs, which have been translated into English, are strongly recommended as probably the best and most complete autobiography of a psychosis in the literature. Niederland's papers are likewise recommended, as is a symposium held in 1962, organized by Kitay, and participated in by Niederland.

A great number of overtly homosexual persons never develop paranoid delusions, and a great many persons are paranoid without being homosexually oriented. It is easy enough to dismiss such clinical material with the challenge that at least latent homosexuality can be demonstrated in persons who develop paranoid reactions. But latent homosexuality is far more widely distributed than are paranoid reactions. There may be some relationship between the two; but, as Klaf et al. indicate, the relationship does not appear to be a causal one.

Quite aside from clinical findings, the deep emotional relationships normally existing between fathers and sons, between mothers and daughters, between like-sexed siblings, like-sexed chums, and like-sexed friends must be considered. These cannot be simply lumped together as homosexual. They are part of the foundation of identification and are therefore at the very basis of growing a normal personality and a normal sex identity. They are not merely the bases of paranoid reactions.

Basic trust deficiency. Patients who develop paranoid reactions are probably persons who in early childhood were unsuccessful in developing basic trust. This is, in effect, a basic confidence, derived from innumerable experiences during infancy and early childhood, that, whenever one's frustration becomes intolerable, someone will relieve it and thus restore a tolerable equilibrium. The importance of such basic trust or basic confidence becomes immediately apparent when it is considered how completely helpless the infant or very young child is unless someone else reliably helps him.

In order to understand how a paranoid reaction can develop, one must understand that even the most normal person lives on trust. He must take action continually on the basis of fragmentary information, which only later events can confirm or contradict. A person must assume all the time, without confirmation, that people in general are well disposed toward him or at the very least that they will avoid harming him to the best of their ability.

The normal, everyday person hears parts of a sentence or sees fragments of behavior around him and assumes that what he misses will not put him in personal jeopardy. He eats his meals without thinking that his food may be poisoned. He works during the day, relaxes afterward at home, and then allows himself to go to sleep, without feeling it necessary to take even the most elementary precautions against being injured or destroyed.

When it comes to emotionally charged matters, however, the picture changes, even among quite normal persons. There is in everyone always an undercurrent of magical and superstitious thinking that is not released except in dreams, and even then it is almost always forgotten. In short, we all live deeply irrational lives; but we have all been schooled in childhood to develop an overlay of realistic, logical thinking and a relatively impersonal attitude even about deeply personal matters.

Clinical Description

It is customary to distinguish four kinds of paranoid reactions: (1) jealous, (2) erotic, (3) grandiose, and (4) persecutory. Of these four subdivisions, the persecutory is clinically by far the most frequent and most important variety.

Paranoid jealousy. The jealousy one sees in paranoid reactions is no different from normal jealousy, except that it is much more profound and more relentless. Paranoid jealousy is seldom without some objective, external reason. What makes it pathological is that it rests on evidence that seems inadequate to the normal person. Nevertheless, the reasons for jealousy that the paranoid person gives seem to him sufficient to support his belief. But what he believes is actually a projection of his own wishes and desires, which he denies as his own.

Paranoid eroticism. It is easily perceived that the eroticism of the paranoid person is a denial of his own desires and a projection of these desires upon another person. This other person may be someone the patient actually perceives, however incorrectly, as the object of his passion. It may also be someone imagined.

Paranoid grandiosity. This seems to represent a phase of infantile or early childhood development in which the infant or child conceives himself as having tremendous powers or abilities. Regression to such a phase, in the face of frustration, places the paranoid person in the imagined position of an omnipotent person, whose powers cannot be diminished or denied.

Persecutory paranoid reaction. The most outstanding characteristics of persons who develop a psychotic persecutory paranoid reaction are a deep distrust of others and an unusually strong tendency to deny their own hostility. They characteristically project their hostility on to other persons. Such persons may or may not have had a recognizable paranoid personality before they were exposed to stressful conditions, to real or imagined danger, or to actual damaging discrimination or imagined discrimination.

From time to time, whole communities seem to respond to real or imagined threat with something approaching paranoid panic. The invasion from Mars broadcast in 1938 brought hundreds of people who had not heard the introduction which explained that it was just a play, on to the roads with all their movable possessions loaded on to pushcarts and in automobiles. And a rumor in a Midwestern town that a deadly gas was being disseminated aroused a paranoid panic in a high percentage of the population. In these instances, the reactions were too general to be dismissed as simply a widespread paranoid personality. They showed a widespread belief in the unlikely danger and a tendency to flee, even when people were actually safe where they were.

The preliminary threat. An upsurge of overwhelming fear of retaliation may immediately follow one's own upsurge of overt hostility. This fear, however unreasonable it may be, is actually the fear of one's own conscience or superego or of some regressive antecedent of one's mature superego. To deny the internal sources of conscience or superego is a serious matter. If a person denies the threats of his own conscience or superego, he is left with only one resource, and that is to look for the threat in his environment.

This is the essential nature of what it means to project. The patient finds his own hostility in other persons, who now seem to threaten him. Thus, what appears to *produce* a persecutory paranoid reaction is really that which tips a chronically unstable balance. In the past the patient has maintained this unstable balance through successful denial and projection or disowning projection. Disowning projection in the infant is later normally subordinated to adequate repression.

From what happens clinically in persecutory paranoid reactions, one has to conclude that repression has all along been inadequate. In other words, there has been too much dependence upon denial and projection or disowning projection. This is the heart of the matter. In an emergency, these relatively infantile defenses take over and become predominant. A psychotic paranoid reaction then appears. It is probable, although not experimentally proved, that adults who develop paranoid reactions under stress have not been able to form or have not been given the necessary intimate close relationship with a loving mother or mother substitute.

Onset. The onset of paranoid delusions of persecu-

tion typically occurs in a setting of environmental or interpersonal stress. It is generally believed that this happens most often in adults who have habitually found fault with everyone but themselves and whose accusations against their acquaintances sound very much like vignettes of themselves. The same kind of thing occurs less benignly when a paranoid person begins by expressing open distrust, suspicion, hostility, and self-reference, although these attitudes appear unjustified to his friends and relatives. If they oppose him or try reasoning with him, they are likely to become frightened by him, especially if he reacts by accusing them of also being parties to his fantasied persecution, which paranoid patients often do. The major defect of the paranoid reaction, under these circumstances, is to isolate and estrange the patient at the very moment when he needs someone to confide in and to help him.

The onset of a paranoid reaction may be sudden. In that case it represents the sudden breakdown of an adaptive and defensive system that had previously been adequate for all ordinary practical purposes. Often, however, the suddenness is only apparent. The abrupt failure in such cases is analogous to many cases of sudden cardiac decompensation. There have been many indications in the recent past that stresses were not being well handled; but the persons who noticed these indications maintained an unjustified confidence that the situation was only something temporary and would clear up by itself.

The precipitating situation in a paranoid psychosis may seem trivial to persons who have maintained faith in the patient's intrinsic ability to deal with increased stress. This misplaced confidence has been concealing the patient's actual situation from those close to him. In these situations, a psychotic development may proceed behind a facade of apparent health, until the patient is no longer able to control his impulses or conceal his illness. When this point is reached, the open manifestations of paranoid psychosis may indeed appear abruptly, even though they have been going through a relatively slow internal evolution for some time.

Early phases. A more or less prolonged prodromal phase is common in paranoid reactions, whether it is recognized or not. The patient meets with frustration, rebuff, threat, loss, or temptation—as, of course anyone else might. The difference is that, having no one he can trust and confide in, he reacts by first withdrawing his interest in his environment and then by losing interest in it. Sensory or perceptual isolation may have an extraordinary effect on supposedly normal subjects who voluntarily agree to their isolation but who are given to understand that they can end it whenever they want to. Some of these subjects find their isolation so unendurable that they quickly end it. The paranoid person is not isolated in the same sense, but he feels himself cut off from all meaningful human interactions when he most needs them.

The paranoid patient becomes preoccupied and, like any other isolated person, he undergoes regression. In his regression and isolation he tries to understand what has happened to him. This leads him to try once more to regain contact with objective or consensual reality, with the reality that other people seem to be living in. But because he cannot change his delusional beliefs, he must reconstruct the realities around him in such a way that his delusions appear confirmed. The world he now lives in is definitely and personally a dangerous world.

This apparent confirmation of the patient's delusional beliefs greatly increases his anxiety. To him, things seem somehow changed. He himself feels somehow different, estranged, puzzled. He tries to account for the changes that he observes in terms of his surroundings, whereas the origins of the changes lie within him. The result is that his growing anxiety, coming from within him, is projected and appears as a growing danger from his surroundings.

The paranoid patient becomes, as anyone in objective danger becomes, watchful and uneasy, uncertain of what is going on around him. The more his suspicions and misgivings increase, the more he examines—distrustfully—his environment. And the greater his suspicions and misgivings, the less he can depend on anyone but himself to investigate the situation. Unfortunately for him, he has always depended on solitary observation; he has always looked for and found hidden meanings; he has always depended on the use of leading questions and the search for hidden clues.

The more a person with these attitudes and habitual techniques examines any situation, the more likely he is to conclude that "something is going on"—something of personal importance that eludes him. When he reaches this, usually early, conclusion, he begins to notice many things that had previously escaped him. People seem to give meaningful glances in his direction; they gesture, smile, laugh, make facial expressions, and even perform unexpected movements or assume special postures for his notice.

In the preoccupied, regressed, and uncertain state of things the patient now experiences, everything seems somehow meaningful and related to him, even though he cannot seem to grasp the significance of what is going on. This self-reference has led some workers in the field to assume that centrality is the major factor in paranoid developments; that is, the paranoid person feels himself the center of attention. There is a certain amount of truth to this. The man who feels the major object of a murderous pseudo-community is without doubt making himself the center of attention. It has often been noted in the psychiatric literature that many paranoid persons would rather be the object of attack than not be noticed. This, however, is not a constant finding. Paranoid patients often feel themselves to be just part of some great design. And many narcissistic patients want to be the center of attention but are not paranoid.

The psychotic paranoid patient does not understand that his rising anxiety comes from processes within himself, not from rising environmental dangers. He does not realize that, in the very process of withdrawing from objective reality and regressing, he has unwittingly precipitated the estrangement he now experiences, the puzzlement about what is going on around him, or the imminent threat of a breakthrough of his own unconscious impulses, which he had until then been able to contain through strong processes of denial and projection, which assisted his weak repression.

Even a normal person will find that, the more fearful and watchful he becomes, the more dangerous his surroundings appear. To a fearful, suspicious, vigilant, anxious paranoid person, everything around him seems to justify and reinforce his distrust. His human environment appears to be conspiring to make him uneasy and on guard. He finds things at home or at work purposefully disarranged, as if to test his vigilance or his intelligence. In the street he finds himself jostled, pushed, obstructed, or ridiculed. He misinterprets innocent laughter as something malevolently directed at him. People appear to be talking about him in a depreciating or slandering way. Someone smiles at someone else, and the patient can only conclude that they are smiling about him. All the time, the plot is thickening, the mystery seems to grow and grow. The patient's need for some explanation of all that is going on becomes irresistible.

Preliminary crystallizations: finding a focus. Even a normal person could not endure as much anxiety, as much uncertainty, as much instability as this without seeking an explanation. It is characteristically human to look for explanations, for some kind of hypothesis under which whatever appears strange may be subsumed. Without some kind of preliminary crystallization, some guess as to what lies behind what one is experiencing, a person may be held in intolerable suspense.

Paranoid reactions involve a great deal of anxiety. Once paranoid suspicions have been aroused, they have to be dealt with. Even a mistaken conclusion seems more comforting than no conclusion at all. Unfortunately, the person developing a paranoid reaction is one who has much less than average ability to judge reality. He is typically a person who has little skill in taking the role of others, of putting himself in their place and looking at his own situation with at least passable objectivity. He has had little experience in confiding in other persons, and he does not communicate readily, no matter how much he needs to do so.

A paranoid person developing active delusions of persecution cannot simply give up the denials and projections or the disowning projections that make up his delusions. If he tried to do this, he would be overwhelmed by the hostility they express. His delusions defend him against his own hostility. If he were to

recognize and accept his own hostility, it might be sufficient to destroy him, as psychotic depressive hostility sometimes destroys the patient by suicide. The paranoid patient's only hope, at this phase, is that he may be able to reconstruct reality to include his delusions and still give it some degree of stability. He must find a place for his delusions in his reconstructed reality because they are defensive in nature; they help him preserve his own personality structure and protect him from suicide.

During the phases of preliminary crystallization, the paranoid patient has not yet established a master mind or a master plot. He does feel that, for some reason he does not understand, he has been chosen to fulfill some role, which he does not understand either. To him, it seems that he is being subjected to all kinds of tests, that he is being made to seem stupid, or that somehow he is the victim of some expression of contempt. For example, magazines are left lying open for him to observe, to indicate that he is considered a criminal, a pervert, or a fool. From time to time, he notices that food he is given tastes peculiar; he wonders what has been put into it. The feedback from his own hostility may make him feel that automobiles are aimed at him with the deliberate attempt to run him down.

A person developing a persecutory paranoid reaction usually begins at this time to feel that he is being systematically watched. When he steps out of his office, he notices a furtive person slink by who seems to have been keeping tabs on him. When he telephones, inexplicable things begin to happen: he dials one number and gets another, or people ring him up and then remain completely silent when he answers. At this point, he may poke around his office and his home to see if he is being bugged. When he turns to television, he hears things and sees things that seem to refer to him, matters he had never before thought were public knowledge. The same is true when he goes to the movies. Whatever this is that is going on seems to be spreading. The patient feels that he is getting more and more involved in something important that he does not understand.

It is inevitable that anyone so beset should try to communicate with someone else about all these things going on. The difficulty is that the patient has already concluded that he is being persecuted. If he tries to communicate all this to someone, his listener is almost sure to express his doubts. Since the listener does not share the patient's projected hostility and fear, he is likely to expostulate and confront the patient with realistic evidence that he is wrong. This is a mistake. To the patient, his own interpretations are so self-evident that only an idiot or an enemy could possibly doubt them. An enemy? Yes, the paranoid patient is on the lookout for enemies, and now he can only conclude that the man he has just confided in is among his enemies. The man does not believe the patient.

Therefore, he is trying to deceive him, so as to make the patient an easier prey.

Final crystallization: the paranoid pseudocommunity. In the phase immediately preceding this one, the patient has remained in suspense, perplexed, feeling that something ominous was going on but unable to recognize what that something might be. Up to now, he has failed to reconstruct his own reality, to take the place of the reality he lost when he regressed. He has failed to explain his uneradicable suspicions. He may already feel that "they" are planning something, plotting something against him. But he can say neither what that something is nor who they are who plot against him. The final step in a paranoid reaction is to find answers for these questions: who "they" are and what they are up to. It is this step that leads to the formation of a pseudocommunity, a group of real and imagined persons bent on destroying the patient's reputation or his life.

Such a delusional organization is called a pseudocommunity because the real and imagined persons making it up are not, in fact, united against the patient at all. The "they" the patient conjures up have no factual existence, and there is, in fact, no plot against him. Like a manifest dream, the pseudocommunity is the patient's own construction. It seems dangerous or even murderous because he has denied and projected into this fantasy his own hostility, which he can no longer manage in any other way.

The paranoid person's hostility has escaped repression. It is now accessible to his preconscious thinking. Therefore, he must deny it and project it, since he can no longer repress it. The persons on whom the patient is most likely to project his irrepressible hostility are usually authoritarian figures or competitors who, he believes, are only disguising evil designs behind a show of friendliness.

The pseudocommunity may be defined as an imaginary organization of real and imagined persons who seem to be united in some plot against the paranoid patient. The alleged plot is actually an organization of the patient's own hostility, which, somewhat in the manner of the director of a play, he allots to specific persons or agencies around him. His story, if he confides it to anyone, sounds like a mystery story. It is, however, a dangerous story because the patient may at any time take action against any of his unsuspecting persecutors.

This crystallization of a pseudocommunity from the obscure hostility, fears, and suspicions preceding it confers upon the paranoid patient a certainty that, for the first time, he understands what is going on around him. He thus replaces the confusion of his newly unrepressed hostility, suspicion, and fear with the clarity of a delusional reality. One of the most common statements of such a patient when he has finally constructed his delusional pseudocommunity of plotters is: "Now everything has become clear to me!"

This experience is called sudden clarification. It is not, of course, a genuine clarification. It is only a false crystallization of the patient's own denied and projected hostility. But, once a paranoid patient achieves such a false crystallization, he interprets everything in its terms. In this way, whatever actually happens around the patient seems only to confirm and strengthen his misinterpretations.

Paranoid action. A paranoid person who feels that he is being persecuted will take measures similar to those that a normal person might take when he is actually being persecuted. Paranoid action seems unintelligible to others only because they do not understand what lies behind it. Paranoid action may consist of nothing more than increased aloofness and expressions of distrust and resentment toward persons around the patient. The relation of this reaction to an early childhood failure to develop basic trust is obvious. It is, of course, a self-defeating reaction, but this is true of most psychopathological behavior. The paranoid patient occasionally shows outbursts of acute anger or bitterness. This makes other people avoid him, thus increasing his loneliness and in some instances leading to the development of an over-all paranoid personality.

A minority of persons who develop delusions of persecution openly take steps to retaliate. Such steps may at first be confined to complaints to authorities: the foreman, the manager, the police. In fortunate cases the complaints lead paranoid patients to psychiatric help. Paranoid hostility and suspiciousness, however, may extend to *all* authoritarian figures. If a paranoid patient feels that he can trust no one, he may decide impulsively to flee from the pseudocommunity or to attack someone within it. Neither action can lead to success. There is no organization that actually corresponds to the patient's pseudocommunity. He cannot solve his problems by fleeing from this nonexistent organization. If he decides to flee, he finds that he cannot escape his own projected hostility. If he makes accusations against his supposed persecutors or tries to attack them, he only magnifies his difficulties.

Adult aggression stimulates adult counter-aggression. When a paranoid person attempts aggression against any of his supposed persecutors, he meets counter-aggression. He himself is attacked and he may be forcibly restrained and confined. When such things happen to an aggressive paranoid person, who, of course, is also already frightened by his own projected threats, they seem to him to be realistic confirmations of his delusional expectations of unjustified attack by the pseudocommunity or at least by persons egged on by members of the pseudocommunity.

Fortunately, the majority of persons developing paranoid reactions do not take overt aggressive action that leads to counter-aggression, restraint, or confinement. Either they manage to live with their anxieties and suspicions until these quiet down or they seek

out-patient help that is neither threatening nor confining.

Differential Diagnosis

Most experienced clinicians report the great difficulties one encounters in trying to make a differential diagnosis in this form of disturbance or distortion. In the first place, the mechanisms of denial and projection are used to some extent by everyone; they are, therefore, carried over by anyone who develops any psychiatric disturbance. That is, the clinician can expect at least *some* paranoid contamination in the course of practically any illness, whether this be psychiatric disturbance, somatic illness, or bodily injury. In the second place, paranoia, paranoid states, paranoid reactions, and paranoid schizophrenia shade over, one into the other, as is usually the case in classification, so that often a clear cut distinction cannot be made.

The extreme, classical paranoia does not present diagnostic difficulties, especially when it is a chronic condition.

Paranoid states can be distinguished from paranoid reactions by the fact that they are, in effect, mild forms of paranoia that are actually static. They often begin as active paranoid reactions, lose their vigor and progression, and leave the person chronically paranoid, that is, delusional in some respects, which may or may not incapacitate him.

Paranoid reactions can be distinguished from paranoid schizophrenia by the absence of hallucinations, which are characteristic of schizophrenia, and by their better organization. The delusions of schizophrenia are usually fragmented, bizarre, or weird. They are much more at variance with the structure and content of normal beliefs than are the delusions of paranoid reactions or paranoid states.

When paranoid reactions develop late in life, as in paranoid involutional psychosis, they are likely to show overt or covert hostility. Unfortunately, the situation of the aging person is likely to be one of dependence, where before he had been independent, and those with whom he now lives and on whom he is now dependent may resent his presence and belittle him. His paranoid delusions, while often exaggerated, are in such cases based on actual experiences in objective reality. They also reflect the patient's realistic but exaggerated fear of death, as, for example, the not uncommon delusions of the approaching end of the world.

An acute manic episode may be mistaken for an acute paranoid reaction. This is especially likely when, instead of manic exaltation, the manic person breaks out with hostile aggression, becomes haughty, and complains widely about the way he is treated. The difference is that the manic patient is governed by his angry mood; when this passes, as it almost always does, his haughty, complaining, hostile behavior disappears. Another difference frequently observed is that

a manic patient is rather easily distracted and even sometimes led, whereas the patient with a paranoid reaction is more likely to retain an angry initiative.

What is usually called a paranoid personality varies from an irritable, hypersensitive, more or less delusional approach to other persons and to life (which seems to have been present throughout adult life and often throughout adolescence as well), to the same syndrome following some frightening, humiliating, or deeply disappointing experience. In the latter instance, it can as well be called a chronic paranoid state as a paranoid personality. In either, the person may, with perhaps some psychiatric help from time to time, lead a fairly normal life, outside of institutions.

The symptomatic paranoid states are secondary or incidental to many organic syndromes. These are no different in clinical form from the paranoid reactions; they develop in acute, including delirious, brain diseases, and they often appear as part of the symptomatology of chronic brain diseases. But to say this is to tell only part of the story.

The brain, like any other organ in the body, is dependent for its normal function on a free flow of blood through it and, in some cases, on an adequate lymphatic drainage as well. It stands to reason that anything interfering with such function will quickly lead to an incompetent brain. Thus, in many systemic disturbances, there will be incompetent brain functioning, and in many of these, paranoid reactions may arise. This is presumably because a realistic grasp of what is going on around and within oneself demands brain competence. This is frequently seen in arteriosclerotic brain disease, where the sclerosed arteries cannot supply the brain with the rather large and continuous supplies it needs. It is also seen in senile brain disease, where, in addition to sclerosed arteries, there is an actual disappearance of millions of brain cells. The surprising thing is that there does not seem to be any direct relationship between the *amount* of brain cell disappearance and the degree of cerebral incompetence.

Such general disturbances as uremia and the introduction into the circulation of such toxins as carbon monoxide, the latter sometimes in suicidal attempts, may so damage the brain that it is no longer capable of dealing realistically with the surroundings or with the rest of the person but is still capable of organizing paranoid delusions to replace reality. In all organic brain disease that is chronic or sufficiently destructive, the best one can hope for is management of the person—whether at home, in a nursing home, or in a hospital—so that he is adequately nourished and clothed and so that he does himself and others no harm.

Prognosis

Classical full blown paranoia is by definition incurable. As a matter of clinical experience, it has been

found that almost no patient in this group ever improves.

As for paranoid reactions that have come to a standstill, with the delusions still active but the general personality intact (sometimes called paranoid states), the prognosis is also very poor. The question of hospitalization is entirely one of whether or not the immediate family and the community can tolerate a person in their midst with fixed delusional beliefs. If these delusions are erotic or grandiose, they are likely to be tolerated. The same is true of the litigious paranoid person, provided there are funds always available for lawyers and court fees, since these patients seldom win their cases and are notoriously persistent in their attempts. Paranoid delusions of persecution or jealousy that become static are another matter. The person having them is nearly always a danger to someone or to society; he is, in addition, usually an unpleasant person to have around. Some such individuals find themselves most comfortable in solitude. A few are able to channel their aggression into an acceptable social movement or into a form of work that demands unpleasant aggression.

As for the acute paranoid reaction, whatever its form, it is usually amenable to therapy, provided the therapist maintains his distance and is never for a moment dishonest or discriminatory with the patient. Often, in out-patient clinics or office practice, the patient with an acute paranoid reaction makes rapid progress once he has convinced himself that he is dealing with a neutral therapist who is thoroughly reliable. Such a therapist may be the paranoid patient's first contact with someone he can trust. The course may be long, or it may be quite fleeting, depending on how well the therapist does and how well the patient can profit by the situation.

Therapy

Psychotherapy in an out-patient clinic or in the private offices of a well trained psychiatrist is by far the best approach to paranoid reactions. Although there are today many enthusiasts of hypnosis, as there were in the 1880's and 1890's, it is actually a hazardous form of therapy for these patients. They are abnormally suspicious of anything that smacks of thought control, except for the amorous female, and she is likely to have her own fantasies as to what went on during the hypnotic state. Much the same is true of drugs, which may become incorporated into the patient's paranoid fantasies.

The classical paranoiac, with an established system of fixed delusions, does best when he is not confined at all. The exception to this, of course, is the paranoiac who is determined at all costs to set right something his delusional system tells him is wrong. It is not always easy to distinguish the dangerous from the harmless paranoiac.

What has been said about the paranoiac applies equally well to patients with paranoid reactions. Some

of these reach a certain point in their delusional development and then seem to stop—the ones whose disorder many call paranoid state. It is possible, even with the apparently static paranoid person, to help him change his delusional points of view or at least to channel them into some socially acceptable movement.

Fundamentally, what the patient suffering a paranoid disorder needs most is understanding without condescension. Almost all paranoid persons are distrustful of others, usually because significant individuals in their immediate and remote past have let them down, over and over, time and again. They were not given the usual opportunities as infants to develop what Erikson has called basic trust; they lived through a childhood in which significant persons proved un dependable or outright rejecting. It is no wonder that they experience adulthood the same way. The therapist, to such a person, is just another authoritarian figure he expects to be un dependable, hollow, and even covertly malicious. The therapist must, therefore, expect his paranoid patient to be suspicious of anything he says, since all his life the patient has found that significant persons say one thing, usually pleasant and encouraging, but actually do something quite different, usually unpleasant, defeating, and even harmful.

Adults developing paranoid reactions, especially the common persecutory form, almost uniformly consider themselves incapable of loving and being loved. Therefore, the therapist should not expect to be regarded by his patient with anything but dislike and resentment for a long time, during which time he will be secretly tested by the patient. One may well ask at this point why a paranoid person comes voluntarily to a therapist. The answer is not hard to find. The patient usually knows that he is distrustful; he is uncomfortable about it and wants to change, even though he may resist change, just as another patient struggles against the removal of a tooth by a dentist he has asked to remove it. It is painful to suffer from a paranoid reaction, and it is painful to go through the difficult process of overcoming it.

The therapist of a person with a paranoid reaction must be scrupulously honest with him at all times. He must listen with courtesy to the patient's delusions, if they are communicated, and neither indicate that he believes them—since he does not—nor argue with the patient about them nor hold the patient in any less esteem because of them. On the other hand, even though the patient makes himself the center of attention through his pathology, the therapist must avoid too much friendliness or kindness. A friendly but distant neutrality is usually the most that a paranoid person can accept at first without becoming suspicious that he is being submitted to the "old treatment"—first the kindly word and then the acts that demonstrate that all this was a parade to humiliate him and make him feel an unloved, unlovable fool.

The patient's role in good psychotherapy is to say what he wants to say, when he feels safe in saying it, and when he feels the therapist really wants to listen to him. As in all psychotherapy, he should be allowed to follow his own lead, interrupted as little as possible, and spared the curse of too much or too frequent interpretation. A therapist may well feel that he is having a difficult time of it when he treats someone with a paranoid reaction; but he can encourage himself, if he needs encouragement, by realizing how much more difficult is the task of a proud, ill used, and often hostile patient to reveal himself and all his humiliating failings to someone he does not trust and does not even like. If paranoid patient and psychotherapist succeed in establishing a genuine relationship with no delusions or at least with only the echoes of the delusions, it may well be the first genuine adult relationship that the patient has ever made and the beginning of many others that he could not have otherwise achieved.

A patient with a paranoid reaction is usually a very anxious person. If the physician treating him feels that the patient's anxiety is more than he can or should handle, the use of chlorpromazine is indicated as a tranquilizing agent. If the disturbance is mild, oral dosages of 25 to 50 mg. three times daily may be tried for a few days to see if the patient tolerates the drug well and shows no undesirable side effects. If individual tolerance is satisfactory and there are no undesirable side effects, the dosage may be increased to 100 mg. three times daily.

Tranquilizers, such as chlorpromazine, should be administered only under the physician's careful supervision. As soon as chlorpromazine can be dispensed with, this should be done, preferably by first reducing the dosage before eliminating the drug. Tranquilizers can sometimes be useful at the beginning of psychotherapy, but they are not a substitute for it.

Suggested Cross References

For a discussion of the theoretical concepts upon which hypotheses about the dynamics of paranoid reactions are based, see Area C, which deals with current theories of personality and psychopathology. The treatment modalities that were mentioned in this section are further discussed in Area G, on psychiatric treatment.

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Chapter 17

Psychotic Disorders. III: Affective Reactions

17.1 MANIC-DEPRESSIVE REACTIONS

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The manic-depressive reactions are fundamentally severe disorders of mood. Though there may also be marked disturbances of thought and behavior, these should be regarded generally as appropriate to the predominant mood.

The manic patient characteristically displays elation or irritability, pressure of speech, flight of ideas, and increased motor activity. The depressive patient displays the converse: depressed mood, mental and motor retardation, and sometimes feelings of agitation and apprehension. Classified as "manic-depressive reaction, other" are patients with mixtures of the two types previously described, with continuous alternation of the manic and the depressed behavior or with progression to hyperacute (delirious) mania or to depressive stupor.

Reflecting the unsettled state of all nosology in psychiatry, however, is the fact that the diagnosis is not made on the basis of signs and symptoms alone; it also includes a consideration of outcome. Manic-depressive reactions of whatever type have a tendency to remission and recurrence (although a single illness is not rare), and they do not progress to a state of mental deterioration. If the patient's progress does not follow any of these patterns, it can be assumed either that the original diagnosis was incorrect or that a different disorder supervened.

History

Almost alone among the functional disorders, manic-depressive reactions are recognizably described in poetic and medical literature from earliest times to the present day. Homer, Plutarch, Hippocrates, and Aretaeus described both mania and melancholia as vividly and eloquently as any modern observer; they characterized them as related disorders, differentiated them from schizophrenia and from senile disorders,

noted the regularity of remissions and recoveries, described the personality types of those who seemed most likely to develop the disorder and the circumstances that appeared to precipitate the attacks. They suggested reasonable treatment regimens, which included environmental, psychological, physical, and medicinal measures.

Although equally perceptive individual observations continued to be made through the centuries, the knowledge and attitudes of the ancients were essentially lost or suppressed during the Middle Ages. As scientific medicine slowly emerged during the Renaissance, psychiatry was freed from demonology, and physicians rediscovered the phenomena described by Hippocrates, Aristotle, Aretaeus, Asclepiades, Caelius, Aurelianus, Celsus, and Galen. The mentally ill were treated in hospitals, which ultimately became humanistic in outlook and scientific in operation. Psychiatrists were afforded opportunities for systematic and long term observations of large numbers of patients.

Current conceptions and classifications of manic-depressive reactions derive from the work of Kraepelin, whose thinking in this area had been influenced by Falret and Baillarger. Falret studied patients with depression and suicidal impulses for over 30 years; he noted that some of them became elated and then depressed again. In 1854 he published a description of the illness, calling it *la folie circulaire*. Working independently, Baillarger published a report on another series of patients, terming the illness *folie à double forme*. He noted that some of the depressions proceeded to the development of a stupor from which (unlike other stupors) patients did recover. In 1882, Kahlbaum clearly described mania and melancholia not as two types of mental disorder but as stages of the same disease. He named a milder form that ended in recovery cyclothymia and termed the more severe and chronic type *vesania typica circularis*.

Impressed by these studies, Kraepelin, in 1896, proposed the name manic-depressive insanity for this entire group of disorders. In it he specifically included "the whole domain of periodic and circular insanity, simple mania, the greater part of the morbid states

termed melancholia, and also a not inconsiderable number of states termed amentia (confusional or delirious insanity). Lastly, certain slight and slightest colorings of mood, some of them periodic, some of them continuously morbid, which on the one hand are to be regarded as the rudiment of more severe disorders, on the other hand pass over without sharp boundary into the domain of personal predisposition. . . . I have become convinced all these states only represent manifestations of a single morbid process. It is certainly possible that later a series of subordinate forms may be described, or even small groups again entirely separated off. But if this happens, then according to my view those symptoms will certainly not be authoritative which hitherto have usually been placed in the foreground." Every serious student of the field should read Kraepelin's elegant descriptions of his patients and accompany him in the systematic examination of the data that led to his formulations.

Epidemiology

In 1843, Luther Bell, medical director of the McLean Asylum, said, "Every year's experience convinces me that the facts regarding this subject which are capable of being arithmetically noted are of too little moment to be worth recording at all." Thirty years later Isaac Ray stated, "No man can be sure when he speaks of a certain form of insanity that he means by it precisely what everybody else does." In the writer's own early training as a resident at Phipps Clinic, he treated patients under the diagnosis of an affective disorder, hypothymergia in Adolf Meyer's terms. Several months later when he moved to the Sheppard and Enoch Pratt Hospital 7 miles away he treated several of the same patients after their transfer—still displaying the same symptoms and with their clinical states unchanged—under the diagnosis of schizophrenia. In the conceptions current in both institutions at the time, the difference in diagnosis did not imply a corresponding difference in an understanding of the etiology, psychodynamics, treatment, or prognosis.

The situation is better today, and efforts are being made to standardize diagnosis. But even when this is achieved, there may still be a lack of important incidence data. What determines hospitalization or clinic referral is not only the presence of a mental disorder but also the tolerance of the setting in which it develops. Serious psychotic reactions may not be brought to the psychiatrist's attention if the individual is quietly depressed and only moderately retarded.

Even though current data are inadequate, it does appear that the incidence of manic-depressive reactions has decreased markedly in the last 50 years. In 1900, 17 per cent of all admissions to the Boston State Hospital and 37 per cent of admissions to the McLean Hospital were so diagnosed; in 1950 the figures were 8 per cent and 16 per cent, respectively. In 1951, there were 5,240 first admissions of manic-de-

pressives to all state hospitals, 4,376 to private psychiatric hospitals, and 4,962 to general hospitals with psychiatric facilities. In 1963, the figures were 1,648 for the state hospitals, and 1,761 for the private hospitals. Only discharge figures are available for the general hospitals; they show an increase to 6,335. In all classes of hospitals, women outnumber men; the ratio is roughly 3:2 in the state hospitals and 2:1 in the private and general hospitals.

The worldwide incidence of manic-depressive reactions is commonly given as 3 to 4 per 1,000. It is said to be less in Scandinavia and northern Europe, and somewhat higher in southern European countries. The Jews and the Irish are said to have a higher than average incidence and also to recover from a degree of disorder that in others might be considered malignant. As in the United States, women in other parts of the world are afflicted more than men and, in sharp contradistinction to schizophrenia, the upper social classes more than the lower. In Kraepelin's series, 58 per cent of the first attacks occurred between the ages of 20 and 35; 35 per cent between 35 and 60. The manic form of the reaction occurs primarily in younger individuals, the depressed type in the older group. As compared to schizophrenic patients, a larger percentage of manic-depressives are married; and, also unlike schizophrenia, the marital status is not related to prognosis.

It is hoped that epidemiological studies now under way or planned by the World Health Organization and other groups will promote the development of comparable diagnostic criteria and incidence data. On the basis of impressionistic rather than rigorous studies, however, the disorder is said to be relatively rare in some primitive societies. Kraepelin reported that the total incidence figures among the natives of Java were comparable to those in European countries, but the illness was characterized almost exclusively by excitement and confusion; depression was extremely rare. This corresponded to the absence of ideas of sin and of suicidal tendency. Chinese living in Java displayed the usual symptom picture. Carothers made a similar observation in Kenya, but he found a smaller number (only 24 depressed patients in a total hospital group of 1,600), and feelings of guilt and self-abasement were not elicited. During the same 10-year period, 45 of 149 Europeans were diagnosed as manic-depressive. Eaton and Weil studied the relatively homogeneous, highly structured Hutterite colonies in the Dakotas, Montana, Alberta, and Manitoba. They found a relatively low incidence rate and an unusually high recovery rate for all psychoses, but the usual predominance of schizophrenia over manic-depressive reactions was reversed in this society, with the latter occurring four times as frequently.

Etiology

The inconsistencies described in epidemiology are

inevitably magnified and compounded in an examination of etiological studies. Kraepelin's work was hailed as a milestone in the development of medical psychology, as indeed it was. He appeared to have brought order out of chaos and to have demonstrated empirically the strong probability that a number of what had been regarded as separate clinical syndromes were manifestations of the same morbid process.

The problem in etiology revolves about those critical words "the same morbid process." Do these clinical syndromes result from shifts in a single definable psychobiological system? Or is it possible, after all, that this group of varied and assorted reactions have as many dissimilarities as they have features in common? As Kraepelin himself said, "the symptoms which have hitherto been in the foreground [may not] be authoritative." Is it a case of the elephant and the blind men—each describing the limited portion he himself has perceived but no one seeing the animal as a whole? Or do we have a group of manic-depressive reactions as we believe we have a group of schizophrenias, and do concordant studies meant to bring together the different aspects of a single process instead bring to light contrasting aspects of several processes? Although the definitive studies remain to be undertaken, it would be a safe bet that the answer to each of these last questions will be a qualified "yes." The critical question is not "Is it nature or nurture?" but rather "In what ways and to what extent is it nature and in what ways and to what extent nurture?"

Hereditary factors. Investigators who try to assess the contribution of hereditary factors to temperament, character, and mental illness are faced with a most difficult problem. Even dogs can be trained to do an astonishing number of remarkable tricks as well as such useful work as guarding and shepherding a flock or flushing and retrieving a fowl. Here training clearly builds upon an inherited ability. In humans how can one parcel out an inherited trait from those that result from years of training by a manic-depressive parent who is also the natural object for identification?

It does appear true that manic-depressive illness has a higher than average incidence in the parents, siblings, and children of manic-depressive patients. Kraepelin found "taint from the side of the parents" in 36 per cent of his patients; when he considered only those patients who had repeated attacks, the figure rose to 45 per cent. Stenstedt and others give figures of approximately 10 per cent. Perhaps the most persuasive evidence comes from the studies of monozygotic and dizygotic twins. Kallmann assembled his own findings with those of several others and gives an incidence of 20 to 25 per cent in siblings and nonidentical twins, a level much higher than in the general population; while identical twins are found to have incidence figures ranging from 66 to 96 per cent. He believes that the data support the concept of dependence on

the effect of a single dominant gene with incomplete penetrance. Slater and Stenstedt agree with this view, and Rosanoff, attempting to account for a higher incidence of the illness in females, suggested that the gene might be sex-linked.

Just what it is that is inherited is a matter of speculation: Kallmann postulated an alteration in a specific neurohumoral control mechanism, Bellak a specific ego weakness, Abraham a constitutional tendency to increased oral erotism, and Kraepelin an unspecified metabolic abnormality. Interest in this field of research continues; there are a number of studies under way that, building on the foundations laid by earlier workers, are bringing more sophisticated research designs and case findings and evaluative and statistical techniques to bear upon the problem.

Constitutional factors. Folklore has long associated temperament with physique. The jolly fat man is a familiar stereotype; Caesar was not alone in distrusting Cassius with his "lean and hungry look." Kretschmer elevated these notions to a scientific study in 1921 and reported a disproportionately large number of pyknic individuals among those with a cyclothymic personality and specifically with manic-depressive psychosis. Sheldon developed a related but more sophisticated approach in which the individual is described along three dimensions: endomorphy (massive viscera, rounded fatness), mesomorphy (bone, muscle, and connective tissue predominating), and ectomorphy (fragility and delicate linearity of build). Kretschmer's pyknic manic-depressive patients correspond to Sheldon's mixture of high mesomorphy, moderate endomorphy, and relatively low ectomorphy. According to Sheldon's scheme, too, cyclothymic personality patterns have a higher than average representation among individuals with this constellation of somatotype components.

In addition to body build as such, some idea of the vast range of etiological processes that have been advanced may be afforded by merely listing suggested dysfunctions: (1) of the endocrine system, (2) of the diencephalic centers involved in affective expression, and (3) of the processes which in lower animals are involved in hibernation, since the psychosis seems to occur more frequently in the spring.

Biological factors. For over 100 years each new technical advance in the methods of anatomy, histology, physiology, biochemistry, and pharmacology has been brought vigorously to bear upon the problem of the manic-depressive reaction in an effort to identify the structures or the biological processes that may be involved in the disordered behavior. Few of the numerous tentatively positive findings withstood the test of replication.

Recently attention has been directed to the autonomic nervous system, where activity appears to in-

crease in some depressive states when psychological defenses fail and to return to normal when the defenses are reconstituted. In the first studies relatively crude clinical measures were employed, but the rapid development of sophisticated biochemical techniques has brought new information that promises to increase the explanatory power of some biological hypotheses. At the outset, however, it is well to call attention to some of the problems in interpreting the results of these studies.

Psychobiological aspects. Everyone recognizes that mood is a complex psychobiological state and that changes in mood must reflect changes in both physiological and psychological processes. The experience of joy or pain or fear has a psychological and physiological component. Joy as we commonly experience it would not be joy if only the normally occurring psychological or physiological process were active. Just what it would be we may be able to demonstrate experimentally in the not too distant future, since the identification of some of the biochemical systems involved and of suitable blocking agents seems an attainable goal.

Many etiological studies seem at first glance to take the position that the disorder has either psychological or physiological roots. Most investigators would agree, however, that what they have tried to do is to focus on one area in depth in order to gain the maximum amount of information about a part of the total process. It is as if one sees only a spotlighted figure on a darkened stage; the rest of the cast will join in playing out the story, even though, for the moment, they are not seen. A shortcoming in collaboration up to this time is that biologists and psychologists have tended to select different groups for intensive study; hence it is not possible to combine such seemingly reliable data as we have from the two spheres of study. There can be no doubt, however, that neurophysiology, neurochemistry, and pharmacology are opening new avenues to the understanding of behavioral mechanisms.

Antidepressant drugs. The antidepressant drugs have attracted particular interest not only because they favorably affect the course of depressive illness but also because they can be used to explore biochemical mechanisms that may accompany or be responsible for depressed behavior. Attention was called to this problem by the discovery that iproniazid, an effective clinical antidepressant, is also a monoamine oxidase inhibitor, and monoamine oxidase is importantly involved in the metabolism of the brain amines. Animal studies have shown that iproniazid and other monoamine oxidase inhibitors that are clinically effective increase the brain levels of norepinephrine and serotonin and also lead to excited behavior. It was proposed that this might mean that depression was caused or accompanied by a decrease—and elation by an increase—in brain catecholamines.

This hypothesis was strengthened by information

from another source; imipramine, which is among the most effective antidepressants clinically, is not a monoamine oxidase inhibitor. It decreases cell permeability to norepinephrine and thus prevents its inactivation or binding by the cell. The net effect, therefore, is to increase the available concentration of norepinephrine just as the monoamine oxidase inhibitors do by another mechanism. Still another line of evidence is the finding that dihydroxyphenylethylamine (dopamine), which is a precursor of catecholamines, counteracts the effect of reserpine, which in its turn is thought to deplete brain serotonin and norepinephrine. In animals both imipramine and monoamine oxidase inhibitors reverse the sedation brought about by reserpine.

Metabolic aspects. Changes in the metabolism of the adrenal steroids have also been reported in depression; it must be noted, however, that such changes occur in almost any condition of emotional arousal. Although the levels of urinary 17-hydroxycorticosteroids are often found to be normal in cross-sectional studies of depressed patients, Bunney and associates found marked fluctuations when certain patients were followed longitudinally. In this group, high levels appeared to be associated with a breakdown in the defenses against psychic distress but not necessarily with a high degree of manifest anxiety. Three patients who committed suicide were found to have the highest levels of 17-hydroxycorticosteroids recorded in his study; one of these patients also had the highest level of urinary epinephrine and norepinephrine. To the extent that it could be determined, the increases in 17-hydroxycorticosteroids and in psychic distress paralleled each other on the crisis day. In one patient who alternated every 24 hours between a manic hyperactive and a depressed underactive state, Bunney et al. noted that the hydroxycorticosteroid levels were consistently higher on the depressed days.

Some changes in electrolyte, water, and carbohydrate metabolism have also been reported in depressed patients, although most of these studies have not yet been widely replicated. There is suggestive evidence that during an acute depressive attack there may be an impairment of the mechanism that excludes sodium from cells and a decrease in the rate of transfer of sodium from the blood to the cerebrospinal fluid. When electroshock therapy is given, *only those patients who improve clinically show a return to normal.* Another interesting but unexplained finding is the reported very high effectiveness of lithium in the treatment of manic attacks.

A cautionary word is in order concerning all these findings. The drugs that are so effective in bringing about clinical improvement and the mechanisms associated with alterations in catecholamine and 17-hydroxycorticosteroid levels that seem to be associated with the return to normal behavior may be compensating for some other abnormality that has not yet been defined. It is not yet proved that it is the change in the levels of these metabolites that causes the

manic-depressive reaction, or, rather, the depressed reaction, since that is the state that has been most intensively studied.

Psychological and psychodynamic factors. Early writers called attention to the fact that most manic-depressive illnesses occurred in individuals who were constitutionally of a depressive, manic, or cyclothymic temperament; the disease was believed to be simply an extreme swing in the characteristic behavior of these individuals.

Kraepelin's theories. Kraepelin believed that, compared to this innate predisposition, external factors played a subordinate part in the causation of the disorder. It was recognized that a multitude of more or less traumatic events was apparently associated with the precipitation of attacks: death or the severe illness of a loved one, unrequited love, financial losses, purchases, sales, engagements, the attainment of long sought goals, etc. Kraepelin believed that these carefully documented incidents had little or nothing in common and that their very multiplicity spoke against the importance of any single one of them. Even more crucial, in his view, was the fact that the illness might appear to be precipitated by a relatively insignificant event in an individual who had a prior history of withstanding the most serious stress and would have a similar subsequent history. There were many instances in which no precipitating event of any nature could be discovered. These variations and inconsistencies led Kraepelin to discount the importance of psychic causality; "manic-depressive insanity may be to an astonishing degree independent of external influences."

Adolf Meyer reacted strongly against what he termed this "either-or" point of view. Rennie, reviewing 208 manic-depressive illnesses treated at Phipps Clinic, reported that 79 per cent had evidence of disturbing life situations in the immediate dynamics, this judgment being based on the content of their productions during treatment or on their retrospective accounts of the onset of the illness. It is clear that, in discussing these psychological and psychodynamic factors, the investigator is not blessed with universally persuasive, let alone incontrovertible, evidence.

Abraham's theories. Psychoanalysts have attempted to develop a systematic psychological theory of behavior and personality development and have had a special interest in the psychoses. Abraham was the first psychoanalyst to study manic-depressive patients. He drew attention to the fact that in periods of remission they were not normal; that is, in the psychoanalytic sense they had never reached the level of maturity in personality development. He described their personality structure as closely resembling that of obsessive-compulsive individuals. Both personality types display characterological features of egocentricity, intensive ambivalence, and envy; they are gripped so equally by love and hate that they are immobilized in relating to others, being unable to express one emo-

tion without the other. In manic-depressives, the inability to love leads to feelings of inner impoverishment.

In 1911 Abraham explained this clinical picture by utilizing the libido theory of his day. On the basis of the specific transference relationship that developed between the manic-depressive patient and his therapist and on the basis of the patient's recollections of early life experiences, he postulated (1) that these patients have an unusually strong oral drive, which is probably partly constitutional and partly the result of frustrations by and lack of gratifications from the mothering person and (2) that, as a result of his frustrated orality, the individual does not progress smoothly and effectively to the next phase of personality development but relates to other objects with the ambivalent attitude he developed toward his mother (his primary object), being unable to fuse the good satisfying object and the bad frustrating object into an object that is at times gratifying and at times frustrating. This ambivalence is precariously compensated for as the individual matures; he remains unduly vulnerable to frustration by his love objects. When in later life such a disappointment occurs—and any of the psychic causes already listed could be so considered—the patient regresses to his earlier mode of relating to objects; his ambivalent conflict is reactivated and is now directed toward his own ego. The manic attack was seen as a return to and an acting out of infantile freedom, in which the patient gives free rein to his impulses.

Freud's theories. Taking Abraham's hypothesis as a point of departure and pointing out that these findings referred only to those manic-depressive patients whose illness was clearly related to psychological factors, Freud indicated that normal mourning could be considered as a paradigm that might throw light on the nature of melancholia. Where Abraham had emphasized shifts in libidinal cathexes (energy valences or charges), Freud pointed out that clinical observations made it necessary to amplify some of the earlier psychoanalytic ideas about the ego and the id, the structural aspects of personality. Just as the bereaved mourned the loss of the loved one, the melancholic appeared to mourn the loss of his own ego. He suggested that the depressed individual, in withdrawing his libidinal attachment from the lost object, invested it in his own ego rather than in another object. Part of this libidinal energy served to establish an identification of the ego with the abandoned object; the remaining libido under the influence of the ambivalent conflict is reduced to sadism visited upon the ego. This sadism originally would have been directed toward the depriving object with which the ego is now identified.

It was partly in order to account for this process of identification and sadistic attack upon the ego that the structural theory was modified; what had been included in the original concept of ego was divided now

between an ego and an ego-ideal and later between ego and superego. Freud suggested that struggles between the superego and the ego took the place of struggles between the ego and its ambivalently loved object. He believed that the reason the melancholic patient is so often arrogant and demanding instead of ashamed and submissive as he describes his unforgivable sins and utter worthlessness is that these self-reproaches are really directed at the supposedly beloved object.

Object relationship. There have been further elaborations of psychoanalytic thinking about manic-depressive psychosis. Among the most important is that which had originally been considered as a turning away from objects is considered now as an object relationship that has been impaired by regressive alteration in ego and superego functions. This regressive change serves as a defense against the development of disruptive anxiety in conflict situations. In the psychoanalytic literature generally, mania is viewed as a defense against melancholia.

Relationship to life history. Psychoanalytic theory represents an attempt to understand current behavior in the light of the individual's life history. It suggests hypotheses for research in two areas: in psychotherapy and in personality development. Developmental psychological research is rapidly expanding, and in some longitudinal studies now in progress an effort is being made to characterize by objective criteria interactions between infants and parents in ways and at developmental phases suggested by psychoanalytic theory.

In psychoanalytic therapy of manic-depressive patients, interpretations are made on the basis of theory, and presumably it is these interpretations that bring about change in the patient's behavior. It is obviously difficult to evaluate this. In the case of manic-depressives, particularly, the problem is compounded by such observations as Rennie's in the study previously mentioned, in which he found that 93 per cent of the Phipps patients recovered from the first attack. Even though 79 per cent of them had recurrences, it would be impossible to prove that the patient one "cured" would have fallen into that group. A further difficulty is that any one analyst is unlikely to have analyzed more than several manic-depressive patients.

The problem of the validation of psychoanalytic hypotheses remains to be solved but it has attracted the interest and efforts of a number of able investigators. The psychoanalytic scientist would have to be able to state whether the patient's improvement represented a return to his prepsychotic state with no essential personality change, in which case he would presumably be vulnerable to further attack or whether there has been not only a clinical improvement but a degree of maturation with consequent increase in effectiveness of the patient's object relations, in which case it would be assumed that he now had personality

defenses that are less disruptive than the manic-depressive reaction.

Cohen et al. studied in some detail the intensive psychotherapy of 12 manic-depressive patients. They attempted to define the character of the interpersonal relations reported and observed during the treatment and to relate the reported early life history to these characteristics. Their findings were checked by an independent investigator who examined a random selection of case histories of a group of manic-depressive, lower-class patients treated in a state hospital. Certain behavioral characteristics and aspects of early life history were common to both groups of patients.

During periods when the patients in the study were free from psychosis, they displayed behavior generally characteristic of those with a constitutionally depressed temperament. Several had occasional periods of moderate euphoria, and during psychotic episodes some had typical acute manic attacks. They were highly dependent upon the esteem and approval of others and, correlated with this, held values which were both conventional and changeable in conformity with what they perceived to be those of their group. They were unusually competitive and almost childish in their envy of others; the defense of denial was often employed, and associated with this was an insensitivity to the feelings of others and to their own motivations. It was as if these patients had given up any desire to achieve maturity and self-sufficiency, in exchange for approval of the person on whom they were dependent. They endeavored to gain this approval by doing whatever they believed that person wished them to do. At the same time they were envious and competitive, not only with the object of their dependence but with anyone whom that person chanced to notice. Their own pervasive envy of others led them to fear becoming themselves objects of envy by others. Consequently, they also feared success in achieving the dependent aims they persistently sought.

The patients appeared unaware of this conflict and ambivalence. Ostensibly, they appeared to enjoy friendly relations with everyone; those who displayed outgoing trends tended to have numerous, but superficial, relationships. Others were more reserved and concentrated on one or a few important persons. They actively avoided awareness of the broad implications of their own or others' behavior, and early in treatment they were nonpsychological in their thinking. Their productions in therapy had more of a factual than an interpretive quality. Yet they were sufficiently subtle to manipulate their objects to secure gratification of their dependent desires.

Among the common characteristics of the family histories were: (1) isolation of the family from the social environment by some factor such as economic, religious, or racial difference, (2) parental awareness of this difference and extraordinary efforts to maintain or raise family status by strict conformity to accepted values, (3) parental manipulation of the chil-

dren to gain the desired status, with the ultimate effect that the patient came to value himself in proportion to his conformity to these values, (4) continued emphasis in the family on the absolute need for conventional success, with resulting feelings of high competitiveness with and envy of others, (5) in most intensively studied cases, greater aggressiveness, ambition, and rigidity in the mother than in the father, who was often blamed for the sad family state from which the patient was the potential rescuer, and (6) notable inconsistencies in discipline, in which the child was at times punished for behavior that at other times brought no reaction.

Gibson checked these findings in the case histories of 27 manic-depressive and 17 schizophrenic patients who had been treated at a state hospital. Except for parental role reversal and inconsistent and harsh discipline, which occurred with equal frequency in the experimental and two control groups, the characteristics of the manic-depressive patients' behavior and the early life histories were essentially the same in both groups; and these stood out in sharp contrast to the family experiences of the schizophrenic patients. However, in the original study the schizophrenic and his family had been kept in mind as a reference group. More research needs to be done on family interaction patterns in normals, in those with various mental disorders, and in all social classes to determine the precise nature of the contribution such patterns make to an individual's development. The findings in studies that have already been undertaken suggest the importance of specific family experiences in the development of manic-depressive reactions.

Investigators appear to have adduced sufficient evidence to indicate that various factors play some role in the development of the manic-depressive reaction. What is lacking is a way of weighting each factor with accuracy and precision. It seems reasonable to expect that with further research groups of patients can be characterized by certain patterns of factors. This point of view is well described by Bellak in his multiple-factor psychosomatic theory of manic-depressive psychosis.

Clinical Description

The American Psychiatric Association diagnostic classification is based on the concept of manic-depressive insanity proposed by Kraepelin in 1896. In a day when therapy consisted principally of hospitalization, control, support, and moral treatment, there was much to be gained in following his suggestions. It was clear that this group of psychotic patients, whether entirely homogeneous or not, pursued a different course and related to others in quite a different fashion than did the group with the disease labeled dementia praecox.

Adolf Meyer stated that even so perceptive a phenomenologist as Kraepelin found it necessary to change his diagnosis of manic-depressive insanity in an appreciable number of patients after the Wasser-

mann test was instituted as a regular laboratory procedure in his hospital. Today, as we review the results of electroshock and the drug therapies, it appears that among the manic-depressive patients some groups respond differently to these therapeutic agents. A growing body of opinion holds that these differences in response reflect underlying differences in psychopathology or pathophysiology. The patients' behavior patterns are being scrutinized more closely again, and efforts are being made to define certain subgroups within the diagnostic categories, subgroups that respond more or less favorably to one type of treatment but most unfavorably to another.

Syndromes

Manic-depressive reaction, manic type. There are some people who are blessed with unquenchable gaiety and energy. They soon become the center of every group they join. They may be somewhat superficial but are nevertheless alert. They quickly seize on a new idea, develop it energetically, and manipulate people and things in the environment to ensure its acceptance. They are the movers and doers of the world, never seem to doubt themselves, and only redouble their efforts if they are blocked in achieving their desires.

A state of hypomania may arise almost imperceptibly in such individuals, but it is more dramatic when it develops in one whose basic temperament is more on the reserved or quiet side. In hypomania, the qualities of personality listed above become intensified to a level at which they may be regarded as symptoms, but in casual or brief encounter the individual may still appear as one of God's anointed.

There is a classical triad of symptoms: (1) elated but unstable mood, (2) pressure of speech, and (3) increased motor activity. The hypomanic talks easily, winningly, humorously, and he talks and talks and talks—and talks. He is warm, then friendly, and then uninvitedly intimate and unwelcomely personal. He radiates good health: his eyes shine, there is a sheen in his hair, a glow to his skin, a bounce in his stride; one can almost see the elasticity of his muscles. He is constantly on the go and never seems to tire. Only as one stays with him does one become aware of a distractibility; of impatience and intolerance when his wish is not immediately gratified; of impulsive and ill considered actions; of unseemly self-indulgence; and of his bland disregard of patent difficulties.

In acute mania all the foregoing manifestations are more intense and more disturbing to those about the individual. Propriety, convention, discretion are painfully absent. The patient demands and attempts to command the center of the stage. He puns, teases, cracks jokes—some of them good, some awful, some coarse, some blasphemous. His excessive good humor is transformed instantly to the most vicious anger if he is crossed or ignored. He is inconsiderate of others and disregards their needs, comfort, and rights. He is

constantly on the go, moves quickly from one activity to another, never finishes what he starts. His speech is like his movement, with flight of ideas that may proceed to clang associations and actual incoherence. He may burst into tears momentarily when he is faced with some realistic problem, but an instant later he is all smiles and miles away. Every impulse is expressed in words and, unless he is restrained, in action, too.

There is loss of contact with reality, an inability to adhere to a line of thought and pursue it to its logical conclusion and not infrequently what appears to be a delusion of wealth or great power or both. However, these symptoms have a quality quite different from the superficially similar behavior of the schizophrenic. Although the manic has no more control over his behavior than the schizophrenic, one does not feel that he is alienated to the same degree; it seems to be more a case of denial and loss of normal inhibitions without the deep disturbance of the sense of identity. However, the manic patient may not be quite clear with regard to time and place; he may misidentify people and occasionally greet total strangers as friends of long standing. Quite commonly an attack of acute mania starts with a brief period of depression which the family recalls in retrospect but which was not a matter of concern at the time.

Delirious mania is the most intense state of disturbance. It may develop gradually, the patient progressing through the two more minor stages, or it may develop full blown. All of the previously mentioned symptoms may be present, but now in the most extreme form. The patient is totally out of contact, his speech is incoherent, and he is constantly and purposelessly active; he may be incontinent of urine and feces. Hallucinations and delusions are common. It is impossible to develop sustained contact with the patient, and hence one cannot gain his cooperation.

Manic-depressive reaction, depressive type. There are some people who almost always appear somber, quiet, and withdrawn. Somehow one never quite knows what to say to them; they are invariably polite and briefly responsive to overtures, but they never take the lead, and every conversational gambit seems to die. They are good people, sincere and earnest; they are not without compassion but are moved more easily to tears than to laughter. One gains the impression that they are competent and reliable, but they never seek responsibility and most definitely would rather be followers than leaders. John Milton could well have referred to them when he wrote, "They also serve who only stand and wait."

A state of simple retardation may arise almost imperceptibly in such individuals, but it is much more dramatic when it develops in one whose basic temperament is more on the outgoing or energetic side.

In simple retardation the qualities listed above become intensified; there is a classical triad of symptoms: (1) depressed mood, (2) difficulty in thinking, and (3) psychomotor retardation. The patient appears

dejected and cheerless; everything he says and does is with effort. His expression is dull, he is careworn and bent over, his every move is painfully slow. There is no spontaneity. He speaks only in response to questions and even then answers in a word rather than a sentence. One must ask a series of questions to get the most ordinary information: "When were you born?" "July." "July what?" "July 14." "What year?" "1925." He answers as if he were searching for long forgotten memories. He speaks in such a low voice that one finds oneself moving close to him and speaking more loudly, as if he were the one who can't hear. He says that everything is hopeless, that he is a disgrace to his family; he recalls that when he was a boy he took a paper from the newsstand and did not pay for it; he did not finish a task his employer had given him, and he will never be taken back on the job. His appetite is poor. His sleep is restless, and he awakens early each morning feeling worse than he did when he went to bed. He thinks he should end it all, and suicide is a very real danger; he may kill his children, too, to spare them disgrace and the agony of life. There is no disorientation or intellectual defect, however.

There is a variant of this picture, in which the depressive affect and retardation are much less prominent. These patients have multiple and persistent somatic complaints: a constant but vague feeling of malaise, of things being not quite right, headaches, nausea, a feeling of being choked up or stopped up, abdominal discomfort, constipation, weakness, easy fatigue, tension, and restlessness. They continue to work but find it difficult to get things done. They can't read or look at television but find their thoughts turning to their ever present discomfort.

Careful examination reveals no physical basis for the complaints. There may be a history of a similar episode previously for which the patient could get no help but which finally passed off after several months. The patient may give a history of an earlier frank depressive attack or of depressive illness in the family. Here, too, suicide is a danger, which makes it doubly imperative that the patient be recognized as having a depressive illness and not an episode of neurotic hypochondriasis.

Acute depression may follow either of the two states described above, or it may develop suddenly out of the blue. All the symptoms already mentioned are present in more intense form. The patient looks utterly hopeless and deeply dejected. He feels he has committed unforgivable sins, has brought disgrace on the family, and is responsible for every disaster or lesser misfortune that has befallen them. Not only has he been evil in the past, but everything he does now serves only to spread destruction. The family fortune is gone, their home will be taken away, and all is lost. People are disgusted with him, and the newspapers refer to his sinful deeds; the arrangement of the cutlery on his tray conveys a message that he should kill himself. He falls asleep readily but awakens in a few

hours; frightening dreams are common. His appetite is poor; constipation is marked; there is considerable weight loss. He feels that he has no insides, that he is stopped up with feces and other corruption, that he will rot away; that he is foul and disgusting. Suicide is an ever present danger.

Manic-depressive reaction, other. Mixed states are included in this category. In Kraepelin's view these were transitional states, occurring most often as the patient moved in either direction from a manic to a depressive phase but also occurring as interludes in a more or less pure form of mania or depression and rarely occurring as independent attacks. The patient displays a mixture of the signs and symptoms usually present in only one phase of the illness. Kraepelin listed six types of mixed states: depressive or anxious mania, excited (agitated) depression, mania with poverty of thought, manic stupor, depression with flight of ideas, and inhibited mania. The names indicate the principal presenting symptoms.

In alternating or circular states the patient moves from depression to mania and back to depression again without intervening free periods. A complete cycle may occur in as brief a period as 48 hours or as infrequently as once in several months.

In hyperacute delirious mania the severe symptoms of delirious mania are irreversible and death supervenes.

In chronic mania the patient maintains the state of excitement of acute mania for prolonged periods. Cases are on record in which the illness persisted essentially unabated for 35 years.

In depressive stupor depressive signs and symptoms are carried to their nadir. The patient literally does nothing for himself. He lies in bed, does not eat and must be tube-fed, and is incontinent of urine and feces. He responds to nothing in his environment. If an apple is pressed into his hand, he turns it about, apparently not knowing what to do with it or how to get rid of it. Usually mute, he occasionally expresses confused or delusional ideas. After recovery there is little recall of what was felt or experienced in the stuporous state.

Differential Diagnosis

There is no difficulty in establishing the diagnosis of acute mania or acute depression. However, the majority of patients one sees in the office or clinic are not so easily placed in a diagnostic pigeonhole and it is incumbent upon the physician to make a careful longitudinal investigation in which family history, developmental experiences, temperamental characteristics, and the onset and development of the illness, including all behavioral and physical symptoms, are thoroughly reviewed.

Somatic disease. Subclinical or clearly established physical disease may be accompanied by severe depressive symptoms that override the manifestations of the primary process. Depressed mood and apathy or

excitement and irritability may be found in hypertensive cardiovascular disease, uremia, hepatitis, various intracranial lesions—such as general paralysis, cerebral arteriosclerosis, and brain tumor—psychomotor epilepsy, toxic deliriums, drug intoxications, and drug withdrawal states and after infectious diseases. Conversely, the first symptoms of depression may be a variety of somatic complaints so convincingly presented that operations and other heroic somatic treatments have been carried out.

Schizophrenia. This condition may begin with a disorder of mood and, indeed, may continue to present such prominent affective features that the ultimate diagnosis may be schizophrenic reaction, schizoaffective state.

The history will prove helpful. The manic-depressive personality typically has distinct affective features: he usually relates fairly easily to others but in a dependent fashion; he often describes incidents or periods in which there were notable mood swings; feelings of guilt and inadequacy are common; and he shows many of the characterological features of the obsessional neurotic. On the other hand, the schizophrenic has usually been more reserved, remote, and self-contained; his affective responses have appeared to others shallow or even inappropriate; there may have been feelings of strangeness or of bizarre inner alterations; he may report an inner experience of sudden enlightenment in which the incomprehensible became clear to him and he became incomprehensible to others. The schizophrenic illness often starts with a period of panic and dissociation, the manic-depressive attack commonly with a depressive mood swing.

The therapist often feels fairly close rapport with the manic-depressive in his early interviews and only later begins to experience a clinging, wearing, insensitive, limpet-like attachment on the part of the patient that may become quite unpleasant. The schizophrenic patient is more difficult to understand; one may sense a barrier between himself and the patient that cannot be crossed, but for a time at least one may find his sympathy aroused by the obvious distress of the schizophrenic, who, torn by inner conflict, does not make the same type of demand on others that the manic-depressive commonly does.

Psychotic depressive reactions. These reactions are characterized by severely depressed mood, misinterpretation of reality, and, on occasion, delusions and hallucinations. The patients are distinguished from the manic-depressive group primarily by the fact that their illnesses seem to follow immediately upon a clear cut precipitating event. They are usually not given to self-reproach; they blame others or fate and are quite demanding in attitude. Often they can be diverted for brief periods, but then they resume their depressive complaints. These patients are not described as having been of a manic-depressive temperament before the illness.

Involuntional psychotic reactions. These reactions show most of the clinical characteristics of acute depression except that, instead of displaying psychomotor retardation, they are apprehensive, anxious, and agitated. These patients describe themselves as compulsive characters but give no history of mood swings. The illness develops during the involuntional period. Care must be taken to establish the absence of somatic disease, which is common in later life. Rarely does a first true manic-depressive reaction occur in the involuntional period.

Psychoneurotic disorders. These are often accompanied by depressive symptoms, and, conversely, depressive attacks may be accompanied by complaints of neurasthenia, anxiety, or obsessive-compulsive manifestations. Since a depressive attack may culminate in suicide, it is very important to make an accurate diagnosis. Differentiation may be difficult. Neurotic disorders on the whole show a variable and irregular course; the clinical features tend to be changeable and are more responsive to external stimuli; phobias, feelings of depersonalization, anxiety, and apprehensiveness may come and go; feelings of extreme guilt and worthlessness are not commonly present. The neurotic patient is more subjectively than objectively depressed and, although apparently as retarded as the true manic-depressive, is relatively easy to arouse to action. A few studies, not yet adequately confirmed, indicate that the positive biological findings in some psychotic depressions are negative in the neurotic depressions.

Prognosis

Rennie's 1942 study of the 208 manic-depressive patients, who were among the first 1,300 patients admitted to the Phipps Clinic of the Johns Hopkins Hospital between 1913 and 1916, provides one of the more reliable sources of data concerning the course of the illness, since criteria for diagnosis were relatively constant throughout Adolf Meyer's chairmanship. Even so, 99 manic-depressive cases were discarded because the diagnosis was not considered to have been definitely established. Of 17 manic patients, 14 had a second attack, 11 a third attack, 5 a fourth, and 3 a fifth attack. Of 121 depressed patients, 93 had a second attack, 64 a third, 36 a fourth, and 18 five or more attacks. Of cyclothymic patients, only 2 had one attack, 4 had two, 6 had three, and 37 had four or more attacks, one patient having had 20. The average first manic attack lasted $3\frac{1}{2}$ months, the average first depressive attack $6\frac{1}{2}$ months. The shortest first attack was 3 days, the longest 36 months, except for one case of chronic mania which persisted for 24 years. Up to age 45, recurrent attacks are of approximately the same duration; after 45, they grow definitely longer. The manifest depth of the psychosis was apparently unrelated either to the speed or degree of recovery. Eleven of the 208 committed suicide, including two manic patients who had shown no depressive manifes-

tations; 7 others were known to have made serious suicidal attempts.

Treatment

There are two important facts to keep in mind whenever one is asked to see a manic-depressive patient. The first is the ever present danger of suicide, which must always be guarded against, most particularly when the patient is going into or *apparently coming out of* a psychotic episode. The second is that the prognosis for any individual attack is relatively good; hence an attitude of conservative optimism is warranted.

One can be reasonably sure that by the time the patient comes to the physician's office all the common sense remedies will have been tried and found inadequate. Relatives, friends, and employers will have attempted to encourage and stimulate the depressive, will have assured him again and again that he has done no wrong, that they hold him in highest esteem, and that his fears and concerns are without factual basis. They almost certainly will have made him take a few days off and may even have sent him off on a vacation. They will have indulged the manic, will have gone along with his many requests, may even have undertaken certain ventures he suggested, will usually have tried the few days off and vacation gambit, and only recently will have come to suspect that something is wrong, since he has become more rather than less demanding, hyperactive, dissatisfied, and impulsive.

Hospitalization. The first decision to be made is whether the patient can be safely treated at home or should be sent to a hospital. The development of psychiatric units in general hospitals has made this an easier decision than it was when hospitalization necessarily meant a psychiatric hospital with the snake pit images associated with it in the popular mind. If the patient is in a state of acute mania or acute depression, hospitalization is imperative. In simple retardation or hypomania, one may decide whether to try ambulatory treatment on the basis of his evaluation of the situation. The items to be considered are the history, current status, nature of the patient's interpersonal relations, and the patient-doctor relationship.

If there is a history of a previous attack, one can assume that the current illness will be of the same or greater severity and duration. If the patient was hospitalized previously, he should be admitted again for at least a brief period. There is a grave risk that he would interpret a conclusion that he did not require hospital care not as an encouraging finding but as an opinion that he is hopeless and not worth the expense entailed.

It is difficult to decide on hospitalization on the basis of symptoms alone, but if a careful history reveals that the hypomanic has already shown some impairment of judgment in his financial affairs or has

committed serious indiscretions, it is advisable to remove him temporarily from a deteriorating situation. If the depressive has shown continuing weight loss and persistent insomnia with early morning arising; displays deep anxiety and agitation; describes sudden emotional outbursts or gives a history of these supplanted suddenly and recently by an attitude of hopeless resignation; avoids contact with those to whom he previously has been very close, then he may be considering suicide, and hospitalization is necessary. If the relatives, friends, and business associates are too intensely involved with the patient and are bombarding him with advice and suggestions, or, conversely, if one senses that important relationships at home or in the office have been worn thin and that an explosion is likely, a period in the hospital and out of his usual setting would be helpful to the patient and all concerned. If the patient himself sought the referral, it is a good sign. If he came at the insistence of others, it is an indication of a change in their attitude toward him; the meaning of this to the patient must be evaluated (not by direct questioning) to learn whether he believes they consider him hopeless; he may take the fact of the referral as an incentive to suicide.

Finally, even if all the foregoing favored ambulatory care, it should not be undertaken unless the physician feels that a substantial responsive contact has developed between himself and the patient in the course of the examination, no matter what treatment he plans to prescribe. Until this contact is established in the hospital or out of it, the risk of impulsive acting out continues and may increase.

Electroconvulsive therapy. Electroconvulsive therapy (ECT) has been widely used and is regarded as a specific symptomatic treatment for the depressive attack. Usually there is dramatic improvement following one or two treatments, and a course of six or eight, given over a period of 3 or 4 weeks suffices for most patients who respond favorably. It is used less successfully and less often as a treatment for the manic attack. It is generally accepted that ECT is most effective in the treatment of involutional melancholia and endogenous depressions and that it is relatively ineffective or may have an adverse effect in anxiety states. There has been an increasing trend on the part of its adherents to give ECT on an out-patient basis, with care being taken to provide adequate supervision for the confused and amnesic patient.

There are many, including the writer, who, although recognizing the effectiveness of ECT in aborting a depressive attack, believe that it should be used with caution and then only after other therapeutic approaches have been given a trial. In every case it produces transient mental impairment and in rare instances may result in severe memory loss and other defects in intellectual function. Some, but not all, psychotherapists believe that, when the depressed patient finds himself, as if by magic, suddenly relieved

of symptoms, he quickly represses conflicts and actively avoids consideration of the situational and experiential factors that may have played a significant role in the development of his illness. ECT, in their view, tends to increase the resistance to subsequent psychotherapy, even when the ECT is administered by someone other than the psychotherapist. Other somatic treatments do not appear to have this effect. The effectiveness of psychotherapy in preventing recurrence or prolonging remission of depressive attacks is questionable to some but is regarded by others as offering the best hope.

Several investigators have recently reported a new electrical treatment for depression. An electrode is attached to each eyebrow, a third below a knee cap; they are wired to a vest-pocket battery pack, which passes a current of 250 microamperes. The patient so wired can carry on normal activities. It was found that when the direction of the current was positive at the head, there was a distinct tendency for the patient to feel alert and cheerful.

Drug and electrolyte therapy. Iproniazid and other monoamine oxidase inhibitors and, to an even greater extent, imipramine have been found by some investigators to be almost as quickly effective as ECT. Freyhan has pointed out that drug therapy has the additional advantage of maintaining experiential continuity. There is no amnesia or confusion, as there is following ECT; the patient feels that he is cooperating actively in a therapeutic relationship, and a sense of continuity from illness to health is established. The collective experience with drugs has not yet reached a stage that permits uniformly successful prescriptions for specific symptoms. The imipramine type of drugs are generally superior to other antidepressants in the treatment of retarded depressed patients; chlorpromazine is regarded by some to be the drug of choice in manic attacks. In some cases, combinations of drugs seem to be more effective than any single one.

Lithium carbonate has been used since 1949 in the treatment of manic episodes and has been reported to have brought about dramatic improvement in 4 to 10 days. Patients on maintenance therapy have gone for several years without a recurrence. For unexplained reasons, it has been more widely used in Europe than in the United States.

Grinker and his associates undertook a thorough phenomenological study of depressions and correlated their findings with clinical course and response to various treatment modalities. They found one group of patients who complained of feelings of guilt and loss of self-esteem. They were withdrawn, isolated, and apathetic; also, their speech and thinking were slowed. The premorbid personality was compulsive. These patients responded well to ECT, poorly to psychotherapy, and tended to have recurrent attacks. Another group complained of deep discouragement, helplessness, unworthiness, and sinfulness; they were agitated and extremely anxious and made clinging

demands for attention. The premorbid personality was fairly well integrated; the illness seemed to have been precipitated by a traumatic experience. These patients responded well to drugs and psychotherapy. A third group was agitated, demanding, and hypochondriacal and had many psychosomatic complaints. The premorbid personality evaluation elicited a history of lifelong disturbance. Support, reassurance, and drug therapy afforded this group only passing relief; ECT made them worse; a few improved after long term intensive psychotherapy.

Psychotherapy. The efficacy of psychotherapy in the treatment of manic-depressive reactions and in the prevention of future attacks is a matter of controversy. Some psychiatrists feel that there is insufficient data to support the hypothesis that psychotherapy is a useful treatment modality in these conditions; others feel that psychotherapy is of great value.

In the psychotherapy of the manic-depressive reaction, as in other behavioral disorders, the physician may have in mind either of two goals. For the majority of patients, the aim will be to offer support and protection during the attack and then to examine customary patterns of interacting with others with a view toward developing a more effective use of assets and an earlier recognition of those situations that regularly lead to frustration and disappointment. The goal is to help the patient make more effective use of his capacities but not to alter his fundamental personality patterns in any essential way. In some patients in whom psychological factors appear to be importantly involved in the genesis or perpetuation of the illness, the patient and physician may decide upon a far reaching effort to bring about a personality change. The major part of the therapeutic work must be done during a period of remission, but it is desirable to lay the groundwork during the psychotic episode.

The principal problem is that of establishing and maintaining a therapeutic relationship. This is difficult with the depressive because he has detached himself from others, has temporarily lost the capacity to relate to them, and is turned in upon himself. Even when he does begin to relate to the doctor, he expects abandonment and tends repeatedly to lose touch. The manic, on the other hand, is hyperactive and distractible; he does not stop long enough to do more than barely recognize the existence of another person.

The therapist must be active with both depressive and manic patients and the type of activity—support, reassurance, challenge, annoyance, scolding, uncritical acceptance—must be tailored to the immediate situation and to the stage of the developing relationship. During the psychotic episode it is important to vary the length of the interview in accordance with the patient's clinical state at the time. Underactive, retarded patients should be seen relatively briefly so that they are not made to feel that they fall short of an expected standard. Productive depressive and manic patients should be seen regularly for set periods, even though

for long intervals it may seem that nothing they say is new or important. A varied program of activity and rest should be prescribed for both manics and depressives. It is desirable and sometimes possible to bring out the manic patient's underlying depression when one repeatedly points out the inappropriateness of his mood to the serious difficulties he has described.

As the therapeutic relationship develops and the patient improves, the physician will come to be seen as a friendly and powerful supportive figure. In this setting, which provides gratification of some of the patient's dependent wishes, one may review with him his relationships and needs with a view to making common sense alterations in certain poor habit patterns, modifying his compulsiveness, and making more creative use of his assets. This approach implicitly sets up a long term obligation to the patient. With appropriate reinforcement, he preserves an image of the physician as a strong, benevolent authority to whom he may turn in time of need. When a recurrence develops after a patient stops taking his prescribed medication, it is reasonable to surmise that what is unreported and probably not noticed is a disappointment in the doctor on the part of the patient, a feeling that he was subtly rejected, that the physician no longer likes him and has lost interest in him.

In intensive analytic therapy, the developing dependent relationship to the physician is not used to gratify the patient's desire for love. Rather it is pointed out to him as an example of the way in which he builds his self-esteem on the approval of others instead of basing it on the exercise of his own considerable capacity for substantial achievement. The numerous manipulations by which he seeks to gain this approval, and which for the most part he is not aware of, are delineated. Their patterned character is exposed by relating current interactions to a series of similar ones in the past. The patient gradually comes to an understanding of some of the forces that impel him to this repetitious self-belittling behavior. Even when it is successful, this type of treatment may have to be carried through a remission, another psychotic episode, and into another remission before the patient and the physician are able to identify some of the critically important interactions.

Suggested Cross References

For a more detailed discussion of the neurochemistry of depression and the pharmacology of the anti-depressant drugs, see Sections 2.2 and 2.3, respectively, in Area B, on the basic sciences. The family influences in the genesis of various forms of psychopathology are discussed by Fleck in Section 4.3. Area C, on current theories of personality and psychopathology, contains a fuller description of psychoanalytic theory. Other psychiatric syndromes in which depression forms a prominent part of the clinical picture include psychotic depressive reactions (Section 17.2), involuntional psychotic reaction (Section 17.3),

the neurotic depressive reactions (Section 24.2), and depressive disorders of children (Section 41.1). For alternate viewpoints on the treatment of manic-depressive psychosis, see Section 35.2 by Cole and Davis and Section 35.5 by Kalinowsky on antidepressant drugs and on ECT, respectively, in Area G, on psychiatric treatment. The reader is also referred to Hendin's discussion of suicide in Section 33.1.

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17.2 PSYCHOTIC DEPRESSIVE REACTION

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Definition and History

Psychotic depressive reaction first appeared as an official diagnosis in American psychiatry in 1952. The definition in the American Psychiatric Association's *Diagnostic and Statistical Manual* reads: "These patients are severely depressed and manifest evidence of gross misinterpretation of reality, including, at times, delusions and hallucinations. This reaction differs from a manic depressive reaction, depressed type, principally in (1) absence of history of repeated depressions or of marked cyclothymic mood swings, (2) frequent presence of environmental precipitating factors. This diagnostic category will be used when a 'reactive depression' is of such quality as to place it in the group of psychoses."

Prior to 1952 three diagnoses for depression were used: involuntional melancholia; manic-depressive psychosis, depressive type; and reactive depression. The first two were classified as psychoses, the third as a psychoneurosis.

By 1952 the climate in American psychiatry favored addition of another depressive diagnostic entity. Adolf Meyer, with his emphasis on reaction types, helped set the stage for what he called a "reaction complex . . . qualified by the statement of the etiological or dynamic factors at work." This position affirms the dictates of common sense. When grief, for example, appears to pass over into depression, it is considered a reaction to a personal loss. It is reasonable to conclude that losses—such as financial reverses, demotion, or amputation of a limb—may cause depression. The psychoanalytic movement, with its emphasis on impulses, infantile and childhood experiences, and unconscious forces, highlighted the psychodynamics of depression. Also important in establishing a new depressive category were experiences of psychiatrists in World War II; they found themselves without a nomenclature for psychological reactions to stresses of combat.

Since 1952 the subject of depression has become more complex because of new theories, new treatments, and wider clinical experience with mild and atypical cases. New terms have been employed to qualify the word depression, compounding the complexity. Some of the new terms employed are: endogenous and exogenous depression, anxious and agitated depression, depression of psychotic proportions, masked depression, depressive equivalent, depression as a defense, postpartum depression, obsessional depression, and drug depression. These terms imply many different meanings both in theory and in practice.

Further difficulties arise from the various meanings of the word depression. It can mean blueness, sadness, unhappiness, anxiousness, loneliness, emptiness, discouragement, hopelessness, a sinking feeling, lowered energy level, and tearfulness. Patients use the word for any of these meanings and many others, even without reference to any affective state, and professional workers often do not explain in what sense they employ the word.

It is not surprising that some psychiatrists consider depression a unitary disorder with a variety of manifestations, that some accept the four types found in the diagnostic manual, that others deny the existence of one or more types, such as involuntional depression or psychotic depressive reaction. The problems presented by depression in recent years have lead to several symposia on the subject.

This complex and confusing situation can be clarified by considering what is necessary to establish a clinical syndrome. The clinical picture should have: (1) typical signs and symptoms; (2) onset at a recognizable time with a characteristic course; and (3) a definable outcome, such as recovery or a more or less chronic state. In addition to these three factors, it helps to have adequate knowledge on: (4) epidemiology, that is, the occurrence in certain classes of people by age, sex, race, environment, occupation, etc., and predisposing factors, such as heredity, childhood experiences, and metabolic or neurophysiologic facts; (5) etiology, including precipitating factors and pathology; and (6) treatment.

The better a diagnostic entity meets these requirements, the more certain is the diagnosis and the more specific and effective is the treatment.

Epidemiology

There are no reliable statistics on the prevalence of psychotic depressive reactions, and there are only suggestions as to the incidence of this type of reaction. Indeed, it will be difficult to secure reliable incidence or prevalence figures until there is more knowledge about the parameters of this diagnosis. Cultural, regional, racial, and individual differences attach diverse meanings to possible environmental precipitating factors, such as losses. A person accustomed to making and losing large sums of money gambling in the stock market presumably would not be affected as much by a financial loss as a person whose life savings were wiped away by a stock market crash. If death means that the soul of the deceased has escaped the painful vicissitudes of earthly existence and has gone to a happy hereafter, death of a loved one may be a cause for rejoicing rather than depression. If loss of a fortune means release from the onerous responsibility of managing the fortune, the loss may be an occasion for celebration, not depression.

Since nearly every person must experience at least one catastrophic loss in a lifetime, it might be supposed that psychotic depressive reactions are quite

common, perhaps almost equal to the death rate. Clearly this is not the case. According to the United States Public Health Service Reports for 1963, the number of hospitalized cases of psychotic depressive reaction was 4,979, compared with 3,409 cases of manic-depressive psychosis and 6,264 cases of involuntional psychosis. But because of the prevailing confusion about the concept of depression, these figures are not believed to give valid comparative information on incidence.

Etiology

Hereditary predisposition. It seems reasonable to suppose that a psychic trauma may disturb a genetically determined neurohumeral mechanism regulating mood. It also seems reasonable to believe that the genetic regulator may be made more vulnerable by intrauterine infection, radiation, or brain injury at parturition. Though there appears to be a genetic factor in some cases of manic-depressive psychosis, none is known in psychotic depressive reaction.

Physical states. It also appears possible that physical states may make an individual more vulnerable to psychologic stress. Viral infections, malnutrition, and the use of drugs such as rauwolfia are sometimes associated with the onset of depression.

Environmental precipitating factors. By the diagnostic criteria of the American Psychiatric Association, the sole unique feature of psychotic depressive reaction in the group of depressive psychoses is that of environmental precipitation. What constitutes an environmental precipitating factor? Clinical experience points to severe personal losses. Death of a spouse or close relative is placed high on the list. Other losses assumed as important are loss of love, loss of property, a demotion or other serious loss of status. Yet depression also follows what appear on first report to be trivial losses. For example, a man became deeply depressed and suicidal following the death of his dog. Subsequent study of the case revealed an unhappy marriage. A wife hostile to the patient for years had turned his children against him. His sole affective companion was the dog who greeted him when he came home, went hunting with him, and slept on the floor of his bedroom. Loss of the dog severed the only affective tie with a fantasied ideal marriage and home.

The psychiatrist is not alone in the search for significant events. A depressed patient is prone to review his past life. Most often he settles on something about which he has felt guilty, often a sexual misdeed. Now, he imagines, his sins are "catching up with him." Or he remembers he was unhappy 10 years ago, when he was accused of mistreating his wife by one of her relatives. Was there some truth in the accusation? The patient's relatives are also involved in the search for causes. They may say that the bank failure has been preying on the patient's mind for years. If a single, seemingly significant loss cannot be found, it is said

that many small losses accumulated, and, when the barn burned, depression followed. So the search for losses becomes imaginative and creative.

A man was admitted to the hospital for his fourth depression in 10 years. With the first three, no precipitating cause had been determined, but now he believed that all his depressions were due to a 50-cent error made on an income tax report 20 years before. Listing of causes of depression by some authors discloses astonishing alleged events: dog had ticks, delayed by snow storm, went on vacation, unable to go on vacation, etc. Sometimes the depression follows a promotion. This seems paradoxical, but to make this event consistent with the concept of precipitating loss, it is stated that the patient felt unworthy of the promotion and hence suffered a loss of self-esteem.

Grief. Probably the most significant human loss is death of a close relative. The modern period in the study of grief began with Lindemann's report. This was based on 101 persons: psychoneurotic patients who had lost a relative during the course of treatment, relatives of patients who died in the hospital, bereaved disaster victims and their close relatives, and relatives of members of the armed forces. Lindemann described symptoms of normal grief: sensations of somatic distress; preoccupation with the image of the deceased; guilt feelings in which the bereaved accuses himself of negligence in relation to the deceased; feelings of hostility toward doctors and others, charging them with not properly caring for the deceased prior to his death; and a change in conduct patterns, such as restlessness, inability to organize activities or to carry on customary social pleasantries.

According to Lindemann, normal acute grief lasts 4 to 6 weeks. He also listed several varieties of morbid grief reactions. Delayed grief may come on months or even years after the loss, sometimes on an anniversary date of the death. Distorted grief reactions include overactivity without a sense of loss; acquisition of symptoms of the last illness of the deceased; marked hostility without showing grief; apathy; and behavior destructive of the patient's interests by uncalled for generosity, foolish business deals, and agitated depression. Lindemann's study is relevant here because many of the symptoms found in grief are also seen in depression and also because Lindemann diagnosed depression in only a small fraction of the cases. This raises the possibility that grief is a special reaction and not the cause of depression.

Studies on grief have continued. Parkes found that of 3,245 patients admitted to a psychiatric unit in a 2-year period, 94 developed their illness within 6 months of the death of a spouse or parent. This number was six times greater than the expected bereavement rate in the general population. The incidence of affective disorders comprised 65 per cent of the 94 bereaved patients and 47 per cent of the nonbereaved psychiatric patients; 28 per cent of the bereaved group and 15 per

cent of the nonbereaved group were diagnosed as having a reactive depression (neurotic).

In a second study, Parkes compared a group of bereaved patients with a group of nonpatient widows from a study by Marris and found that the patient group had, in general, similar grief reactions. However, the bereaved patients had more trouble accepting the loss and more frequently had ideas of self-blame. The patients also suffered from atypical grief reactions: abnormal prolongation of the grief, unusually intense grief, hypochondriacal symptoms resembling those suffered by the deceased in his last illness, and panic attacks.

In a third study, Parkes presented a more detailed classification of grief reactions. He defined two broad categories: (1) the stress-specific reactions—typical grief, chronic grief, inhibited grief, and delayed grief; and (2) nonspecific and mixed reactions—any of the above along with psychosomatic reactions, psychoneurotic reactions, affective disorders not resembling grief, or other conditions. Parkes found no case of retarded or psychotic depression in his cases, but there was one case of manic illness.

On the basis of the data reported by Parkes and Lindemann, a new classification, grief reaction, may be appropriate. Their work casts considerable doubt on loss by death, by itself, as a sufficient cause for psychotic depressive reaction, although it appears that loss by death may be an associated factor in some cases.

Advanced age. Another approach to the relationship between loss and depression involved persons whose status has changed in the latter years of life. Levin and Goldfarb have indicated that older people are commonly subject to depression. Busse et al. stated that these depressions occurred about once a month and lasted from less than an hour to a few days, they were associated with feelings of discouragement over the future. These persons were aware of the causes of their unhappy feelings, such as physical suffering or lowered financial, professional, or social status. They had not suffered depressions earlier in their lives. Busse et al. do not believe that these depressions were based on unconscious mechanisms, ambivalent wishes, or attempts to force another person to give evidence of affection.

Other writers have referred to the affective state of the depressed elderly as apathy or disinterest rather than blueness. Still others indicate that psychotic depressions are less common past age 65 and believe that older people are more immune to such depressions. A depressive retirement syndrome has been proposed, the symptoms of which are subjective depression, insomnia, loss of interest, lessened concentration, loss of satisfaction in work, social retreat, hypochondriasis, and gastrointestinal and sexual disturbances. Many writers believe that this depressive reaction in the

elderly is usually a mild syndrome in which neurotic symptoms of earlier life reappear.

Physical illness. Dovenmuehle and Verwoerd reported on 62 patients admitted to a general hospital for serious cardiac disease who were rated for severity of depression. They found that 64 per cent of these patients had episodes of moderate to severe depression lasting from an hour to more than a day. Associated symptoms were lowered self-esteem and anxiety. Both mild and severe cardiac disease provoked severe depression during the first 3 years of illness, but after 3 years mild cardiac conditions did not provoke severe depressions, suggesting that these patients adjusted to their situation. Difficulty in sleeping, reduction in appetite and body weight, and constipation were not prominent in these patients. No patient was noted as psychotic. The authors believe that the response of depressive reaction to physical disease is similar to a grief reaction or an acute situational depression.

Stewart et al. reported a clear association between depression and the awareness of having a serious illness likely to be fatal or seriously disabling in 20 per cent of a group of 30 medically ill patients. Compared to manic-depressive psychosis, the depressed medically ill had fewer depressive symptoms, no suicidal tendencies, and no previous history or family history of depression.

Mutilating surgery. Evidence of a relationship between losses and depressive reactions has appeared in studies of patients who had mutilating surgical operations. Sutherland and Orbach have reported that acute depression can occur in anticipation of surgery. After surgery, depression may occur in relation to the loss of some valued activity. If some substitute activity cannot be found, the depression continues. Postoperative patients may also develop persecutory ideas against their doctors and nurses, severe hypochondriasis, anxiety, and marked dependency. These reactions are stronger if the patient cannot form a satisfactory relationship to medical personnel.

In common types of losses, a certain degree of specificity in the reactions to the loss seems probable. A grief reaction, for example, differs from the response to mutilating surgery. In all these types of losses, there may be an element of depression, commonly of a transitory nature. If the patient must continue to live in the presence of the loss, as in the case of a physical illness or a mutilated body, the depressive feelings tend to persist. A few of the persons suffering these losses may become severely depressed.

Psychological predisposition. An interesting approach to the problem of predisposition has been made through studies of the childhood of adults who have developed depression. Brown's work is typical. He compared 216 depressive patients with 267 general medical and surgical patients who were not depressed; 41 per cent of the depressed group and 19.6 per cent of the controls had lost one parent by the age of 15.

Immediately preceding onset of the adult depression were broken love affairs, loneliness, marital difficulties, death of a spouse or relative, loss of job, and trivial quarrels or rejections. A few cases seemed precipitated by influenza!

Loss of a parent. A study by Beck et al. reported on the relationship of orphanhood and depression in 297 routine admissions to a psychiatric out-patient clinic. Instead of using psychiatric diagnoses, a depression inventory was employed as a criterion of depression; the depth of depression was also judged clinically. The sample was divided into three groups, of approximately equal size, according to the scores on the depression inventory. The results showed that, of 100 patients who had high scores on the inventory, 27 per cent reported the loss of a parent before age 16; of 97 patients with medium scores, 15.5 per cent reported such a loss; and of 100 patients with low depression scores, 12 per cent. In addition, those patients judged as severely depressed clinically had a significantly higher proportion of parental death than those without depression—36 per cent as against 15 per cent. These investigators also arranged their groups by standard nosology. Although the psychotic depressive group had the highest percentage of orphanhood, it was not significantly higher than that for the schizophrenic group.

In another study, Sethi reported that there was a significantly greater occurrence of separation in childhood and separation as an antecedent event in a group of patients with high scores for depression as compared with a group with low scores. Childhood separations were defined as death of parents or siblings, marital separation, hospitalization of parents for 3 or more months, or child away from home for 3 or more months. Antecedent separations, all within 6 months of the onset of depression, were classed as the death of one or more parents; divorce or separation of parents; hospitalization of parents, siblings, or self for 3 months or more; absence of parents or patient from family unit for 3 months or more. Sethi believes that childhood separation produces a vulnerability to depression that can be triggered by separation in adult life.

An association between attempted or successful suicide and homes broken in childhood is suggested by Dorpat et al. They defined a broken home as one in which one or both parents were missing for more than 4 years prior to the subject's 18th birthday. The home may have been broken by death, separation, or divorce; or the subject may have left home because of illness or poverty or to marry or find work. The results showed, in general, that in both the attempted and successful suicide groups the incidence of parental deprivation was far in excess of the rates of childhood deprivation in control groups. Significantly more of the completed suicide group, as compared with the attempted suicide group, lost both parents by death.

Dorpat et al. suggested that the successful suicide group was reacting to irrevocable losses, such as the death of a loved one, and that the attempted suicide group was reacting to a threatened separation and trying to prevent it. The authors believe that an unresolved object loss in childhood leads to an inability to sustain object losses in later life.

Another approach to predisposition in depression is provided by investigators who study the effects of the loss of the mother figure in infancy or childhood on personality development. Bowlby is representative of this approach. Children brought to a residential nursery were observed after separation from the care of the mother, sometimes for protracted periods. Upon return home, reports on the behavior of the child were secured from the parents.

Such children typically showed a predictable sequence of behavior when brought to the nursery: protest, despair, and detachment. The protest was against the separation from the mother. The child despaired that she would ever return. Finally, the child detached himself affectively from the mother and from personnel and other children in the nursery. Bowlby believed that this sequence involved ambivalent feelings toward the mother; the child both wanted her and was angry at her for her desertion.

The child's ambivalence after returning home was shown by clinging to his mother and by acute anxiety and rage whenever she left him. If the child had been away more than 6 months or if he was subjected to repeated separations, the detachment may have reached an advanced stage, and there was danger that the child would never regain affection for his mother.

According to Bowlby, this sequence is characteristic of all forms of mourning. After an unexpected loss, there is protest: the bereaved strives either in actuality or in fantasy to recover the lost object and at the same time reproaches it for deserting him. Hope that she will return alternates with despair that she will not. In time, emotional detachment develops, and gradually the mother's permanent loss is accepted. Bowlby suggests an inherited evolutionary basis for anger and reproach in mourning. This pattern or response occurs with every loss, whether the loss is retrievable or not. Pathological mourning occurs when there is an inability to express overtly these urges to recover and show anger against the lost object. Adults who fail to mourn following a recent loss become detached and affectionless. With them the task of treatment is to recover and relieve the latent longing and anger concerning the mother for desertion during childhood.

Despite the literature showing that the incidence of early loss of a parent is high in adult depressed patients, Bowlby noted that delinquent boys also show a higher incidence of loss by death of a parent. Thus, it does not follow that there is a causal relationship between childhood loss and adult depression. However, Bowlby pointed out that children can suffer other

significant losses, such as rejection or neglect by parents. He cautioned, too, that although the relative incidence of loss is higher in psychiatric patients, the absolute rate is low; hence other factors must be operating to predispose to depression.

Gregory has performed an invaluable service by pointing out possible errors of sampling, inadequate statistical techniques, and logical fallacies found in the literature on predisposition. A recent study by Pitts et al., which attempts to avoid the pitfalls discussed by Gregory, finds no significant differences in parental deprivation in the childhood of groups with the diagnoses of manic-depressive psychosis, schizophrenia, neurosis, alcoholism, personality disorder, and organic brain disease.

Relationship with early love object. Another approach to the problem of predisposition comes from the psychoanalytic study of adults and children. This work has been carefully reviewed and evaluated by Mendelson. In general, analytic writers believe that the certainty of being loved and wanted, with its accompanying sense of security and self-esteem, comes about mainly through fortunate relationships with early love objects. Without this, the infant is repeatedly overwhelmed by feelings of abandonment, loneliness, anxiety, and depression. Such severe deprivation leads to a pathological personality development.

Jacobsen, for example, attributes the predisposition to depression to excessive disappointments before the child has learned to handle his ambivalent feelings toward himself and his love object at a time when his endopsychic representatives of himself and his objects have not been firmly established or clearly differentiated. Klein believes that the infant enters a phase characterized by a complex mixture of feelings of grief and hostility over a feared loss of his love object. He feels guilty and self-reproachful. This is referred to as the depressive position. Infants who fail to pass beyond this position are likely to succumb to a similar set of depressive feelings in adulthood after loss of a love object.

Mendelson does not believe, however, that the analytic literature establishes a correlation between infantile experience and adult depression. The theories have been based on too few cases, much of the analytic information is subject to retrospective falsification, and the word depression is not used consistently from one writer to another. Analytic writers, according to Mendelson, have come to recognize that depression is a complex phenomenon embracing many affective states and probably results from inherited, constitutional, and psychological factors.

Clinical Aspects

Clinically, depression is an affective state of sadness or blueness. In mild degree this usually goes unnoticed by relatives and is felt only slightly by the patient; in severe degree everyone remarks on it, and the patient experiences severe suffering. The affective

complaint is that of sadness, low spirits, blueness, dullness, failure to enjoy life, not caring to participate in activities, loss of interest or zest, and a gloomy outlook.

Physical signs. A depressed patient looks sad. His eyes may be downcast and staring; the corners of his mouth sag. He smiles not at all or only rarely and weakly. He slumps, and his shoulders droop.

Many depressed patients manifest retardation as a prominent sign, responding and moving slowly. The flow of thinking is not so rapid as formerly. Patients complain they cannot concentrate and have trouble making decisions that, once made, are subject to uncertainty. Pronounced retardation makes them seem stuporous. However, other patients do not show retardation. Both retarded and nonretarded patients may exhibit restlessness, irritability, tension, or even marked agitation.

The patient's store of energy is depleted. He cannot get started on his daily tasks, which now seem mountainous. His appetite is reduced or absent, food does not taste right, eating is forced. A good proportion of depressed patients have dryness of the mouth. Curtailed food intake leads to weight loss, at times of considerable proportions. Constipation appears in some patients, infrequently interrupted by short bouts of diarrhea.

Sleep disturbance, considered as almost pathognomonic for depression, appears as early morning awakening. Characteristically, the patient awakens at 2 to 4 A.M. and cannot return to sleep. At this time he feels the bluest and suffers most from a subjective feeling of depression and from depressive ideas. Less often the patient cannot fall asleep or experiences broken sleep.

Diurnal rhythm is common. Upon arising, the patient feels blue, anxious, retarded, but by midafternoon or evening there is partial or complete relief. This phenomenon occurs in mild depressions, in the early stages of a depression that later becomes severe, and in the later stages of recovery from severe depression.

The perception of the external world may be altered in depression. Colored objects appear dull or gray, although the patients can name colors correctly.

Somatic sensations may exist for months prior to development of a severe depression. Mildly depressed patients may complain of nothing but somatic sensations that the physician regards as neurotic. Such somatic sensations are prominent in the head. Headache is one, often with a primary occipital locus. The patient also speaks of heavy or dull feelings, of fullness or bursting sensations, of hazy or dozey feelings in the head. Complaints of blurred vision sometimes lead to the purchase of new glasses. After recovery from depression, the eye complaint may persist for 4 to 8 weeks.

The skin anywhere may be the object of paresthesias, and some patients scratch incessantly because of

severe itching. Circulatory symptoms are noted in depressed patients who are also anxious and tense. These are tachycardia, tightness in the chest, and precordial pain. In such patients, blood pressure is apt to be elevated; it falls following successful treatment.

The genitourinary system shows three types of changes: frequency of urination, diminution or disappearance of sex desire, and, in women, reduction or cessation of menstrual flow. Occasionally an increase in libido appears, related to a strong need for affection.

Involvement of the neuromuscular system includes tremors, muscle twitches, muscular soreness, and shooting pains in the muscles of the face, arms, and legs. These symptoms often localize along the spinal axis and in the back of the neck and the occiput. Associated with muscular complaints are those of fatigue or weakness.

Psychological signs. Depressed patients, especially in severe cases, may have delusions. Although these are most often seen in first depressions in the involutional period, they may occur at any age. In cases of repeated depression, they frequently have the same delusional content. The delusions typically involve ideas of sin or guilt, poverty and unworthiness. They reflect the patient's cultural background and individual conflicts. A religious person may feel that he has committed an undefined, unforgivable sin, for which he is being punished; these patients often seek help from religious authorities.

One woman felt that she had succumbed to temptation by the devil following an illusion in which she perceived a ray of sunlight as a yellow snake. The snake, she believed, had poisoned the well, and she in turn was poisoning her own family by cooking with well water. This made the food taste peculiar. God had deserted her, and there was no possible salvation.

A wealthy man of 39 became depressed and insisted he was on the verge of bankruptcy. He could not spend 5 cents for a cigar; he had to walk home rather than ride the bus; medical attention was too expensive and useless.

With delusions of sin, guilt, poverty, and unworthiness, hopelessness easily develops. The patient may conclude that suicide provides the only solution.

A fair proportion of depressed patients have suicidal thoughts and refer to them by implication. Robins et al. discussed these allusions. The patient may speak of getting his affairs in order, making a will, visiting life-long friends or relatives once again, where he would like to be buried, wishing certain persons happiness in the future, being tired of living. He may give to persons close to him some of his personal effects. Others speak directly of a wish to die or intent to commit suicide.

Paranoid features may appear in the delusions. A 44-year-old depressed single woman accused her dentist of seeking to use her for illicit sexual purposes. Her proof of his duplicity was that, when he drilled on her teeth, she felt unnatural sensations in her vagina. Less florid cases show only simple ideas of reference. People seem to allude to the patient in derogatory terms that confirm his idea of unworthiness.

Hypochondriacal delusions may absorb the patient's whole attention. He has heart disease, cancer, or a brain tumor. In some cases these delusions seem to be associated with or preceded by somatic complaints; in others they are associated with life-long fear of a certain disease.

Hallucinations, quite rare in depression, are almost always auditory and condemnatory.

A depressed mood has widespread effects on a patient. He notes his blue mood, sleep difficulties, reduction in energy, and diurnal rhythm, and he seeks an explanation. He wonders if an earlier illness is recurring. He thinks that he is a victim of the latest epidemic. He fears that some hereditary or familial nervous trait is showing itself. Mental retardation and indecisiveness make him unsure of himself and reduce his self-confidence. He notes in the mirror a change in his appearance and feels that other persons see this. He suspects that people speculate on his changed appearance. Does he have some secret sin or immoral wish? As a consequence, he becomes tense and anxious, perhaps fearful, avoiding people as much as possible and watching his behavior so that he does not make a revealing mistake in word or act. He tries to put up a front and maintain a smiling countenance. All this prepares fertile ground for the growth of ideas of reference and delusions. He comes to view everything pessimistically. Loved ones may desert him, and friends turn against him. He feels completely helpless and lost. Even though he feels he deserves this punishment, he thinks he may somehow make it up to those he has wronged, and then all will be well. Still other patients feel that they would be better if only somebody could help them. Some patients seek excessive proofs of affection, presenting a picture of dependent clinging. Others resent the imagined lack of attention and angrily demand it. Both types may make suicidal gestures in an effort to gain affection.

The foregoing signs and symptoms of depression differ in severity and variety in individual cases. The definition of psychotic depressive reaction requires that they be of severe degree with gross misinterpretation of reality and possibly with delusions and hallucinations. Severity of symptoms and gross misinterpretation of reality, however, do not differentiate psychotic depressive reaction from manic-depressive psychosis, depressive type, or from involutional depression. Psychotic depressive reaction does not have unique clinical symptoms.

Diagnosis

Several technical problems related to the diagnosis of psychotic depressive reaction create difficulties for the clinician. These difficulties include the time interval between the external precipitating event and onset of the depression, mild depressions, depression that gradually become psychotic, and repeated depressions.

Time between a precipitating event and onset of

depression. If a precipitating event precedes the beginning of the depression by only a few weeks, it is easy to think of the event as bearing a causal relationship. As the interval lengthens, however, the relationship between cause and effect becomes tenuous. Sometimes the time interval is not so great as noted by relatives, for the patient was gradually becoming depressed but had not appeared so. Careful questioning of the patient often discloses that with an object loss he felt tense and unhappy, and, as time passed, the depression progressively deepened. Without such evidence, events that occur more than a few weeks before the onset of a depression should not be regarded as causal.

Mild depressions. Many depressions which follow a possible environmental precipitating event never become severe. There is no history of cyclothymic mood, previous depression, or neurosis. Most of these cases are probably not seen by psychiatrists, and the state is simply regarded by the patient or his relatives as "low spirits" or unhappiness due to a loss of property, position, a relative, etc. This type of depression is not listed in the official nomenclature.

Depressions that gradually become psychotic. Some depressions begin acutely and reach severe proportions in a matter of hours or days. Other depressions begin with only one or two symptoms, such as a slight diminution in appetite and a feeling of sluggishness in the morning, then gradually progress to a severe form over a period of weeks or months. A case of rapid onset is justifiably called psychotic. But a case of gradual onset is more apt to be thought of as neurotic in the early stages, especially if there is anxiety with or without somatic complaints.

Repeated depressions. A first depression may follow a severe personal loss, and in a second depression no identifiable stress can be assigned. Or a first depression may have no precipitating factors, but the second does. Since there are two depressions, both cases qualify for manic-depressive psychosis, and the diagnosis has to be changed in the first case when the second depression appears. Does one call the second depression in the second case a psychotic depressive reaction? Unfortunately, detailed studies on the symptoms during the course of untreated psychotic depressive reaction are not available to compare with manic-depressive and involutional depressions. Thus, these issues cannot be resolved. It seems unlikely that adequate studies can be carried out because of the therapeutic enthusiasm generated by antidepressant drugs and electrotherapy.

Is psychotic depressive reaction a clinical entity? It does not have clinical features that clearly separate it from other types of depression. It does not have a typical unique group of symptoms or signs, nor does it have a known characteristic course. By definition, it does not make provision for minor depressive reactions to loss. It tends toward inclusion of any loss as a possible etiological factor. There is no limit on the

time factor between the loss and the psychotic reaction. There are no figures on its prevalence and inadequate figures on incidence. Common life situations associated with highly significant losses—such as death, lowered status in the elderly, curtailed physical and social function in serious illness and after mutilating surgery—do not typically lead to psychotic depressive reactions. These losses more commonly lead to reactions specific for the type of loss. The reactions that have depressive elements are generally transitory or mild, though some are severe and chronic. Severe personal loss, though playing a role in some psychotic depressive reactions, is not the sole etiological factor. Though suggestive of a relationship, the literature on predisposition to psychotic depressive reaction as a result of childhood parental deprivation is inconclusive.

Treatment

Since the concept of psychotic depressive reaction focuses attention on a significant loss, two interesting questions immediately arise. In cases of impending loss, such as the expected death of a close relative, a mutilating surgical operation, or retirement in the near future, can plans for adjustment to the new situation be formulated that would prevent depression? The second question is: What can be done to prevent depression, once a loss has occurred? Can the grief reaction, for example, be treated in a way to prevent it from passing over into a psychotic depression? Do substitute involvements help? With a woman who cannot have children because of a hysterectomy, does adoption of a child, the raising of animals, or participation in community affairs prevent a depression? These topics apparently have not been explored systematically, but they seem worthy of intensive study. Unfortunately, the psychiatrist is not called until depression has developed.

The treatment of psychotic depression is primarily empirical. There are several principles of treatment.

Uncovering unconscious motivations. Attempts to probe into unconscious factors possibly related to depression are apt to make the patient more introspective, anxious, depressed, and perhaps suicidal.

Combating depressive ideas. If the patient has ideas of guilt or unworthiness, the psychiatrist attempts to undermine these by minimizing them or by direct denial. The patient is told that he did not commit the unpardonable sin, harm a certain person by word or act, cause the death of a loved one. It is explained that he has distorted and exaggerated his degree of guilt. If the patient has feelings of hostility for which he blames himself, the importance of these is minimized, rationalized, or denied. At the same time, attempts are made to bolster the patient's feelings of self-esteem by pointing to his achievements and good qualities.

Suicidal ideas and ruminations are a constant concern. Getting these into the open frequently relieves

the patient, who then may feel that the psychiatrist knows and understands the worst. The discussion of suicide includes all the patient's reasons for suicide. Appeals to a patient's ethical or religious beliefs may be helpful, since these beliefs usually hold suicide as the greatest sin. From a patient who has confidence in the psychiatrist, it is possible to secure a promise that he will make no suicidal attempts.

In all these discussions, hope for his recovery is held out to the patient. He will recover no matter how futile the future seems; thousands of patients with the same kind of trouble do recover.

Sometimes a patient feels better about his illness if it is interpreted to him primarily in physical terms. He is told that depression is a disorder affecting the part of the nervous system and glands regulating feelings and that this part is temporarily malfunctioning. To justify this statement, the psychiatrist may cite examples: nervousness in hyperthyroidism, premenstrual tension and blues, menopausal irritability, unaccounted for mood swings, his own diurnal rhythm. It seems surprising to hear patients who have considerable guilt say, "If I could only sleep, or eat, or move my bowels, I would feel better." Here special treatment for these complaints may improve the patient's attitude.

The more severely depressed the patient, the more transitory are the results in combating depressive ideas. Yet these attempts are often very useful in easing the depression until more definitive treatment with antidepressant drugs or electrotherapy has had significant effects or before the patient enters the hospital. These efforts may prevent suicidal attempts.

Daily activities. The patient should be encouraged to continue activities within the limits of his available energy but not beyond, since this makes him feel more depleted and discouraged. Activity diverts him from depressive preoccupations and preserves the routine of normal existence. Depressed patients may feel that others can detect changes in their appearance or behavior; therefore, they withdraw from social contacts. In this instance, social contacts have to be planned, taking into account the patient's sensitivities.

The deeper the depression, the less active the patient, but an emphasis on a customary daily routine is therapeutic. It reinforces the expectation that he will recover. To assess how much work and what kind of work the patient can do, the psychiatrist should know what a typical normal week and day is like for the patient. This knowledge provides a check on the progress of treatment. What time did the patient arise, how long did it take him to dress and to shave, what did he eat for breakfast, what work did he do, whom did he talk to and about what, what changes has he noted in himself since the last visit, what time did he retire, how well did he sleep? Concern for him as a physical being gives comfort. It helps to satisfy his need for affection and builds self-esteem.

To improve the energy level and relieve feelings of

depression where there is diurnal rhythm, the psychiatrist may use sodium Amytal (1.5 to 3 gr.) and amphetamine (5 to 15 mg.) at breakfast and lunch time, if no other antidepressant drug is employed. The amounts of these drugs in DexamyI are appropriate for the average case. For patients with agitation or tension, sodium Amytal alone is often better. For patients without anxiety or tension, an amphetamine alone may be more effective.

A good nutritional status must be maintained. Occasionally, severely depressed patients require spoon feeding, rarely tube feeding. Constipation is preferably treated with a mild laxative, such as mineral oil. An occasional patient requires enemas.

Women concerned about disturbance in menstrual function can be told that, after recovery from the depression, the menses will return. Similar advice may be helpful for those concerned about loss of libido.

Sleep concerns many patients. A warm bath and a glass of milk before retiring reduces tension. Perphenazine or meprobamate accomplishes the same end. Chloral hydrate upon retiring is beneficial. Secobarbital (1 to 3 gr.) used as soon as the patient awakens in the early morning is also helpful. Continued use of sedatives for sleep should be avoided because changes in early morning awakening are very helpful in judging the response to treatment. Since patients are apt to feel the most depressed when they awaken early, they are most suicidal at this time. The patient should know that the psychiatrist understands this. If the patient fears he will act on his suicidal thoughts, he should be instructed to call his psychiatrist to discuss his fear.

Environment. Much can be accomplished by management of the patient's environment. Nurses, occupational and recreational therapists, and other hospital personnel who have contact with the patient should be given instruction in the psychopathology of depression so that they can combat depressive ideas without probing into psychodynamic factors. All these persons should pay attention to the patient's physical needs and assist in keeping him active. Everywhere throughout the hospital the attitude of personnel should be that of an understanding desire to help, with emphasis on the patient's recovery.

With out-patients, relatives should have their roles regarding the patient clarified by giving them information on how depression affects a patient. In general, they should play a supportive, optimistic role. Sometimes relatives fear that they played a part in causing the depression. While a patient is depressed, discussion of interpersonal relationships of patient and relatives may stir up animosities and guilt. A better time to discuss these subjects is after the patient has recovered. Relatives should be instructed to observe those signs and symptoms that are useful in judging the progress of treatment. Relatives also need instruction in what to expect from electrotherapy and how to reassure the patient who has memory loss associated with this treatment.

Hospitalization. Many depressed patients can be treated without hospitalization. The indications for hospital care are severe depression or serious suicidal preoccupations, inability of relatives to give adequate care, a seriously depressed patient not responding to treatment.

Drug therapy. In the experience of some, imipramine has given results comparable to electrotherapy. The dose is up to 300 mg. a day in four equally divided doses; the usual dose averages 150 to 200 mg. a day. Amitriptyline has also been useful, showing, perhaps, slightly better effectiveness than imipramine. Tranylcypromine and the monoamine oxidase inhibitors (nialamide and phenelzine sulfate) are used when the other drugs fail. The effects of imipramine appear in 7 to 10 days and reach a maximal response in 14 to 18 days. The response to amitriptyline is quicker.

How long to maintain a patient on drug therapy can be solved at present only by a gradual reduction in dose. With a patient receiving imipramine for 4 to 6 weeks, the daily dose may be reduced by 50 mg. for 2 weeks while the therapist carefully evaluates the patient's condition. If there are no signs of relapse, the drug may be reduced by another 50 mg. a day for another 2-week period. This process of gradual reduction is followed until the drug is discontinued. If the depression worsens, the dose is increased for a 4- to 6-week period, and the process of reduction is started again. There is no way one can know how long the patient requires a drug. Depressions usually last from 8 to 10 months, but there is so much variability in duration that no definite rule can be stated.

Electrotherapy. A most effective treatment for depression is electrotherapy. Some psychiatrists prefer to use it only in severe cases and in the hospital. It is, however, also effective in mild cases and can, with suitable precautions, be given to out-patients. These precautions are directed primarily toward home management between treatments and concern postshock confusion and memory loss. The technique of unilateral electrotherapy is said to eliminate most postshock confusion and memory loss. Electrotherapy has the great advantage of stopping the depressive attack in 1 to 3 weeks. The average number of treatments is seven to eight, given at the rate of three a week.

From both electrotherapy and imipramine or amitriptyline, one can expect good results in 80 to 85 per cent of patients. The remainder improve more slowly—or fail to respond maximally. Some patients respond to electrotherapy, then after a few weeks relapse, and more courses of treatment may be needed. In the early stage of relapse, one or two electric treatments may abort an attack of depression.

Suggested Cross References

Other depressive disorders are discussed in Sections 32.4 and 17.3 on nonpsychotic cyclic depressions and on involutional psychotic reactions, respectively; Section 17.1 on the manic-depressive reaction; and Section

24.2 on the neurotic depressive reactions. Suicide is discussed in detail in Section 33.1, and maternal deprivation in Section 44.1. A discussion on the biochemistry of depression may be found in Section 2.3 in Area B, on the basic behavioral sciences. Two of the treatment modalities discussed in this section, antidepressant drugs and electroconvulsive therapy, are discussed in Sections 35.2 and 35.5, respectively, in Area G, on psychiatric treatment.

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17.3 INVOLUTIONAL PSYCHOTIC REACTION

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History and Definition

The evolution of the current term "involutional psychotic reaction" to replace the original terminology of "involutional melancholia" is a classic example of the difficulty involved in the nosology of psychiatric disorders. Specifically, this difficulty is incurred in classifying the group of depressive reactions on the basis of their kindred causation, psychopathology, symptoms, and course of illness.

As early as 400 B.C., Hippocrates conveyed status to the word "melancholia" by describing it as a clinical syndrome. The disease received attention from other physicians during the succeeding centuries, but Esquirol, early in the 19th century, became the first physician to give an accurate description of the depressive reaction.

Kraepelin was the first psychiatrist to separate involutional melancholia from the periodic forms of melancholia. In 1896, he described an entity beginning after menopause in women and during late middle age in men that is not a phase of some other type of insanity. This entity encompassed all those gradually developing morbid conditions with anxious depression, apprehension, and the ultimate occurrence of delusions. Further, Kraepelin identified manic-depressive insanity as being constitutional in origin, but he thought that involutional melancholia had an acquired cause.

This diagnostic entity was challenged by Dreyfus, a pupil of Kraepelin, who studied cases of his own and reviewed many of the case histories reported by Kraepelin. Dreyfus decided that melancholia was an adulterate form of manic-depressive reaction and, therefore, not entitled to a separate classification. The German school of psychiatry agreed with Dreyfus, and even Kraepelin came to modify his original posi-

tion. But the majority of English and American psychiatrists reacted adversely and have adhered to Kraepelin's original thesis that a first episode of mental illness occurring in the involutional period and characterized by depression, agitation, feelings of unreality, and somatic and nihilistic delusions does constitute a psychopathological entity.

Around the turn of the century, scientific thought began to move toward devising a workable, nosological grouping of depressive reactions. Adolf Meyer was an exponent of this effort but was doubtful as to the possibility of ever developing a strict classification. Meyer believed that depressive types could be distinguished by their common etiology, symptom complex, course of illness, and eventual results. He proposed to classify all psychiatric disorders under three major groups and placed all forms of depression, paranoiac conditions, exhaustive infectious types, and dementia praecox under the category "symptomatic prognostic groups with complex etiology." Seven types of depression were listed in this group. Meyer advocated use of the term "depression" and the elimination of the word "melancholia," which Kraepelin was then applying to midlife depressions. Meyer recognized a typical form of depression belonging to the period of involution that he termed "agitated depression" or "anxiety psychosis." He differentiated this from the nonagitated depression as marked by retardation with subjective feelings of inadequacy and preceded by mania.

Subsequently, many attempts have been made to improve the classification of depressive reactions. Some English writers retain the original designation, "involutional melancholia." Henderson and Gillespie, after studying a series of cases admitted to the Glasgow Royal Mental Hospital and to some of the county mental hospitals in Scotland, stated unequivocally that involutional melancholia is a relatively common type of mental disorder, possessing certain features of its own. The American Psychiatric Association gives distinction to a depressive reaction of the involutional years, and yet, as recently as 1952, its Committee on Nomenclature and Statistics revealed doubts about the pathogenesis by listing involutional psychotic reaction as the only psychotic disorder under the etiologic group, "disorders due to disturbance of metabolism, growth, nutrition, or endocrine function."

These nosological ramblings recall Meyer's efforts to delineate the condition as one of the symptomatic depressions with complex etiology. Involutional psychotic reaction finally attained its proper categorization when it was classified under affective psychotic reactions in the last revision of the *Standard Nomenclature of Diseases*.

The Committee on Nomenclature and Statistics of the American Psychiatric Association (A.P.A.) defines "involutional psychotic reaction" as follows:

In this category may be included psychotic reactions

characterized most commonly by depression occurring in the involutional period, without previous history of manic depressive reaction, and usually in individuals of compulsive personality types. The reaction tends to have a prolonged course and may be manifested by worry, intractable insomnia, guilt, anxiety, agitation, delusional ideas, and somatic concerns. Some cases are characterized chiefly by depression and others by paranoid ideas. Often there are somatic preoccupations to a delusional degree.

The cardinal delineating features are: (1) personality predisposition, (2) no previous mental disorder, (3) occurrence within the involutional phase of life, and (4) severe depression with apprehension, agitation, suicidal preoccupation, and profound insomnia, culminating in somatic, nihilistic, and occasionally paranoid delusions.

Epidemiology

At the present time, the most reliable statistics on the incidence of involutional psychotic reaction are derived from studies of first admissions to hospitals. It is impossible to determine the actual incidence rate, since there is no method for constructing statistics for patients who recover without treatment, are treated by a family physician or private psychiatrist, or are handled by many public agencies and clinics. Statistics do indicate steady increase of first hospital admissions with a diagnosis of involutional psychotic reaction. Malzberg reported an increase from 2.4 per cent in 100,000 hospital admissions in 1921 to 6.1 per cent in 100,000 hospital admissions in 1940, and 7.2 per cent in 100,000 hospital admissions in 1950.

Simon, in a study of ethnic groups, reviewed all first admissions to a general hospital facility located in a Southern state over the 5-year period of 1959 through 1963. He found that the incidence of involutional psychotic reaction was higher among white women than among Negro women, but there was no significant difference in the incidence in white and Negro men. He suggested a later survey to determine the effect on comparative incidence rates of involutional psychotic reactions in Negroes due to changing social roles, new civil rights, increased urbanization, and improved education.

From the standpoint of sex and age, Kielholz found that females have a higher incidence of involutional psychosis than males. This preponderance is by a ratio of 3 to 1. He also found the condition to be more prevalent in women between 51 and 60 years of age and in men between the ages of 61 and 65. In a majority of cases, the involutional depression had its onset in females from 3 to 7 years after menopause.

In an analysis of certain socioeconomic and cultural conditions, Frumkin found the incidence of involutional psychotic reaction to be higher in individuals from low income and low prestige groups than among professionals and semiprofessional persons. Formal education was inversely related to occurrence of the

reaction, as was the degree of family organization; there was noted a higher incidence among widowed and divorced individuals. The urban population produced twice the number of first admissions as from rural areas. However, Henderson and Gillespie found that the incidence of first admissions to county mental hospitals was higher than to urban hospitals in Scotland.

Etiology

The mystery of the etiology of involutional psychotic reaction is no nearer solution now than when Kraepelin first singled out the reaction from other depressions. Biological studies offer no real clues as to whether or not human behavior is influenced by changing nutritional requirements, decreasing gonadal hormone secretion, and the altered neuroendocrine and metabolic activity taking place in the involutional years. Other investigators have been more successful by using the techniques of the psychobiological and psychoanalytic schools of psychiatry and of the social sciences to gather information about the psychopathology of individual cases and the social setting contributing to the development of the psychosis.

Premorbid personality types. For years it has been known that certain premorbid personality types are predisposed to develop involutional psychotic reaction. The A.P.A.'s official classification lists the three personality disorders so predisposed as (1) the compulsive personality, (2) the passive-dependent personality, and (3) the passive-aggressive personality.

Compulsive personality. This personality type has the greatest predisposition to develop an involutional psychotic reaction. In a series of patients, Kielholz found traits of the compulsive type in 80 per cent; the remaining 20 per cent were schizoid or tended to be moody and worried. The compulsive personality is defined by the A.P.A. as follows:

Such individuals are characterized by chronic, excessive, or obsessive concern with adherence to standards of conscience or of conformity. They may be overinhibited, overconscientious, and may have an inordinate capacity for work. Typically they are rigid and lack a normal capacity for relaxation. While their chronic tension may lead to neurotic illness, this is not an invariable consequence. The reaction may appear as a persistence of an adolescent pattern of behavior or as a regression from more mature functioning as a result of stress.

Further analysis of individual case histories of the compulsive personality reveals a childhood filled with unusual anxiety and early insecurity. The home atmosphere was tense, frugality was practiced, and the parents were rigid in discipline. This type of child generally had difficulty with interpersonal relationships. As adults, such individuals possess a wealth of strong reaction formations and other personality defense mechanisms to enable them to make a well concealed, neurotic adjustment to life. Consequently,

the compulsive personality has more early life successes than failures and hence will be more threatened by any decline in ability or a possible loss of position.

Passive-dependent personality. This personality type is characterized by helplessness, indecisiveness, and a tendency to cling to others as a dependent child to a supporting parent. In such individuals, life-long insecurity produces timidity, submissiveness, and extreme sensitivity to the moods of others. Many are self-sacrificing, become loyal subordinates, and have a pronounced dependency on the approval and the emotional support of others. Poorly repressed aggressive drives can cause fretfulness and doubt, with great demands on the family and associates.

Passive-aggressive personality. This personality type is denoted by passive measures, such as pouting, stubbornness, inefficiency, and obstructionism. Such persons are overly critical, distrustful, and jealous; they blame other individuals or the environment for their failures. Neither the passive-dependent nor the passive-aggressive personalities have the tempered strength of character of the compulsive personality.

Intrinsic precipitating factors. The intrinsic precipitating factors are intertwined psychodynamic and psychophysiological reactions, although it is known that endocrine depletion and vegetative and metabolic changes do not, of themselves, precipitate an involutional psychotic reaction.

Clinicians have long been intrigued with the relationship of the climacteric to the development of the psychosis, and hormone replacement therapy has been used extensively in the treatment of females. Well controlled research studies have demonstrated that the symptoms and course of involutional psychotic reaction are not influenced by replacement hormone therapy. A typical study is that of Ripley *et al.*, using injectible preparations of estrogen. The experimenters relied on serial vaginal smears to determine the exact dosage necessary to produce the desired physiological restoration of vaginal cytology. Even those patients who proved to have the desired physiological response failed to show improvement.

The first symptoms of involutional psychotic reaction generally begin several years after menopause. It should be emphasized that the involutional phase embraces a period of several years and that the climacteric is only one of many happenings in that period. On the other hand, menopause, with the women's mixed feelings about cessation of menstruation, does have many cultural implications. The phenomenon is associated with loss of the ability to bear children and a threatened loss of personal warmth, sexual desire, and physical attractiveness. In some subcultures, another threat to midlife serenity is the engrained myth that women often lose their minds at change of life.

Men equate failing potency with loss of virility, youthful zest, and the best attributes of manhood. Many men approaching the climacteric develop an

emotional reaction to a feared loss of normal sexual activity.

Psychological hypotheses that attempt to explain the development of a typical premorbid personality and the eventual precipitation of a psychosis are drawn chiefly from the fields of psychoanalysis. In the oral stage, strong mixed feelings of love and hate predispose to the development of a narcissistic personality, which reacts to subsequent disappointments with ambivalent emotions of grief and anger. Hendrick says that the narcissist exaggerates his own importance and is easily hurt by the depreciating opinion or lessened affection of others. He points up that the narcissist's excessive evaluation of self can be seen in the psychotically depressed person who is constantly bemoaning his uselessness, unworthiness, and need for punishment; but such a person betrays a high evaluation of himself in the superlatives used to describe his complaints and in the constant demands he makes on others. Involutional depression, from the psychoanalytic point of view, is the personality's reaction of grief and anger to a real, anticipated, or imagined loss in later life.

Extrinsic precipitating factors. The extrinsic precipitating factors associated with the production of involutional psychotic reaction center on interpersonal relationships, cultural mores, and socioeconomic conditions of that era of life. The sociocultural emphasis in this country is on physical strength, vitality, and the mental alertness of youth. There is little reverence for the wisdom of age. The middle-aged man is well aware of the competition from more youthful men and is deflated by an abrupt realization that the social and economic goals of earlier years can never be realized. Forced or voluntary retirement, loss of a job, and loss of financial independence and prestige become added threats to the economic and social integrity of the individual.

Probably the most traumatic experience for both men and women is the death of a spouse, close relative, or dear friend for whom the individual has a healthy or neurotic attachment. The separation is doubly important if the lost one fulfilled a supervisory role or gave economic support.

For a woman, middle age is the period of life when her children leave home for college, employment, or marriage. An emotional void results for the over conscientious, compulsive housewife and mother who has devoted all her life to her family and failed to establish suitable substitutes. Even the presence of a retired husband in the home, if he interferes with her perfectionistic routine, is sufficient to generate poorly controlled aggressiveness and help precipitate an involutional psychosis.

Occasionally, physical trauma, mutilating surgery, or a physical illness can be identified as a precipitating factor. Minor surgical procedures, especially pelvic surgery in women, have precipitated this disorder.

The assumptions of psychoanalysis attribute high

causality to actual or feared loss of body tissue, loved persons, valuable objects, old pursuits, and personal and social values—all of which may overwhelm the susceptible personality.

Clinical Description

Many authors subdivide involutional psychotic reaction into three types: (1) the depressive type, manifested by severe depression, agitation, suicidal preoccupation, and delusions of guilt and nihilism; (2) the paranoid type, with suspiciousness, marked hostility, delusions of persecution, and ideas of reference; and (3) the mixed type, presenting an admixture of sustained agitation and paranoid ideation. In view of the incidence of the depressive type—80 per cent—the clinical description of involutional psychotic reaction is confined to this variety.

The reaction in the depressive type frequently occupies a prodromal period that varies from weeks to months to years. Occasionally, there is a sudden or even fulminating onset in response to some major precipitating event. Anxiety and apprehension are the core of the prodroma. The patient develops terminal insomnia and feelings of inner tensions; he experiences easy mental and physical fatigability; and the waning of biological drives produces loss of sexual desire and loss of appetite. Apprehension is followed by worry about personal health. The classical tension headache plagues most patients and is described as constant during the waking hours, with a bandlike sensation or a feeling of pressure in the head. Concern about physical health may cause the individual to consult a physician, in the hope that some physical disease is responsible for the general state of ill feeling.

Gradually, the course of the illness becomes an extension of apprehension into despondency, with weeping, loss of interest in activities, preoccupation with trifles, inability to make decisions, worsening of the insomnia, and multiple somatic complaints. The deepening depression may be intermixed with periods of anger and peevishness, and the early restlessness turns into extreme motor agitation.

On mental status examination, the typical patient exhibits a facial expression of the utmost sadness and presents a dejected, distraught appearance. Weight loss is pronounced, so that the patient appears older than his age. Psychomotor agitation can extend to wringing of the hands, pacing the floor, repetitious pleas for help, and episodes of frenzied behavior.

The mental content describes somatic delusions, nihilistic delusions, delusions of guilt, self-accusations, and, uncommonly, paranoid delusions. Bizarre somatic delusions involving all structures of the body and the earlier fixation on bowel function is the forerunner of absurd ideas about the alimentary tract. Delusions of nihilism consist of the denial of the existence of objects, persons, or natural phenomena. Guilt is so prominent that patients berate themselves

for unimportant transgressions in the past and believe they have committed unpardonable sins. Predictions of some horrible personal fate are accompanied by signs of fearfulness; meanwhile, the patient insists that any form of punishment is justified. Self-accusation and self-condemnation progress to the point of desiring relief through death. Suicidal preoccupation, with thoughts of just not waking up in the morning, is common in the prodromal period. Suicide is a threat at all times. The presence of illusions and hallucinations should raise suspicions of an associated early organic brain disease.

The sensorium is clear, but inattention, difficulty in concentration, and poverty of ideation are seen. Retention and recall, recent and remote memory, and grasp of general information are in keeping with premorbid attainments. There is a loss of abstract thinking ability, and insight is lacking. Psychological tests are useful in the prodromal period.

Differential Diagnosis

The diagnosis of involutional psychotic reaction should be made only after finding the positive criteria that delineate this reaction. The predisposition to develop circulatory disturbances, disorders of metabolism and nutrition, and senile neurohistological changes in this age decree that the possibility of acute and chronic brain disorders receive first consideration. The propensity of physicians to think in terms of cerebral arteriosclerosis in involutional age patients and then to make a snap diagnosis of organic brain disease can have unfortunate results. Acute brain disorders—with the picture of altered degrees of consciousness, confusion, delirium, and associated physical and neurological deficits—are well known.

In obvious brain disorders, intellectual impairment is the chief finding. In the early stages, the impairment produces only an alteration of recent memory and easy fatigability. The sensorium needs to be tested repeatedly, and such psychodiagnostics as the Wechsler Adult Intelligence Scale, the Wechsler Memory Scale, and the Bender-Gestalt reveal signs of organicity. More advanced cases lose all recent memory but have a fair retention of past memory and live in terms of early life experiences. The personality dilapidation is revealed through inattention to personal dress, excreta carelessness, and the habit of either deliberately or unknowingly exposing the genitals. Episodes of gross mental confusion occur and may be associated with transitory fearfulness, which becomes worse at night but is not the sustained, constant fearfulness seen in involutional psychosis. Hallucinations and illusions are also episodic, although delusions, especially of the paranoid type, can be persistent.

The existence of more diffuse cerebral pathology produces convulsions and various neurological symptoms and signs. In addition, the physical examination may reveal hypertension, peripheral vascular

disease, or other pathology. Consequently, the differential diagnosis requires a thorough medical, neurological, and neurosurgical evaluation.

The psychotic disorders without clearly defined structural change requiring differentiation are: manic-depressive reaction, psychotic depressive reaction, schizophrenic reactions, and paranoid reactions.

Manic-depressive reaction. If the depressed phase of the manic-depressive psychosis has its first appearance during the involutional period of life, a difficult diagnostic problem results. A careful history may show an early mild depression or an unrecognized episode of hypomania. Many times, there is a positive family history, and further analysis of the premorbid personality reveals an outgoing, extroverted individual with the mood swings of the cyclothymic personality. Similarly, clinical features of the depressive type of manic-depressive reaction show more mental and psychomotor retardation and none of the bizarre delusions or extremes of self-condemnation encountered in the involutional psychotic reaction.

Psychotic depressive reaction. The onset of a first psychotic depressive reaction during the involutional period may present diagnostic difficulties. The history usually reveals a basically well adjusted personality structure that finds the environmental situation so overwhelming that it regresses into a depression of psychotic proportions. There are feelings of intense guilt, suicidal rumination, retardation of thought, and psychomotor activity, in contrast to the agitation of the involutional psychotic reaction, profound insomnia, delusions of a somatic nature and occasional hallucinations.

Paranoid and schizophrenic reactions. Those developing during the involutional era have neither symptoms nor signs of a true depression of mood. The affect reveals either veiled or overt hostility, and the patient reacts directly to their paranoid delusional content. Such a patient is egocentric rather than guilt-ridden and self-punishing, and the premorbid personality type is either schizoid or paranoid. Schizophrenic reaction, schizoaffective type, may exhibit periods of despondency that are secondary to the underlying delusional content. In addition, the patient shows signs of dissociation, mental blocking, some autism, and a global retreat from reality. Introversion, schizoid, and paranoid characteristics are evident in the life adjustment.

Anxiety reaction. This reaction is classified under psychoneurotic disorders and should never be confused with the advanced stages of involutional psychotic reaction. Anxiety is the prevailing emotion in this condition, and the individual has a life-long tendency to overreact to stressful situations. The prodromal phase of the involutional psychotic reaction can be confused with anxiety reaction, but there are fluctuations in the prevailing anxiety of the latter in contrast to the continuous apprehensive depressions of the psychosis.

Prognosis and Treatment

A review of the literature on prognosis in involutional psychotic reaction reveals a startling difference in the results published prior to and since the advent of the somatic therapies. The available treatment measures prior to 1940 were hydrotherapy, occupational and recreational therapy, sedation, supportive psychotherapy, psychoanalysis, attention to the physical needs and nutritional requirements, and hospitalization for prevention of suicide. Under such a therapeutic regimen, a few patients were reported to have recovered in less than 9 months, but the majority of the remissions were in the 2nd to 7th year after the onset of the illness. Kraepelin reported a recovery rate of 33 per cent, and Noyes found a 40 per cent recovery rate within the first 2 or 3 years after onset.

Many writers have attempted to identify factors that are favorable or unfavorable for recovery. There is concurrence that the prognosis is better in the younger, more intelligent patient and whenever treatment is instituted early in the illness. Thus, patients with a rapid onset have a higher recovery rate than those with a long prodromal stage. Patients with signs of pronounced anxiety, severe depression, and extreme agitation have a higher incidence of recovery.

The reaction itself occurs at the time patients are beginning to lose their adaptive capacities, and it follows that individuals with a strong premorbid character structure have the best chance for recovery. Also, recovery is enhanced by the possibility of the patient's return to a wholesome atmosphere that includes family, friends, economic security, and occupational and other pursuits of interest.

The introduction of Metrazol convulsive treatment, followed shortly thereafter by electroshock treatment, has altered completely the prognosis of involutional psychotic reaction. Huston and Locher used electroshock to treat patients with involutional psychotic reactions. They reported an 80 per cent recovery rate with improvement maintained for 3 years, although 11 per cent relapsed at a later date. These patients were given another course of electroshock, with a similar 80 per cent good response. The authors noted that patients with paranoid features had the poorest results; otherwise, they were unable to find factors to explain the original failures or the reasons for relapse. Their experience typifies the incidence of recovery found in other articles published during the past 2 decades.

Electroshock is the treatment of choice for involutional psychotic reaction. The word "shock," with its multiple connotations, has a less sinister meaning to patients than does the term "convulsive," and most patients readily accept this form of treatment. The physical contraindications to its use are rare; even patients with advanced heart disease can be treated in consultation with a cardiologist. Pretreat-

ment anxiety can be diminished by oral administration of a short-acting barbiturate. Intravenous barbiturate preparations that detoxify rapidly, such as methohexital sodium, induce prompt anesthesia and early awakening. Injection of the proper dose of succinylcholine chloride through the same needle prevents fractures.

Patients require careful supervision throughout the electroshock program. Treatments must be spaced properly to prevent periods of confusion, and they should be continued until all presenting symptoms have been relieved. Unilateral electroshock treatment, wherein both electrodes are applied over the non-dominant hemisphere, can be used exclusively or can be interspersed with bilateral treatments to help lessen the memory loss.

Kalinowsky and Hoch report on the use of Indoklon as the primary treatment; other psychiatrists reserve it for electroshock failures. There is insufficient evidence at this time to compare its effectiveness with that of electroshock treatment. The injection of such anticholinergic preparations as atropine sulphate also has been found effective in some chronic patients with paranoid manifestations.

Psychotropic drugs also have a useful place in the treatment armamentarium. Antidepressants as well as tranquilizers have been employed in the treatment of involutional depression. In cases where the clinical picture is dominated by depressive features, antidepressants may be helpful. In cases marked by agitation or paranoid manifestations, tranquilizers of the phenothiazine type are often effective. In mixed cases that display depressive, agitated, and paranoid features, a combination of both types of medication may prove to be valuable.

Lobotomy is indicated in selected patients with involutional psychotic reaction. The electrocoagulation method of Grantham, which destroys the connections to the dorsomedian nuclei of the thalamus, has been the basis of several studies, and the results have been uniformly favorable. Ultrasonic waves and cryogenic methods are also employed to produce focal lesions and interrupt frontothalamic fibers.

The supportive psychotherapy rendered during the illness should be continued into the convalescence, along with vocational and avocational rehabilitative measures. The majority of patients with involutional psychotic reaction are inaccessible to depth psychotherapy. Abraham stated that psychoanalysis is valuable only in cases of depression preceded by definite traumatic events, such as the loss of a loved person. Wolberg agrees that a person with involutional depression is not a suitable candidate for intensive psychotherapy. Moreover, he warns that recalling painful material can become so untenable to the decompensating personality that it may aggravate the illness and cause a suicidal attempt.

All suicidal risk patients should be hospitalized, both for their protection and for definitive treatment.

This also applies to all patients receiving any of the somatic therapies. Hospitalization permits adequate supervision of the somatic treatment schedule, sedation, tranquilization, and nutritional requirements, and the patients will benefit from the milieu program of the hospital. Under these circumstances, most patients recover in a period of less than 2 months.

Suggested Cross References

For a comparison of involutional depression with the other depressive disorders see Sections 17.2 and 17.1 on the psychotic depressive and manic-depressive reactions respectively, in this chapter and Section 32.4 on nonpsychotic cyclical depression and Section 24.2 on neurotic depressive reaction. Other psychiatric disorders mentioned in this section—obsessive-compulsive reaction, schizophrenia, and the organic brain disorders—are covered in greater detail in Section 24.1, Chapter 15, and Chapters 18 to 20, respectively. The reader is also referred to Hendin's discussion of suicide in Section 33.1. For a more detailed discussion of the treatment methods referred to in this section, such as convulsive therapy, drug therapy, and psychotherapy, see Area G, on psychiatric treatment. The sections on neurochemistry and psychopharmacology, Sections 2.2 and 2.3, contain a discussion of biochemical features of depression.

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SOME PSYCHOLOGICAL TEST CHARACTERISTICS OF DEPRESSION

HAROLD A. GOOLISHIAN, Ph.D.¹

Test	Reactive Neurotic Depression	Psychotic Depression
General testing behavior	Variable motor retardation Variable associative retardation Frequent expressions of inadequacy Tense inhibited relationship to examiner Gives up easily Critical of self-help and accepts blame Overconcern with performance Apologetic and guilty Unable to handle frustration Easily irritated	Severe motor retardation Severe associative retardation Gross irritability and negativism Severe restless agitation or inertia, frequently alternating Constantly despairing and expressing worthlessness Delusional ideas about examiner, purpose of tests, or use of test results Overt impotence Self-condemning Morbid affect, easily evoked Poorly controlled rage reaction in response to failure and frustration
Wechsler intelligence scales	Many performance scales lower than verbal scales Low digit span Difficulty in maintaining concentrated effort Vocabulary and information generally well retained Verbal productions frequently short Concern with accuracy frequently impedes performance	All performance scales grossly lower than verbal scales Unusual verbal scatter Marked fluctuation in quality of performance Comprehension and similarity tests generally low and often psychotic in quality Easily confused on items requiring concentration Excessively low digit span Distorted and morbid picture arrangement stories Distorted picture completion associations
Rorschach	Low R Long reaction times Stereotyped responses High number of F High F+ per cent Occasional inappropriate C responses Hypercritical of responses Irritated by testing Sensitive to shading Many popular or easily seen responses High number of D and low number of W responses Process of inquiry perceived as being critical of productions	Low R Few determinants Many anatomy responses Low F+ per cent Frequent failures Frequent morbid or decaying content Highly variable reaction times Long periods of unproductive handling of cards Many vague D or W responses Frequent rejections Difficult to obtain adequate inquiry
Thematic Apperception Test	Themes of despair, lack of success, failure, loss of love, and death are frequent Stories usually short and pessimistic in attitude Outcomes are bleak Often on verge of tears	Often a paucity of thematic material beyond simple descriptions Themes vary from the morbid, tearful concern with death and punishment to highly symbolic variations on themes of happiness versus gloom Frequent tearful responses to stories
Word Association Test	Generally long reaction times except to very simple stimulus words Concrete or functional associations Considerable difficulty in associating to words involving love, hate, loneliness, or family	Long reaction times or total associative blocking Stimulus-bound associations Frequent multiword associations Excessive number of traumatic words Stimulus words such as suicide evoke unusual re-

Test	Reactive Neurotic Depression	Psychotic Depression
Minnesota Multiphasic Personality Inventory	High D scale High PT scale Moderately high F scale Moderately low MA scale Low K scale Difficulty in completing test	sponses, such as "good," or a specific stated plan of action
		Difficulty in being tested Process of decision making at times impossible Many "cannot say" or refusals to answer Excessive time required in testing High D scale High PT scale Low MA scale In general, high on psychotic triad Low PD scale Excessively high F scale

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Chapter 18

Brain Disorders. I: Introduction

18.1 INTRODUCTION TO BRAIN DISORDERS

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The complexity of the relationships between brain functions and behavior and the multiplicity of factors capable of adversely affecting brain activity make it difficult to establish a satisfactory nosological classification of the organic syndromes. The American Psychiatric Association classification is based on organic etiology, which tends to overemphasize the etiological role of the single organic factor while obscuring the clinical variations determined by involvement of different systems or regions of the brain and by the psychological and cultural background of the individual.

Organic Factors

The organic factors as determinants of the clinical syndrome are relatively nonspecific. The fundamental process in the organic brain syndromes is damage or destruction of neurons. It is this destruction rather than the nature of the noxious process that is responsible for the characteristic clinical picture. When damage is diffuse and widespread, the basic disturbance in psychic function is the same, regardless of whether the underlying condition is heart failure, hypoglycemia, a head injury, bromide intoxication, or diffuse senile degenerative changes. When damage is to systems or regions of the brain concerned with particular psychic functions, this localization, rather than the nature of the organic factor, yields the characteristic syndrome.

Diagnosis

Diagnosis involves two steps. The first step is to establish the syndrome as organic, as distinguished from the functional disorders. The second step calls for the identification of the factors responsible for the neuronal damage. This requires an understanding of the biochemical and physiological conditions necessary for effective brain function and an apprecia-

tion of the pathophysiology of diseases that may directly or indirectly impair cerebral function.

Psychiatric diagnosis. In the organic syndromes due to diffuse cerebral damage, the basic and constant psychological defects, regardless of any other more obvious behavioral or psychological disturbances, are reduction in the level of awareness or in the efficiency of cognitive functions. Reductions in level of awareness include fluctuating attention, inattention, somnolence, and coma. Reductions in cognitive efficiency include defects in orientation, interpretation of sensory input, memory, retention and recall, arithmetical skills, and ability to sustain a mental or motor task and to utilize abstract concepts or effective generalizations.

If specific neural systems or areas are involved, characteristic disturbances, alone or in combination with the above, may be introduced. For example, damage to frontal lobe connections may reduce interest or motivation with relatively less alteration in attention or gross cognitive functions. Lesions of the hippocampal formation may significantly interfere with the capacity to learn and recall new information without comparably impairing the capacity to retrieve and use old memories and skills (the amnesic syndrome, Korsakoff's psychosis). Temporal lobe involvement may contribute dysphasic elements, distortions in sense of self and reality, *déjà vu*, *déjà pensé*, or hallucinations. Involvement of the reticular activating system or diencephalon may induce states of hyperalertness or insomnia or of somnolence and coma.

Medical and neurological diagnosis. Every patient with an organic syndrome requires prompt and thorough medical and neurological study, with particular reference to ingestion of drugs and alcohol and exposure to toxic materials or anesthesia; previous episodes of disturbed consciousness, including syncope, cardiac arrest, shock, stroke, concussion, and convulsions; neurological symptoms and diseases; and every category of serious medical and surgical disorder in which physiological or biochemical processes can directly or indirectly affect adversely the metabolism or structure of cerebral neurons.

Electroencephalographic diagnosis. The electro-

encephalogram (EEG) is an invaluable aid in diagnosing and following the course of the organic brain syndromes. Three types of EEG changes are found, and each correlates well with the underlying cerebral disturbance and the corresponding psychic manifestations.

Sustained slowing. Inadequate metabolism of cortical neurons or of their subcortical driving systems results in sustained slowing of the EEG. Such slowing may be diffuse or focal, depending on whether the noxious influence is effecting the brain cortex en masse or locally. The degree of EEG slowing reflects the degree of damage to the neurons (up to actual cell death) and, when diffusely distributed, accurately correlates with the degree of reduction in level of awareness and of cognitive performance. However, since destroyed neurons do not give rise to any electrical activity, it is possible to have a normal EEG in the presence of serious organic deficit, as when the EEG originates from surviving neurons that are functionally adequate but insufficient in number to sustain normal cognitive function.

Sustained focal slowing of EEG is indicative of localized brain damage and generally suggests a neurological disorder rather than a general process affecting the cortex as a whole. Diffuse slowing with focal accentuation of slowing may indicate a combination of both.

Sustained acceleration. Diffuse moderate voltage to high voltage fast activity (13 to 20 per second) may occur with toxic reactions to certain drugs, notably the amphetamines and quinacrine. High voltage fast activity localized to the frontal areas is characteristic of barbiturate intoxication. Low voltage irregular fast activity is characteristic of the hypervigilant stage of delirium tremens, an alcohol withdrawal syndrome.

Paroxysmal high voltage slow or fast activity and spikes. These are suggestive of a convulsive disorder and draw attention to the organic brain syndromes associated with epilepsy.

Psychological and Sociocultural Determinants

The clinical manifestations of the organic brain syndromes represent a complex combination of two components: the direct consequences of the damage to the brain itself and the efforts of the individual to cope with the resulting defect and with the demands of his environment. The first is manifest in the altered level of awareness, the cognitive defects, and in the consequences of focal damage, as outlined above. The second is complexly determined by (1) the individual's past psychological development and his characteristic patterns of ego defense and

coping style; (2) the psychosocial setting in and the speed with which the illness develops; (3) the nature of the support from family, friends, physician, and the social structure; and (4) the characteristics of the culture in which the patient was brought up.

To a large extent, the patient's behavior is determined by his efforts to avoid the painful affects of anxiety and depression, which emerge when he cannot cope with cognitive demands. The great individual variability of such factors accounts for the extraordinary range of behavior demonstrated by patients with organic syndromes. Manifest behavior, the content of thought, the nature of sense deceptions or hallucinations—in a word, all the more personal characteristics—are determined by such individual psychosocial factors.

Superficially, the organic syndromes may simulate any form of psychopathology, but attention to the basic defects in awareness, cognition, and specific brain functions in combination with the common EEG abnormalities will assure accurate diagnosis in most instances.

Prognosis

Prognosis is dependent on correction of the underlying organic determinants *and* on the nature of the psychological supports and resources available to the patient. When the organic etiological factor(s) can be eliminated before neuron death has occurred, complete restitution of normal function can be achieved.

In the presence of brain damage, transient or permanent, the capacity of the individual to sustain cognitive performance is greatly enhanced by reducing to a minimum the familiar causes of psychological decompensation, with its accompanying anxiety, depression, and disorganization of ego function. Conversely, placing the patient in an unfamiliar environment or confronting him with cognitive tasks beyond his capacity may produce disorderly, defective performance with anxiety, agitation, irritability, anger, or depression (the catastrophic reaction of Goldstein)—a pattern of response from which recovery may be slow.

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18.2 ACUTE AND CHRONIC BRAIN SYNDROMES

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Definition

According to the American Psychiatric Association's standard nomenclature, brain syndromes are organic mental disorders due to a diffuse impairment of brain tissue function from any cause. *Diffuse* cerebral tissue impairment is said to be necessary to make the diagnosis of brain syndrome. There is an unresolved nosological dilemma on this point, since focalized lesions may produce serious personality and motoric changes, and diffuse lesions may produce only minor deficits and disturbances in sensory and intellectual functions.

Clinical Description

Organic brain syndromes may produce varying disturbances in the patient's mental state in the areas of orientation, memory, intellect, judgment, and affect; psychotic symptoms may or may not be present. In addition to the deficits of the syndrome of organic brain disorder, the patient may have various psychotic and neurotic personality disturbances that are not the result of cerebral impairment but are directly referable to preexisting personality patterns and conflicts or present day life stresses; the disturbances are not necessarily related in severity to the degree of brain damage. These disturbances are interpreted to be defensive, reparative, and restitutional in nature.

Disturbance in orientation. Orientation is most affected in regard to person and place. Because of a lack of lucidity and disturbance in sensorium, there is an alteration in consciousness. The patient may be disoriented and confused and unable to identify the day, time, location, or the person he is talking to.

Disturbance in memory. Memory is more impaired for the recent past than for the remote past. Where memory gaps are evident, as in head injury or subdural hematoma, defects in retention and recall may be demonstrated by questioning the patient about events in his immediate past or by testing his ability to recall objects, digits, or colors after several minutes to an hour has elapsed.

Disturbance in intellectual functioning. Vocabulary is probably the best single index to intellectual ability. Can the patient tell what certain words mean? Other areas to be evaluated are difficulty in comprehension (Can the patient cope with new concepts and abstractions, such as being able to interpret simple proverbs or to distinguish the similarity or difference in words?); difficulty in calculation (Can the patient perform serial subtractions and simple arithmetical problems?); disturbance in general information or knowledge (Who is the President of the United

States?); and disturbance in learning (Can he read and explain a newspaper article?).

Disturbance in judgment. A patient's judgment, as estimated by responses to test questions, may vary in quality from one subject area to another. The examiner must evaluate the accuracy of the patient's perceptions and his ability to take in new information, to correlate facts in a coherent, logical manner, and to make correct inferences from these facts. These powers may affect his skills in problem solving and alter his answers to hypothetical questions, such as, "What should one do if, while sitting in the movies, he is the first person to discover a fire?"

Shallowness or lability of affect. Evaluating mood or affective state is most effectively done by direct inquiry, especially if good rapport can be established between doctor and patient and if the patient's ability to communicate his feelings is not disturbed because of physical or mental disease. The examiner must evaluate the patient's affectivity—that is, the congruence of his affective state with his ideation—and then must validate his responses whenever possible with reports from others. The range of emotional responsivity in organic brain syndromes may vary from severe depression to elated mania. Irritability, paranoid projection, hostility, anxiety, defensiveness, guilt, and other mechanisms may color the affective picture.

Significance of findings. Determining how well the patient can evaluate his own assets and organic deficits requires considerable skill on the part of the examiner, for it has often been observed that the testing of a patient's intelligence and mental status is also a reflection of the examiner's intelligence and sensitivity. It was demonstrated in 1925 by Hollós and Ferenzi that, in addition to the dysfunction caused by organic damage, there were also reparative or restitutive symptoms, such as delusions, hallucinations, and confabulations. The psychological utility of such symptoms is now better understood.

Patients having more or less conscious understanding of their own disabilities may protect themselves from internal and external stimuli that are burdensome or threatening in accordance with their previous personality patterns. Denial of the deficit is basic; evasion, rationalization, dependency, defensiveness, self-protection, and projection are common mechanisms to ward off painful insight. If information input becomes excessive, irritability, rage, and emotional lability may be viewed as messages of distress and as attempts to interrupt the previous painful communicative process. That these attempts at corrective processes are often ill conceived and ineffectual does not alter their intent.

Where only minor organic damage exists, reparative efforts may be extremely successful. This is the basis for optimism in the vigorous application of therapeutic and rehabilitative measures in severe cases. The concept that massive brain tissue loss must necessarily cause deficits that are discernible clinically and by

psychological testing is incorrect. In 1962 Bruell and Albee described a patient with no discernible deficit following hemispherectomy for a tumor.

As brain structure becomes progressively more damaged, the behavioral defenses also deteriorate increasingly, and psychiatric symptoms appear. These reactions may also be viewed as release phenomena of the organic brain syndrome and therefore superimposed on it. They may include psychotic symptoms, such as delusions and hallucinations—distortion of inner and outer psychological realities that are unacceptable to the patient. Symptoms may also vary according to the relative impairment of different cortical areas.

Differentiation between acute and chronic brain syndromes. Brain disorders are classified in the American Psychiatric Association's standard nomenclature as acute or chronic according to the reversibility of the brain pathology and the organic brain syndrome and *not* according to the cause, onset symptoms, or duration of the disease process. This type of distinction between acute and chronic on the basis of *reversibility* is unusual in medicine and may at times be confusing to the student. Temporary and permanent brain damage usually present the same organic mental symptoms. A brain disorder may initially appear reversible and therefore acute, but later it may result in permanent brain damage, so that the diagnosis has to be changed to chronic. Thus, the initial temporary derangement of brain cell metabolism evolves into permanent disruption and death of brain cells. An example of this situation is the brain syndrome due to acute encephalitis that leaves chronic sequelae. Conversely, a long term illness like pernicious anemia may have cerebral symptoms that may be prolonged and are apparently chronic but prove to be reversible with proper treatment. Such a syndrome, though of long duration, is designated acute. Some important differences in the prognosis, course, and treatment of acute and chronic brain syndromes are summarized in Table I.

Differential Diagnosis

A complete history, physical examination, and laboratory study are essential for the proper diagnosis of the etiology and type of brain syndrome. In the presence of organic psychiatric symptomatology, with or without gross physiological signs of systemic disturbance, the physician must consider the common causes, such as head injury; toxic states due to drugs, poisons, or infection; cerebral vascular disease; the convulsive disorders; metabolic diseases; intracranial neoplasms; and the various brain diseases of unknown cause.

Repeated careful physical examinations are essential, with recording of response to stimuli, vital functions, and neurological signs, such as the pupillary state, corneal reflexes, fundi and visual fields, superficial and deep reflexes, and motor and sensory func-

TABLE I
Comparison of Acute and Chronic Brain Syndromes

	Acute (Reversible)	Chronic (Irreversible)
Onset	Most often sudden in onset with rapidly developing impairment of orientation, memory, intellectual functioning, judgment, and affectivity, and with return to normal status when cause is removed.	Unusually long term progressive impairment of orientation, memory, intellectual functioning, judgment, and affectivity, continually worsening in severity. Frequently slow and insidious in onset.
Symptoms	Usually symptoms of delirium but sometimes coma and stupor. Prominent symptoms are most often confusion, disorientations, and clouding of consciousness. May release various underlying psychotic and neurotic reactions.	Usually progressive symptoms of dementia, but sometimes delirium, stupor, and coma intervene. Frequently there is increasing deterioration in interests, self-concern, intellect, capacity to learn, and patient's motivation. May release underlying psychotic and neurotic reactions or cause primary deficits or restrictive defenses.
Etiology	Caused by reversible, temporary, diffuse disturbance in brain function. Often symptoms are associated with a generalized systemic infection; metabolic, cardiac, or toxic disturbance; or head trauma.	Caused by irreversible, permanent, diffuse destruction of brain cells. Often due to insidious chronic brain lesion or to inflammatory, neoplastic, chronic degenerative, or vascular disease.
Course and prognosis	Usually brief but may be prolonged up to 1 month or longer. May end in health and cure, death, or chronic disease.	Usually chronic and progressive, leading to dementia over a period of months to years. Underlying pathology may subside or respond to therapy, as long as there is an irreducible minimum of cerebral tissue destruction that cannot be reversed. Though disturbance may become milder, some sensorium disturbance persists permanently.

tions. Bloody spinal fluid, stiff neck, generalized body flaccidity, and bleeding from various orifices assist in the diagnosis and assessment of the severity of the injury. Useful laboratory procedures are the electroencephalogram, ventriculogram, arteriogram, echoencephalogram, and air encephalogram. At times an Amytal interview may help in eliciting minor deficits.

Acute head injury should be considered not only in the presence of visible damage to tissue, such as laceration, swelling, and hemorrhage in the head area or signs of impaired consciousness, respiration, or circulation, but also where there are other multiple lesions of the body. This is particularly true in vehicular accidents. A history of dizziness, falls, blows on the head, or alcohol ingestion may be helpful in arriving at a diagnosis. In some cases, reviewing the events leading up to the trauma is the best clue to diagnosis, but the services of a forensic pathologist may be required in cases involving poison, air or water blast, or severe electric shock.

Air or water blast accidents producing acute brain syndromes involve principally internal injuries without external evidence of trauma. Internal injury may be present, even though lacerations, burns, and fractures are absent. In these conditions the prognosis and treatment are determined by the extent of pulmonary damage, and treatment focuses on relief of dyspnea and anoxia by the use of endotracheal intubation, oxygen, bed rest, and whole blood transfusions for shock. Electric shock may cause minute hemorrhages in the brain and spinal cord. Loss of consciousness for minutes to hours—even death—may result. In those who survive, there are usually no permanent sequelae, although such transient symptoms as headache, backache (due to small vertebral fractures), fatigue, muscular pain, and tension states may persist. Artificial respiration is the main treatment for the transient cessation of breathing encountered in electric shocks. In view of this, hospitals now require an anesthetist to be a member of the electroshock team where shock is therapeutically administered for depression.

Acute brain syndrome. The early recognition of acute brain syndromes is facilitated by studying behavior by means of the mental status examination and obtaining a detailed history from patient and family. It is important to establish the presence of either a clear sensorium or one that is impaired by organic or emotional factors. It is also important to differentiate between the presenting picture and the ostensible chief complaint, as well as any underlying diseases, particularly when the initial examination involves a comatose, stuporous, or somewhat disoriented patient. Patients manifesting evidence of alcohol or drug intoxication must be differentiated from diabetics or individuals having a subdural hematoma. After the physician has observed and recorded all his findings, he must integrate the data into a meaningful whole in order to deduce the diagnosis, etiology, and treatment.

High on the list of priorities in diagnosing both acute and chronic brain syndromes should be the observation and inquiry into *changes* in the patient's recent behavior, including mood changes, clouding of consciousness, confusion, irritability, disorientation defensiveness, inappropriate humor, sudden rages, and unaccountably irresponsible behavior. Changes in motor behavior may be detected, such as restlessness; clumsiness in walking, eating, or writing; difficulties in articulation; slurring of speech or perseveration; or a decreased tolerance to alcohol.

Chronic brain syndrome. The initial history and physical, neurological, and mental status examinations should follow the same principles as given for the acute brain disorders. Systemic disease must be ruled out, even though the presenting complaint may be psychiatric or neurological. Generally in the chronic syndrome there will be a history of long term progression of symptoms, blunting of interest with a continual worsening of memory, orientation, and intellect. Eventually there results a serious impoverishment in all spheres of cognition.

Owing to the danger of litigation as well as for scientific reasons, detailed studies of the mental status are advisable in cases of head injury, brain tumor, and epilepsy. In patients with mental retardation, cerebral palsy, chronic alcoholism, advancing cerebrovascular disease, head injury, and other neurological diseases, intensive psychological evaluation for rehabilitation purposes is necessary and should be carried out by trained clinical psychologists.

Much progress has been made in the field of psychological testing since Gelb and Goldstein studied soldiers with gunshot head injuries in World War I. In ordinary hospital practice, a complete psychological work-up of organic cases usually involves the following tests: (1) Wechsler Adult Intelligence Scale (WAIS), which is studied for patterning and qualitative values of the responses as well as for statistical score on the verbal and performance parts; (2) Rorschach; (3) Draw-a-Man and House-Tree-Two Person tests; (4) Bender-Gestalt test for organicity; and (5) Thematic Apperception Test (TAT). These tests are helpful in detecting memory defects, confusion, and emotional and intellectual disturbances, often at an earlier time than can a clinical psychiatric examination.

Treatment

In the treatment of the acute brain syndromes, gross physical distress should be eased by means of bed rest, warmth, sedation, and control of hemorrhage. The patient should be made as comfortable as possible by symptomatic, supportive, and prophylactic measures. Because of the danger of respiratory failure or severe hypoxia, emergency measures, such as endotracheal intubation, tracheotomy, and oxygen, may be indicated. Burns, fractures, and lacerations should be treated promptly. Blood loss should be controlled

through whole blood transfusion. Shock or vascular collapse should be treated with plasma and whole blood, and general systemic support should be provided by maintaining fluid and electrolyte balance. Management or prevention of infection is accomplished by the judicious use of antibiotics.

Treatment of chronic brain syndromes is generally symptomatic and supportive and, when possible, is aimed at relief of the underlying disease process.

Suggested Cross References

For more detailed descriptions of the various behavioral symptoms mentioned in this section and of the mental status examination, see Section 13.1 and Section 11.2, respectively, in Area E, on assessment in psychiatry. In that same area, see also Benton's discussion of psychological tests used to assess organic brain damage (Section 12.2). See Section 10.1 for a discussion of the neurological examination, which is also helpful in the assessment of organic brain disorders.

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failure of general metabolic support of the brain or to the action of endogenous or exogenous toxic substances that depress cerebral metabolism.

The term "syndrome of cerebral insufficiency" has been proposed to emphasize the similarity to the more familiar concepts of hepatic or renal insufficiency, including the potential for reversibility if the etiological factors are eliminated before cell death has occurred. It includes the toxic psychoses and the infective-exhaustive psychoses of the older literature.

Many instances of delirium are readily classified within the American Psychiatric Association classification of acute and chronic brain syndromes, but more are either the result of multiple factors operating simultaneously or of some inadequacy of systemic systems supporting brain metabolism. As such, they do not constitute discrete syndromes as much as they are the central nervous system manifestations of the underlying systemic disease.

Incidence

The high incidence of delirium is indicated by the fact that it is present in every patient who is approaching or recovering from coma, who is terminal, who is recovering from general anesthesia, or who is drugged to the point of confusion, and it is present in most patients with severe degrees of anemia, fever, peripheral circulatory collapse, cardiac arrest, congestive heart failure, respiratory failure, pulmonary insufficiency, hepatic or renal insufficiency, acidosis or alkalosis, electrolyte imbalance, or infection; it is also present in those suffering from the effects of many different drugs and from the remote effects on the central nervous system of almost every disease in which bodily homeostasis is seriously deranged. A rough estimate suggests that 10 to 15 per cent of patients hospitalized on acute medical and surgical services manifest some degree of delirium. Among ambulatory patients, alcohol and drug intoxication are the most common causes of delirium.

Etiology

Delirium is due to cerebral metabolic insufficiency. This may involve interference with cerebral metabolism because of inadequate delivery of oxygen, glucose, and other essential substrates, damage to transport mechanisms or intracellular enzyme systems, or disruption of synaptic transmission systems or cell membranes.

With the exception of such gross processes as anoxia and hypoglycemia, little information is available concerning cerebral metabolism in situations comparable to those encountered in clinical delirium. Measurements of cerebral metabolism in humans by the Schmidt-Kety technique—a relatively crude measure of O₂ consumption of the whole brain during hypoxia, hypoglycemia, hypothyroidism, diabetic acidosis, and pernicious anemia—reveal significant reduction in total O₂ consumption only when the defect is severe, approaching coma.

18.3 DELIRIUM

GEORGE L. ENGEL, M.D.

Definition

The term "delirium" is used to cover those instances of acute and chronic brain syndromes secondary to

On the other hand, the spontaneous electrical activity of the cortex, as recorded by the electroencephalogram (EEG), provides an accurate reflection of the metabolic adequacy of cortical neurons. Since the rate of firing of single cortical cells decreases progressively with reduction in O_2 and glucose supplies and with cellular poisons, and since the frequency of the EEG reflects the electrical activity of masses of cells discharging synchronously, factors that alter the rate of discharge of individual neurons, such as their metabolism, correspondingly alter EEG frequency. Studies of EEG frequency of humans during exposure to hypoxia, hypoglycemia, carbon monoxide, alcohol, and other toxic substances known to interfere with cerebral metabolism reveal good correlation between the degree of slowing of EEG and impairment of cortical metabolism.

Patients with delirium demonstrate the same correlation. Diffuse slowing of the EEG is a regular finding in delirium, regardless of etiology. The EEG of most delirious patients shows significant activity slower than 8 per second; those delirious patients whose EEG shows no slow activity will be found on recovery to have a high normal (11 to 12 per second) or faster than normal (> 12 per second) pattern. The earliest signs of delirium, whether spontaneous or experimentally induced, correspond with a decrease in mean EEG frequency of 1 to 2 cycles per second. With the more severe disturbance, the EEG regularly slows to below 6 per second, with much irregular (1 to 2 per second) activity in the comatose patient (see Figure 1).

There is also a close correlation between EEG and reversibility of the underlying process. If the metabolic deficiency can be corrected, as by the administration of O_2 to the patient with cardiac failure or of vitamin B_{12} to the patient with pernicious anemia, there is an increase in EEG frequently corresponding with clinical improvement (see Figure 2). Hence the EEG constitutes a reliable indicator of the presence of delirium and of the adequacy of treatment. Failure of the EEG to return to normal means that therapy is inadequate or incorrect.

Clinical Description

The basic disturbance in delirium is a reduction in the level of consciousness, in the ability to attend, and in cognitive function. It is with these properties that the EEG correlates most accurately, being slowest with the greatest reduction in awareness.

The essential requirement for the diagnosis of delirium is a high index of suspicion. Any patient seriously ill with major physiological or biochemical derangements should be considered as possibly delirious, as should any medical or surgical patient who has difficulty in recounting the history accurately or in cooperating with the requirements of the examination. With milder degrees of delirium, even the seriously ill patient can by heightened effort compensate

for defects, but the physician who anticipates delirium in such an ill patient will recognize that the level of attention is fluctuating and that the patient is demonstrating errors in memory and retention and recall, and a decreased ability to concentrate.

The degree of delirium is measured in terms of the level of awareness and not by any other psychical attribute. The extent of manifestly disturbed behavior or of bizarreness of thought content is no measure of the degree of cerebral involvement and does not correlate with EEG slowing. Some patients may traverse the entire range from the subtlest decline in cognitive performance to coma without manifesting any spontaneous behavior that calls attention to the delirium. Others with a relatively mild defect may respond with gross anxiety merging on panic, hallucinations, sense deceptions, delusions, irrational speech, or outbursts of misdirected rage. The first group is frequently not recognized as delirious; the latter—though often misdiagnosed as having schizophrenia, mania, or some other form of psychosis—generally precipitate a psychiatric consultation.

Typical Patterns of Delirium

The quiet, torpid patient. The defect is inapparent except on direct examination or in the course of observing the patient's inability to recognize hospital personnel or visitors, to cooperate in simple tasks during examinations, or to cope with feeding, washing, or excreting. Such patients either deny or try to cover up their difficulties, often saying they are sleepy, weak, or tired.

The blandly confused patient. This person may at first glance appear relatively comfortable and at ease, responding in a friendly, smiling manner, usually claiming to feel well. But if inquiry extends beyond the perfunctory "How are you?" one will note that he responds slowly, uncertainly, and in a limited and repetitious manner without elaboration, often with a quizzical, puzzled expression, and that he tends to deflect inquiries by attempts at humor or by becoming irritable. More direct examination readily demonstrates the disturbances in memory, concentration, orientation, etc. This type of patient is making use of denial to avoid awareness of his cognitive defect and may become appreciably disturbed if he is pressed too hard.

The anxious, panicky patient. This patient is profoundly disturbed by his inability to maintain cognitive control and may respond even to a mild defect with severe diffuse anxiety and even panic. He may manifest restlessness, tremor, rapid heart, hyperventilation, sweating, peripheral vasoconstriction, frequency of urination and defecation, all of which may confuse the clinical picture of the underlying disorder. His mental attitude is one of diffuse apprehension, with exaggerated concern about what goes on about him, a tendency to startle at unexpected sounds, and fitful sleep with frightening dreams. He

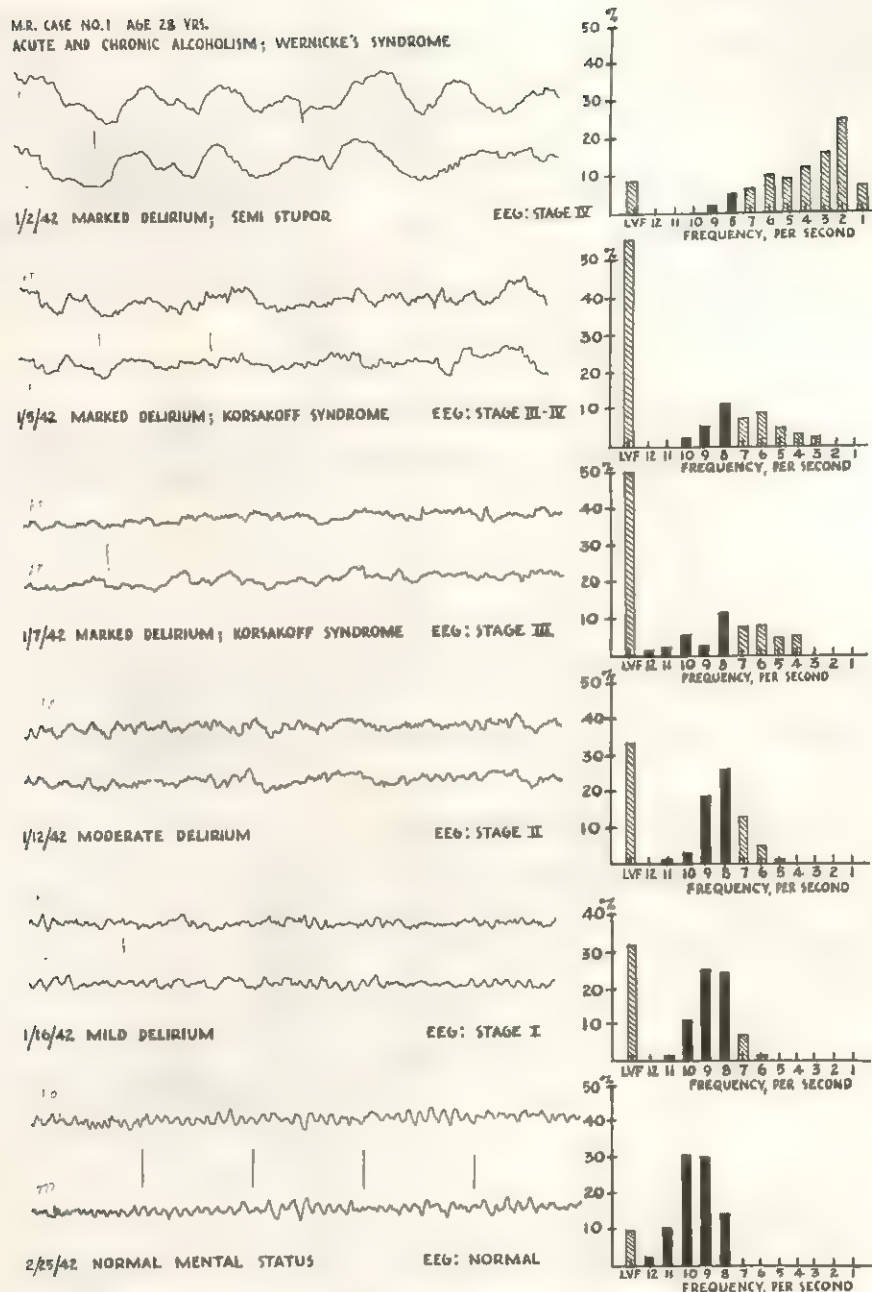


FIGURE 1. EEG changes during recovery from severe delirium due to nutritional deficiency secondary to acute and chronic alcoholism in a 28-year old woman. The spectrum indicates distribution of EEG frequencies and shows progressive increase in alpha activity as level of awareness and cognitive function approach normal. (From Romano, J., and Engel, G. L. Delirium. I. EEG data. *Arch. Neurol. Psychiat.*, 51: 356, 1944.)

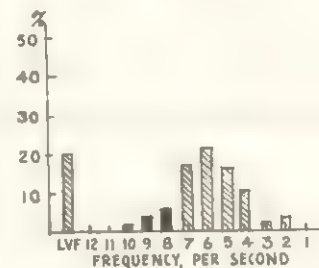
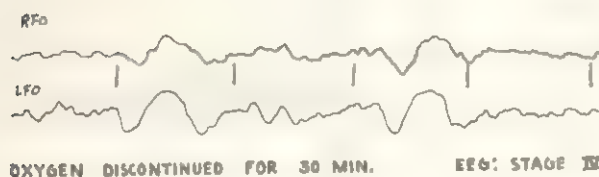
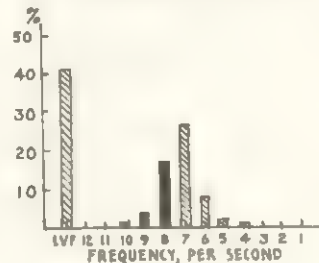
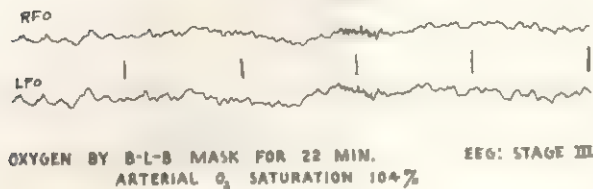
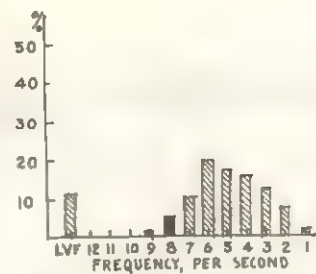
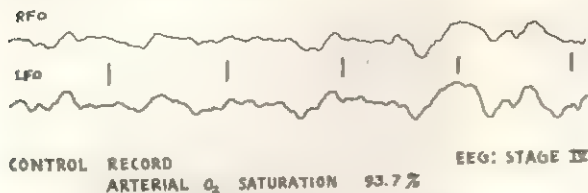
may attempt a panicky flight from the hospital bed. When the underlying delirium is severe, there is usually no difficulty in recognizing from the patient's spontaneous productions that he is disoriented and grossly misinterpreting events about him. With milder delirium, it is usually possible with patience to calm the patient sufficiently to permit some more direct observation of the cognitive deficit. Too hasty use of sedative drugs before diagnosis is established serves to confuse the picture, since they may induce

or contribute to delirium, even though the anxiety is ameliorated.

The hallucinating patient. He quickly attracts attention to himself. Most often he is misinterpreting sensory experience rather than hallucinating. Sounds in the hall are mistaken for familiar voices, vague shadows and shapes are misinterpreted as familiar persons or objects, the picture on the wall may be seen as a face, the sound of the air conditioner or suction pump may be heard as factory

EFFECT OF OXYGEN IN CONGESTIVE HEART FAILURE

L.S. CASE NO. 14 AGE 60 YRS
ARTERIOSCLEROTIC HEART DISEASE,
CONGESTIVE HEART FAILURE 1/26/42



EFFECT OF POSTURE IN CONGESTIVE HEART FAILURE

L.S. CASE NO. 14 AGE 60 YRS. ARTERIOSCLEROTIC HEART DISEASE
CONGESTIVE HEART FAILURE 1/20/42

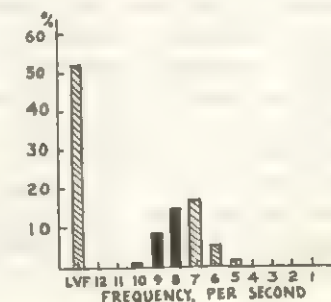
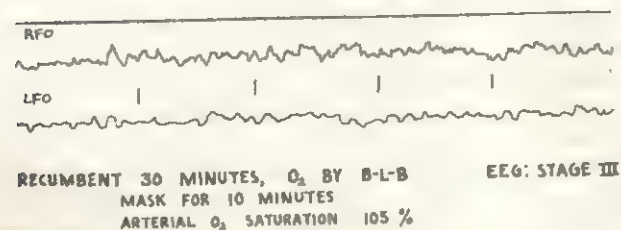
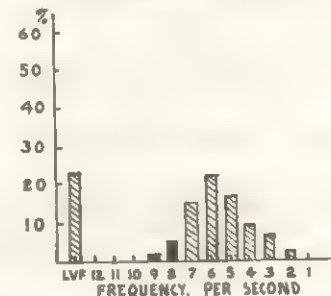
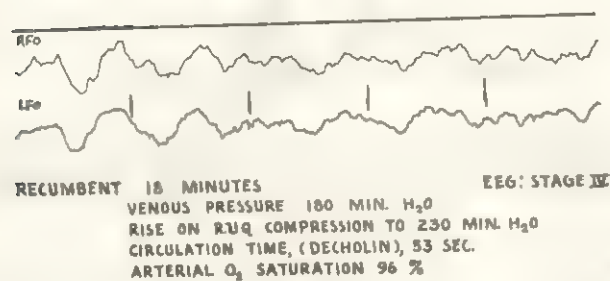
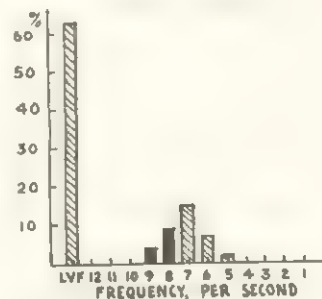
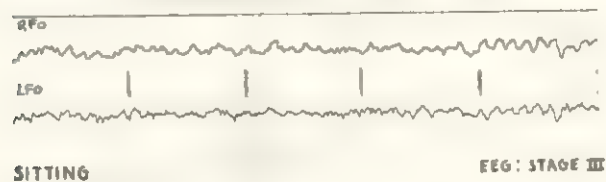


FIGURE 2. Effect of posture and O₂ on EEG in a patient with congestive heart failure and delirium. Improvement in EEG corresponded with improvement in level of awareness and cognitive performance. (From Engel, G. L., and Romano, J., Delirium. II. EEG and EEG.)

noises. The content of such sense deceptions reflects intense anxiety in some; in others the deceptions may be reassuring, as when the voice is believed to be that of a loved one or the face on the wall that of an angel. True hallucinations may also occur. Again, attention to the underlying cognitive defect will readily identify the disturbance as delirium.

The muttering, incoherent patient. He is usually experiencing a more advanced degree of delirium. Disorientation as to time and place are generally gross, as are the other cognitive failures.

Examination

With most patients the diagnosis can be made within the context of ordinary history taking and physical examination and without recourse to a specific mental status examination. The following clinical picture strongly suggests delirium. (1) The patient responds slowly and hesitantly and with a quizzical, puzzled expression, even to simple questions. His brow is furrowed, and his eyes turn up or scan the room, as if the answer literally is to be found by looking for it. (2) He attempts to ward off questions by humor, sarcasm, distraction, and depreciation. If pressed, he may become anxious or angry. (3) If the same question is repeated, the response is inconsistent or contradictory. By asking the patient for such verifiable factual information as are customary in a medical interview—dates of onset and duration of illness, dates of birth and ages of patient and family members, address and phone number of self, relatives, and physician—one can unobtrusively check recent and remote memory, orientation, and ability to perform simple calculations. Delirious patients may be able to report birth dates but may be unable or refuse to calculate ages. (4) During the physical examination, the patient may seem confused about directions and need repeated instructions. He may be unable to initiate or to persevere in a requested act, such as to stick out the tongue or extend the hands, reflecting inability to maintain attention to the task. On the other hand, once mastered, he may persevere in the same act in response to a new command. The physician often finds himself speaking louder, as if by so doing the patient will understand better, a response that in itself should make him suspect that the patient is delirious (or hard of hearing).

Differential Diagnosis

Chronic brain syndrome (dementia). This presents the most common problem, though in fact most patients with chronic brain syndromes get significantly worse during a serious systemic illness or with cerebral depressant drugs (notably barbiturates) and hence may be said to have a superimposed delirium. A normal or only slightly slowed EEG in the presence of a gross defect favors dementia. Some conditions, such as pernicious anemia, hypothyroidism, adrenal

insufficiency, and hyperparathyroidism, may exist for months or years misdiagnosed as chronic brain damage yet reverse completely with proper therapy. It is impossible to know how many cases that begin as delirium suffer irreversible brain damage when the underlying defect remains too long uncorrected. Such cases then end up as examples of dementia.

Schizophrenia. Patients with schizophrenia do not show the generalized cognitive defect nor the characteristic EEG slowing of delirium.

Hysteria. The dissociative states, fugues, amnesia, and pseudodementia (Ganser's syndrome) may be differentiated by the fact that cognitive performance is inconsistent, being excellent in some areas and markedly deficient in others. Acknowledged amnesia for one's own name virtually never occurs in the delirious patient. The disorientation as to place or time of the dissociated hysteric is not consistent with his evident alertness and capacity to assimilate new information. The ridiculous responses of Ganser's syndrome ("How many legs does a three-legged stool have?" "Four") require a degree of cognitive efficiency of which the delirious patient is incapable. A history of delirium in a family member often provides the basis for identification manifestations in the hysteric. None of these conditions shows EEG slowing.

Sensory isolation. Sensory isolation—as occurs with covering the eyes after eye surgery or with confinement to the respirator, the Bradford frame, or the oxygen tent and even with isolation for infection—may in susceptible individuals provoke acute anxiety reactions or psychotic behavior. These are not marked by the cognitive defect or EEG slowing typical of delirium and usually respond rather promptly to relief from the isolating situation. It must be underscored that delirious patients also get worse under such conditions.

Prognosis

This depends on the reversibility of the underlying condition and on the capacity of the brain to withstand its noxious influence.

Management

Correction of the underlying biochemical or physiological defect must be carried out promptly if permanent brain damage is not to ensue. The EEG provides an excellent means of following the course of treatment.

Suggested Cross References

The chapter on neurology, Chapter 10, contains further material on the EEG. For information regarding the metabolic requirements of the brain, see Section 2.2 on neurochemistry in Area B, on the basic behavioral sciences. Also see Doty and Smith's sec-

tions on neurophysiology, Sections 2.5 through 2.9, which contain information regarding the localization of the various functions of the brain that were discussed in this section. Organic brain syndromes that are associated with other, underlying disorders are discussed in subsequent sections in this area.

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Chapter 19

Brain Disorders. II: Associated with Disturbances in Circulation, Nutrition, and Metabolism and with Unknown Causes

19.1 BRAIN SYNDROMES ASSOCIATED WITH CIRCULATORY DISTURBANCES

EWALD W. BUSSE, M.D., Sc.D.

Organic brain disorders are categorized for nosological purposes into two major groupings—acute and chronic. As has been noted elsewhere in this text, the term “acute” is not used to indicate a sudden onset of the symptoms but to imply reversibility, that is, the later return to normal of the impaired function. Hence, “acute” and “chronic” are terms to describe disease outcome and are not related to onset or etiology. For example, the same etiological agent, embolism, may produce in one individual a temporary or acute malfunction, while in another it may result in permanent malfunctioning, at which time it is considered a chronic disease.

Acute and chronic brain syndromes associated with circulatory disturbances include a variety of specific disorders and syndromes. In this broad spectrum of illnesses are included diseases of intracerebral blood vessels and the extracerebral vasculature, both intracranial and extracranial. In addition, there are systemic circulatory disorders that secondarily affect the functioning of the brain. It is usual to indicate the major site of pathological change by designating the disease an intracranial or an extracranial disorder. This simplified approach to diagnosing disorders of blood vessels has value as it relates to therapy and prognosis. However, the student should be aware that pathology is not limited to the designated blood vessels.

Anatomy of the Blood Supply of the Brain

The carotid and vertebral systems are the two sources of blood supply to the human brain. In most mammals the

brain receives its blood through these two major sources, but wide variations exist among different species with respect to the relative importance of these channels of flow. For example, the brain of the laboratory rodent receives its blood supply chiefly by way of two well developed vertebral arteries, and the internal carotid is of less importance. In other animals, such as the dog and the cat, the major flow is through the external carotids, via a well developed network of anastomoses between the external carotid and the intracerebral circulation, and from the vertebrals; the internal carotids are of minor significance. It is evident that reliable studies on cerebral circulation must be performed on man, or in primates whose blood supply resembles that of man, so that our knowledge of human blood circulation may be increased.

Vertebral arterial system. The vertebral system is a simple one composed of the two vertebral arteries entering the cranium through the foramen magnum, joining to form the basilar artery which passes anteriorly to the level of the midbrain, where it divides into the two posterior cerebral arteries. This system, during its course through the posterior fossa, gives off several pairs of arteries providing the blood supply to the cerebellum.

Carotid arterial system. The carotid system derives from the two internal carotid arteries. On entering the skull, they bifurcate, forming the anterior and middle cerebral arteries and a cross-communication through the anterior communicating artery. The carotid system and the vertebral system also communicate through the posterior communicating arteries, thus forming the circle of Willis (see Figure 1). The circle of Willis is frequently incomplete, but it is the origin of the six main arteries, the branches of which are the source of blood for the brain.

Venous drainage. The venous drainage of the brain is also divided into two systems (see Figure 2). The first are veins arising from within the brain and emptying into Galen's vein and the straight sinus. The second drainage system is composed of veins that lie over the surface of the cerebral hemisphere and which drain through the superior sagittal sinus and the lateral basal sinuses.

The 8 to 12 veins that drain the convexity of the cerebral hemisphere as well as the medial surface flow into the superior sagittal sinus but, before doing so, freely communicate with the deep veins of the brain. These veins form four groups—a frontal, a paracentral, a central, and an occipital group. The middle cerebral vein is responsible for draining the inferior half of the lateral surface of the brain. This vein lies in the fissure of Rolando and empties into the cavernous

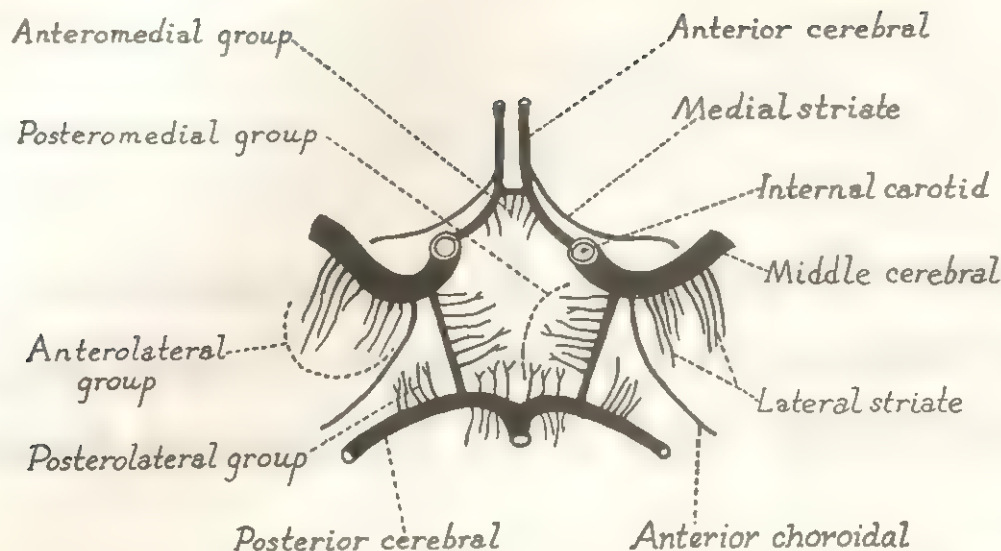


FIGURE 1. This drawing shows the cerebral arterial circle of Willis. (From Truex, R. C., and Carpenter, M. B. *Strong and Elwyn's Human Neuroanatomy*, ed. 5, p. 80. Williams & Wilkins, Baltimore, 1964.)

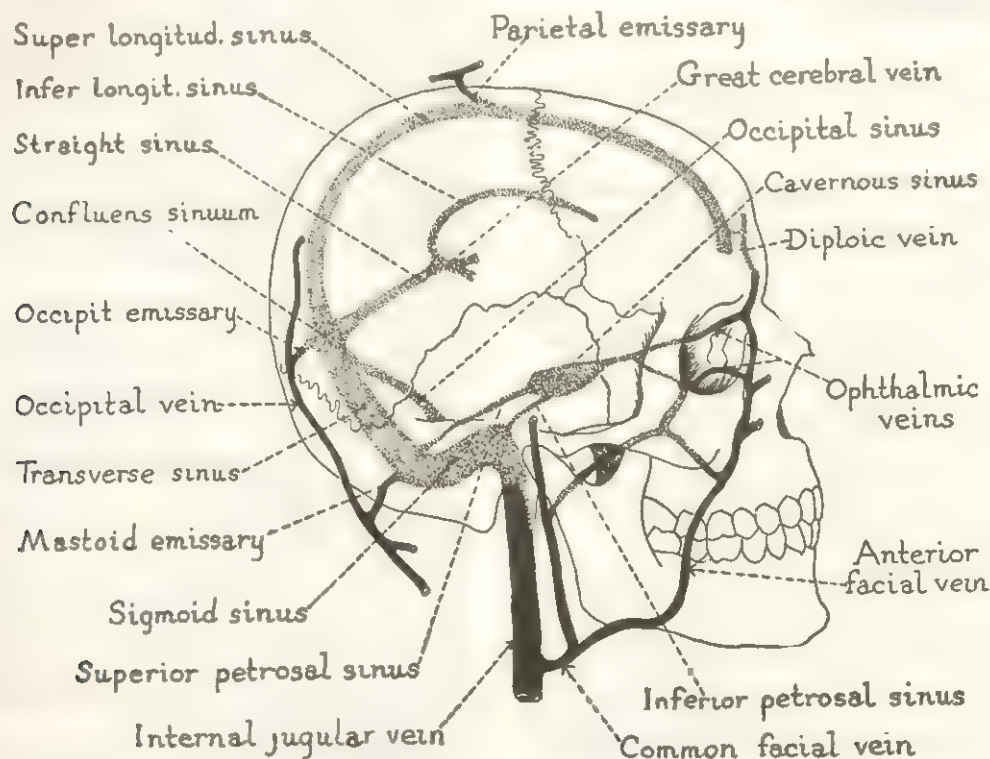


FIGURE 2. The cerebral veins and venous sinuses. The dural sinuses (stippled) and their principal connections with the extracranial veins. (From Truex, R. C., and Carpenter, M. B. *Strong and Elwyn's Human Neuroanatomy*, ed. 5 p. 84. Williams & Wilkins, Baltimore, 1964.)

sinus. It also communicates with the transverse sinus. The venous drainage of the inferior surface of the frontal lobe empties into both the cavernous sinus and the inferior sagittal sinus. Veins on the inferior surface of the temporal lobe divide and empty into the transverse sinus and into the superior petrosal sinus, which in turn flows into the transverse sinus. Drainage of the inferior surface of the occipital lobe is accomplished by the posterior cerebral vein, which joins the great cerebral vein of Galen. The veins emptying

the deep portions of the hemispheres flow into the great cerebral vein of Galen. This is accomplished through the two internal cerebral veins, one deriving from each hemisphere. The cerebellum is drained by two systems, one for the superior surface and one for the inferior surface. The veins of the brain have many and varying connections with extracranial drainage via the emissary veins that pass through the calvarium. The mastoid vein is the most prominent of the emissaries.

Physiology of Cerebral Circulation

The heart and the brain are the two organs most dependent on continuous blood flow for maintaining efficiency of functioning. Interruption of circulation for as little as 5 seconds results in disturbances of consciousness and other neurological signs and symptoms. If the blood supply is interrupted for more than a few minutes, the damage to the brain is irreversible.

Cerebral circulation has been systematically studied for many years. It was first believed that the volume of blood flowing through the brain was fixed, and it was not until the turn of the century that it was recognized that blood supply did vary and that it was influenced by systematic arterial and venous pressures. Only in comparatively recent times have the existence and importance of intrinsic control of cerebral circulation been recognized and studied.

In the adult, age alone does not appear to alter the amount of blood flowing through the brain. It has been claimed that there is a difference in cerebral blood flow between middle-aged and elderly patients, but this is not due to age but is probably related to the presence of pathology. However, it does appear that during the 1st decade of life there is an increased rate of blood flow and that the rate of flow falls until the time of puberty, when it stabilizes.

Cerebral circulation does not seem to be affected by elevation of body temperature. In normal sleep, there is a slight increase in cerebral blood flow, rather than a decrease. Although anxiety tends to increase cerebral blood flow, mental exertion is not accompanied by significant changes in cerebral blood flow or oxygen consumption.

Although a number of factors influence the cerebral circulation, there are only two controlling factors of real importance. The first is the pressure head, the difference between the arterial and venous pressures at the level of the brain; the second factor is the total resistance or hindrance imposed on blood flow by interfering with and reducing the lumen of the vessels in the brain. The first aforementioned determinant is important in disturbances produced by extracranial pathology, while the second is associated with intracranial disease.

Studies on patients with cerebral arteriosclerosis and senile psychosis have demonstrated a significant decrease in the cerebral circulation and the oxygen consumption of the brain when compared to determinations in healthy young men. Hypertension uncomplicated by occlusive cerebral vascular disease is not accompanied by a change in cerebral blood flow.

The brain is not uniformly vulnerable to anoxia; the gray matter of the brain is far more sensitive than the white matter. Within the gray matter itself, there exists variation in sensitivity to oxygen deprivation. Particularly vulnerable are the globus pallidus, visual cortex, and Ammon's horn of the hippocampus. Conversely, the cerebellum, the cranial nerve nuclei (including the cardiac and respiratory centers), and the gray matter of the spinal cord are resistant to anoxic effects.

The major arteries supplying blood to the brain communicate with one another through a system of anastomoses, particularly in the circle of Willis. This arrangement facilitates the development of collateral circulation if it is required. However, there is evidence that under normal conditions little mixing of blood occurs among the various arterial sources within the circle of Willis. Ligation of the internal carotid in young individuals does not reduce brain circulation to a level resulting in neurological symptoms. When one internal carotid is ligated, the pressure distal to the ligature is maintained at approximately half its previous value. This is made possible by extra blood flowing through the circle of Willis. However, this compensation via collateral circulation is not found in elderly individuals, where sclerotic compromise of the circle of Willis reduces blood flow below a sustaining level. The laterality of the blood supply to the brain

does not carry over to the same extent in the cerebral venous system. It appears that approximately two-thirds of the blood sampled in each jugular bulb is of ipsilateral origin with one-third having crossed over from the other side of the brain.

The maintenance of cerebral blood flow above a minimal critical level is regulated intrinsically by changes in cerebral vascular resistance. Fall in arterial pressure can be compensated by markedly reduced cerebral vascular resistance. Serious limitation in cerebral circulation does not seem to result until the arterial pressure falls below a level of 60 to 70 mm. Hg. Although under normal circumstances the cerebral circulation is maintained by intracranial factors, other influences should be considered, such as the viscosity of the blood.

Under usual circumstances, a number of variables operate in narrowing or dilating cerebral vessels. These factors may be classified as neurogenic, humoral, and organic. The evidence for a neurogenic control is fairly clear in a number of lower animals but is far from well defined in man. In contrast, the effect of humoral agents in man is more readily demonstrated. An increase in carbon dioxide tension of arterial blood markedly affects cerebral blood flow. In man the inhalation of 7 per cent carbon dioxide is likely to double the cerebral circulation; hyperventilation produces a marked decrease. The effects of oxygen are quite different. High concentrations of oxygen exert a mild constricting effect; low concentrations of oxygen dilate cerebral vessels. A number of pharmacological agents affect circulation by altering cerebral vascular tone. For example, papaverine produces a modest increase in cerebral circulation, but, regardless of the dosage, it does not approach the effectiveness of carbon dioxide. Other agents, such as nicotinic acid, have been assumed to be capable of producing increased cerebral circulation. Unfortunately, there is little evidence to support this view. Xanthine preparations, such as aminophylline and caffeine, influence cerebral blood flow by vascular constriction.

Pathology of Cerebral Vessels

With advancing age, changes occur in the structure of cerebral blood vessels. "Primary aging" refers to those alterations that result from the passing of time and are not the result of disease or trauma. Generally speaking, changes that are considered to be the result of primary aging are characterized by a thinning of the blood vessel wall. Apparently such changes do not result in neurological complications. Such changes are likely to be observed in the smaller blood vessels during the 5th or 6th decade of life; in the larger vessels it becomes evident between the 6th to 8th decades of life.

Arteriosclerosis, the common pathological change affecting cerebral blood vessels, identifies a related group of pathological changes that are both microscopic and macroscopic.

Atherosclerosis. Generally speaking, atherosclerosis affects the large cerebral blood vessels. This type of pathology is frequently observed where blood vessels branch or curve. This propensity occurs intracranially as well as extracranially. Within the cerebral circulation the most common site for atherosclerosis is in the internal carotid artery at the carotid sinus, the main bifurcation of the middle cerebral artery, and the junction of the vertebral and basilar arteries. In addition, the posterior cerebral artery is frequently involved as it winds around the cerebral peduncles, and the anterior cerebral artery is affected as it curves over the anterior portion of the corpus callosum.

Atherosclerosis results in the vessels becoming tortuous and lengthened. The atheromatous plaques are composed of yellowish material deposited along the internal surface of the artery. Microscopic study not only reveals the deposition of fatty substances but also a thickening and fibrous alteration in the intima, with an increase in connective tissue and capillaries.

Hyaline changes. Hyaline changes are more frequently found in small blood vessels. This type of change is held by some to be a rather gradual one. It is usually associated with hypertension and is characterized by thickening of the vessel wall to the point where the lumen may frequently be obliterated.

Hyperplastic changes. This pathological process involves primarily the smaller blood vessels of the brain. There is a diffuse thickening of the entire wall of the vessel, hypertrophy of the intima, and narrowing of the lumen. This type of change is also likely to be found in hypertension.

Cerebral infarction and hemorrhage. The pathological arteriosclerotic processes described above result in the reduction of the blood supply to the brain, with clinical manifestations that are often designated as "strokes." The term "stroke" is not an entirely satisfactory term, as its specific meaning connotes a sudden and severe attack or event. Strokes, small and subclinical or large and identifiable, are associated with either infarction or hemorrhage. Infarction identifies the pathological events that follow occlusion of the lumen and the shutting off of the blood supply. Infarcts may be small or large, single or multiple, unilateral, bilateral, or widely scattered throughout the brain. When the blood supply is blocked, brain cells are irreversibly injured. Nerve and glia cells die and disappear. Nerve fibers degenerate, and the supporting tissues and small blood vessels are destroyed. This disintegration is called "softening." Over a period of weeks, the debris is removed by macrophages and replaced by connective scar tissue. Small extravasations of blood into the infarction area can make the area red rather than pale. However, red infarcts are not primarily the result of hemorrhage. True cerebral hemorrhages within the brain are usually the result of a break in an artery. Small extravasations arise from ruptures in veins and capillaries. The amount of blood that escapes and its damage to vital centers often make this type of pathology the cause of serious illness.

As mentioned previously, the term "stroke" has relatively little specific meaning. There is a remarkably wide variation in the pattern and severity of strokes. Occasionally, attempts are made to differentiate cerebral ischemic events by designating them "shock," "stroke," "accident," etc. Such attempts at differentiation have value, but it is important to recognize the limitations of various categories, as none have widespread acceptance.

Clinical Description of Cerebral Vascular Disease

The clinical manifestations and complications of cerebral vascular disease can be classified in a number of ways. For example, occlusion of a cerebral artery may result in a loss of a sensory or motor function that does not appear to impair intellectual functioning. However, the loss of the sensory or motor skill may have serious repercussions on the psyche of the patient as a result of attempts to handle the resultant anxiety. It is also evident that cerebral ischemia can result in impairment of intellectual functioning which is not of sufficient magnitude to be considered psychotic.

However, when a widespread disruption of physiological functioning of the brain develops, the following important alterations in the individual's thinking and behavior may be noted: The intellectual functions, including comprehension, calculation, problem solving, learning, and judgment, are impaired. Memory is spotty, and orientation for time, place, and

person is faulty. Emotional responses are sudden, inappropriate, and disproportionate to the stimulus.

The basic clinical picture characteristic of widespread organic brain disorders may be associated with a wide variety of other symptoms. The type and severity of symptoms are not necessarily proportionate to the extent of the physiological disturbance, as they are often influenced by long standing psychological patterns, the environment, and the particular physiological state of the patient at the time the brain disturbance develops. Consequently, the clinical picture is the result of many interacting processes.

Chronic Brain Syndrome Associated with Cerebral Arteriosclerosis

The manifestations of this syndrome range from those brain functions the disruption of which can be recognized by physical examination to those abnormalities observable and identifiable by a systematic mental status examination. Therefore, one would expect to encounter patients who manifest sensory or motor losses but do not show a thinking disorder and patients whose illness is restricted to the impairment of psychological functions with no clear evidence of motor or sensory defects.

Localized pathology

Middle cerebral artery. The middle cerebral artery is the most likely to be affected by occlusion (see Figure 3). It supplies the lateral surface of the cerebral hemisphere, with the exception of the frontal pole, the inferior margin of the temporal lobe, and the superior border of the lateral surface of the hemisphere. The middle cerebral artery has penetrating branches that supply the putamen, the outer portion of the globus pallidus, the upper half of the posterior and anterior limbs of the internal capsule, the body of the caudate nucleus, and the superior portion of the head of the caudate nucleus.

Occlusion of the middle cerebral artery results in the characteristic findings of contralateral hemiplegia, cortical sensory deficit, and hemianopsia. Aphasia is present if the occlusion is on the dominant side of the brain. If it is on the nondominant side, agnosias are noted. When branches of the middle cerebral artery are occluded, characteristic signs and symptoms are produced. Occlusion of the precentral artery, which supplies the operculum and the posterior part of the inferior frontal gyrus, results in weakness of the contralateral face and tongue. If the dominant hemisphere is involved, a motor aphasia may result. The Rolandic artery or the central branch of the middle cerebral artery supplies the major part of the precentral gyrus; blocking of this artery produces a weakness of the contralateral arm and face. Since the distal branches of the middle cerebral artery supply the superior part of the temporal lobe, the parietal lobe, and the occipital lobe, occlusion will produce a contralateral cortical sensory loss and a

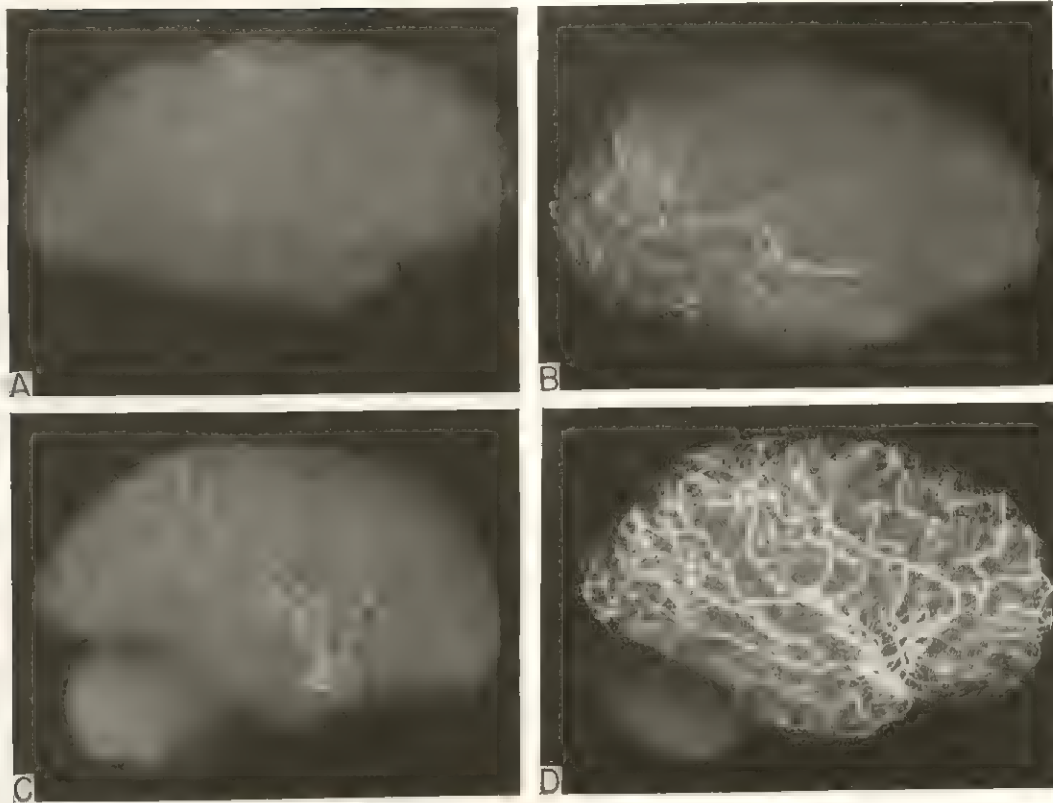


FIGURE 3. X-rays of fresh cadaver brains in which cerebral arteries have been injected with radiopaque material. A, injection of anterior cerebral artery; B, injection of posterior cerebral artery; C, injection of superficial branches of middle cerebral artery; D, injection of the anterior, middle, and posterior central arteries. (Courtesy of Dr. Harry A. Kaplan.) (From Truex, R. C., and Carpenter, M. B. *Strong and Elwyn's Human Neuroanatomy*, ed. 5, p. 79. Williams & Wilkins, Baltimore, 1964.)

homonymous hemianopsia or homonymous upper quadrantanopsia. If the dominant hemisphere is involved, sensory aphasia or apraxia may be present. Occlusion of the superficial branches, that is, those covering the cortex, can produce a myriad of symptoms, depending upon the location and the extent of the superficial cortex involved.

The lenticular striate artery, the largest of the striate branches of the middle cerebral artery, is the most frequent site of cerebral vascular occlusion. The inability of the lenticular striate artery to supply its portion of the brain results in a typical hemiplegia involving face, arm, and leg.

Anterior cerebral artery. The anterior cerebral artery originates in the internal carotid and follows the dorsal aspect of the corpus callosum (see Figure 3). The area supplied by the anterior cerebral artery includes branches to the orbital and prefrontal lobes. Branches go to the internal surface of the brain, the paracentral lobule, the main portion of the corpus callosum, and the anterior and inferior portion of the caudate nucleus. The clinical picture resulting from occlusion of the anterior cerebral artery or its branches has not been clearly determined. Frequently there is paralysis and cortical hypesthesia of the opposite arm, and at times there is a weakness of the face. Other symptoms include disturbances in smell,

grasping, and sucking reflexes; incontinence of bowel and bladder; akinetic mutism; and mental changes.

Posterior cerebral artery. The posterior cerebral artery is a part of the vertebral system arising from the basilar artery (see Figure 3). Through cortical branches it furnishes most of the blood supply to the ventral surface of each hemisphere. Near its origin from the basilar artery it gives off deep branches that supply the brain stem, including the red nucleus, subthalamic nucleus, substantia nigra, medial portions of the cerebral peduncle, and deep structures within the brain. Branches penetrating into the brain supply the thalamus, choroid plexus, hippocampus, mammillary bodies, medial geniculate body, part of the lateral geniculate body, the body and posterior part of the fornix, and the inferior part of the posterior limb of the internal capsule.

There are multiple locations for occlusion to take place, and numerous symptoms may develop. Few symptoms appear, owing to the collateral circulation that is possible through the communicating artery and through the pial communications with the middle cerebral artery. Contralateral homonymous hemianopsia with sparing of the macula results from occlusion of the superficial cortical branches of the posterior cerebral artery. Sudden occlusion occasionally produces bilateral temporary blindness. A thalamic

syndrome, involving the development of thalamic pain, results from occlusion of the penetrating branches of the posterior cerebral artery. The thalamic syndrome is usually accompanied by a contralateral hemianesthesia. Occlusion of other branches may produce the red nucleus syndrome, subthalamic syndrome, interpeduncular syndrome, and the like.

Internal carotid artery. Occlusion of the internal carotid artery primarily affects the distribution of the middle cerebral artery. As in many instances, the area supplied by the anterior cerebral artery is spared because of an adequate communication provided by the anterior communicating artery. A telltale sign of occlusion of the internal carotid artery is monocular blindness, fleeting or permanent, involving the eye contralateral to a hemiplegia. This indicates interference with blood flow in the ophthalmic artery, which arises from the internal carotid artery. Occlusion of the internal carotid artery is at least four times as frequent in men as in women. It is also three to five times more frequent on the left side than on the right.

Vertebral artery. Usually there are two good-sized vertebral arteries. If an occlusion occurs in one, the other provides adequate circulation, and frequently symptoms do not result. If symptoms do develop, they are characterized by facial pain, rotational vertigo, vomiting, dysphagia, ipsilateral cerebellar ataxia, Horner's syndrome, contralateral loss of sensation for pain and temperature of the extremities and trunk, and homolateral involvement of the senses on the face. At times cerebral ataxia may be the only sign.

Basilar artery. The basilar artery arises from the two vertebral arteries at the junction of the pons and medulla. Occlusion of the two vertebral arteries frequently produces the basilar artery syndrome. The basilar artery supplies the entire pons and terminates with the formation of the posterior cerebral arteries.

Occlusion of the basilar artery or one of its branches produces variable syndromes. The main findings are signs of bilateral upper motor neuron disease combined with unilateral or bilateral cranial nerve involvement. Rotational vertigo, cerebellar ataxia, sensory deficit, and visual field defects or blindness may also appear.

Diffuse pathology. The diagnosis of chronic brain syndrome associated with diffuse cerebral arteriosclerosis includes minor to severe disturbances in thought and behavior that may be attributed to cerebral anoxia produced by arteriosclerosis. Psychosis due to arteriosclerotic brain disease is a recognized clinical entity, and it constitutes a major mental health problem. In the British literature one finds the diagnostic term "chronic confusional state" rather than chronic brain syndrome, and "arteriosclerotic dementia" instead of psychosis with cerebral arteriosclerosis.

Epidemiology. The appearance of symptoms that suggest a brain disorder resulting from circulatory disease is usually noted between 65 and 70 years of

age. However, the disease may appear in persons as young as 45. It is often difficult to establish a correct diagnosis in regard to underlying pathology. The difficulty in differential diagnosis is complicated by the simultaneous existence of cerebral vascular disease and senile brain changes. Both types of pathology are found in more than 20 per cent of patients with chronic brain disease examined at autopsy. In many state institutions in excess of 40 per cent of the patients admitted are over the age of 60. Of the first admissions, one third are diagnosed as having senile or arteriosclerotic brain disease. Casual review of such statistics over the years suggests that there is an increase in the prevalence of these types of brain changes in elderly people. However, this may not be strictly true. Rather, when the age of the patients is considered, it is clear that people are living longer, and it may be that the same percentage develop the illness at a specific age as in years gone by. It is likely that people are now living longer and therefore developing vascular changes affecting the brain who in the past would have died at a much younger age. If present hospital admission rates continue, senile and arteriosclerotic brain disease may be expected to show an increase of 200 per cent in the number of first admissions to state hospitals by the year 1980. Similarly, it has been estimated that 67 per cent of the patient population in state hospitals will be over the age of 65 by the year 2000.

Clinical description. The accuracy of the description of the onset of chronic brain syndrome with cerebral arteriosclerosis is frequently influenced by the presence or absence of a careful observer. Often the disease is reported as having a rather abrupt onset, the onset being identified by the appearance of an incapacitating symptom. However, careful review of the course of the disease frequently reveals that the patient has had an increase in headaches; has complained of dizziness, faintness, and weakness; and in some instances has reported transient focal neurological symptoms. Memory, particularly for recent events, is impaired, and the ability to make judgments declines. Sleep disturbance is usual early in the course of the disease. As the pathological process continues, the patient continues to narrow his interests and activities and often becomes irritable and restless. Unpredictable and profound fluctuations in mood and inappropriate emotional reactions are frequently reported. As a defense against the loss of various abilities, other manifestations of illness appear, which vary from marked hypochondriasis or serious paranoid features to such acts as genital exhibitionism.

Some clinicians indicate that better than 50 per cent of cases with diffuse cerebral arteriosclerosis demonstrate their first symptoms by suddenly developing a delirious picture in which they are confused, incoherent, and restless and frequently have hallucinations. This delirious picture subsides and

leaves the patient at a considerably reduced functioning level, from which he gradually declines. The view of a gradual decline is challenged by recent investigators who believe that cerebral arteriosclerosis is characterized by episodic decreases in mental capacity, with intervening plateaus often lasting considerable periods of time.

The sudden appearance of a serious or incapacitating symptom is often precipitated by an added mental or physical stress. For example, removal to an unfamiliar environment or the presence of serious infection may precipitate the more serious symptoms. There is evidence that such individuals are functioning at a marginal level, and, when added stress is superimposed, the organism decompensates, and mental symptoms become apparent.

Differential diagnosis. The challenge and frustration of clinically distinguishing cerebral arteriosclerosis from senile dementia, Alzheimer's disease, and Pick's disease has continued for many years. Although examination of the brain at autopsy indicates considerable differences in the pathology considered characteristic of senile brain disease and of cerebral arteriosclerosis, during life it is frequently impossible to distinguish the disorders. This is in part attributable to the fact that both diseases can exist within the same person.

In general, patients with arteriosclerosis do not show the profound physical and mental decay seen in patients with senile dementia. They are less likely to sustain fractures of long bones, are not so often bedridden, and are more likely to complain of headaches and dizziness and to have emotional outbursts. Fainting attacks and convulsions are characteristic of cerebral arteriosclerosis. The memory defect in the senile patient is apt to be diffuse; in the arteriosclerotic it is spotty and fluctuant. Both types of patients fabricate in order to compensate for the deficiency. Senile dementia is more likely to produce alterations in moral standards and sexual indiscretions. If neurological examination reveals brain damage, this is evidence that the disease is of vascular origin.

Alzheimer's and Pick's diseases have a gradual onset and occur at a younger age. Alzheimer's disease is characterized by diffuse intellectual impairment, with a steady progression to profound mental deterioration. Alzheimer's disease does not show periodic episodes of improvement. Pick's disease is also an insidious process, but its clinical course and characteristics are more easily identifiable. In attempting to differentiate the arteriosclerotic paranoid reaction from the paranoid illness without organic brain disease, one important clue is that in the organic patient there is a marked fluctuation in the paranoid expressions and behavior. Patients with psychogenic paranoid reactions can control paranoid thinking in certain situations, but it may be easily uncovered by skillful exploration.

Role of the electroencephalogram as a diagnostic

aid. The psychiatrist has few laboratory procedures available to him to assist him in making a diagnosis. The value of the electroencephalogram (EEG) is often depreciated because there are so few easily recognized pathognomonic brain waves. There is apparently no consistent relationship between different types of dysrhythmia seen in the EEG and specific etiological factors. However, the EEG frequently gives the first indication that the brain is becoming involved in an underlying disease process, be it toxic, infectious, metabolic, cerebrovascular, or degenerative disease. Changes in the EEG can often be demonstrated before there is any change in behavioral or psychological performance and actually precede alteration in the measured total cerebral oxygen uptake. Therefore, in metabolic disturbances, the EEG is often quite useful in following the status of the brain. Disturbances in the EEG may predict the beginning of psychological alteration, and improvements in EEG often precede clinical improvement.

It is rare that a patient with Alzheimer's disease is reported to have a normal EEG. The EEG disturbance associated with this disorder is usually reported as a diffuse slowing, with very few or no α waves. These brain wave records closely resemble those found in senile psychosis. The severity of the dysrhythmia is more closely correlated to the rapidity of the progression of the disease than to any specific clinical picture or to the duration of the illness. The patient's age or the presence or absence of seizures does not influence the EEG. Serial EEGs point to the unpredictability of focal abnormalities as they appear and disappear. This fluctuation in focal disturbances may be of help in differentiating diffuse degenerative brain disease from localized pathology.

Focal EEG abnormalities are commonly found and are of value in many disorders of the brain in which the pathology is localized. However, it is important for the clinician to keep in mind that focal EEG abnormalities of unknown origin and of unknown significance have been repeatedly observed in elderly subjects over the age of 60. Such abnormalities are encountered in 30 to 40 per cent of elderly people without any clinical evidence of central nervous disease. This abnormality is characteristically found in the left temporal area, although this disturbance in a small percentage of cases shows a number of variations as to distribution and laterality. As was previously noted, the exact origin of these foci as well as their significance is not clear. The disturbance in some subjects makes its first appearance in middle age and increases in incidence with advancing age. Clinically, these foci tend to be silent and are not related to cerebral dominance, speech disturbances, seizures, intellectual functioning, or blood pressure. However, there is evidence suggesting that a localized vascular disturbance is responsible for the focal abnormalities. An understanding of this peculiarity

must await further research, but the clinician is cautioned not to attribute greater significance to this type of disturbance than is justified on the basis of current knowledge.

Prognosis. The duration of the illness from date of onset is difficult to determine. The average appears to be somewhere in excess of 4 years. However, because of the constant introduction of new medications that prolong life but do not relieve mental symptoms, the lengthening of the life span of these patients is actually producing a serious nursing problem. It is not unusual to find patients who have survived 16 years or longer in a state of severe dementia. Death usually results from overwhelming infection, extensive brain hemorrhage, or myocardial infarction.

Treatment. A number of misconceptions regarding health and the utilization of health facilities are encountered in our society as regards the utilization of state hospitals for the care of the aged. Such distorted attitudes and beliefs are often shared by members of the health professions who are insufficiently informed. These attitudes permeate and influence the care provided for the patient, as they interfere with the cooperation with family, community agencies, and legislators. For example, there is the distorted belief that many elderly people are placed in state hospitals because they are rejected by their families or friends and that many patients with mild organic brain disorders are institutionalized because their families are not interested in taking care of them. In a careful study of the utilization of state hospitals in New York, Goldfarb concluded that their elderly patients are likely to have organic brain syndromes and that they "are not persons who have been rejected by their families for social or financial reasons. They are sick people who need comprehensive medical care and for whom no other adequate community facility is yet available." It is likely that such elderly persons would benefit from care in institutions that maximize the opportunity for continuing relationships with family and friends, but such institutions are practically nonexistent.

Patients who have evidenced signs and symptoms of arteriosclerotic brain disease respond to a carefully regulated pattern of life. If they can be assigned tasks that are in some way rewarding to them and within the limits of their abilities, then irritability, overt manifestations of hostility, and depression with possible suicide may be prevented. As in all diseases, nutrition must be carefully maintained, alcoholic intake should be prohibited, and drugs that affect the central nervous system should be utilized with considerable caution.

In the constant search for new treatments, the hyperbaric method offers a new dimension of enormous importance. This technique provides a method of increasing the quantity of oxygen delivered to the cells of the body and to the brain. Hyperbaric therapy

is not actually new; for over a hundred years, pressure chambers utilizing room air have been used sporadically in Europe. The resurgence of interest is in part attributable to the combining of hyperbaric environmental conditions with the breathing of pure oxygen. Under hyperbaric conditions the remarkable increase in oxygenation is due in most part to the increased quantities of molecular oxygen physically dissolved in plasma, and not to improving the hemoglobin carrier system. This has led to speculation that it would be quite possible to sustain life with little or no circulatory activity. However, since the therapeutic usefulness of increased oxygen would be most effective in the treatment of disorders of the central nervous system marked by inadequate oxygen transport and defective oxygen utilization, it would provide no therapeutic relief of those disorders partly or totally related to an inadequate supply of nutrients or to the inability to eliminate toxic metabolic products due to failure of the circulatory system. Although it is possible that hyperbaric therapy may provide a method of relieving oxygen deprivation within the central nervous system, it is also obvious that there are many complications to be overcome and that considerable research will be needed during future decades. The role of hyperbaric therapy in cerebral vascular accidents is uncertain, since much depends on the ability of oxygen to diffuse through brain tissue. Much more information must also be added to the experience gained with deep sea divers and caisson workers before sufficient data are obtained so that one can appreciate the effects upon the doctors or nurses living or working in a hyperbaric environment.

The resistance of cerebral blood flow to modification limits the ability of drugs in increasing cerebral circulation. Blood flow to the brain is less readily influenced by drugs than it is in any other tissue. No spectacularly useful drug is now available for enhancing cerebral circulation. The stability of brain circulation accounts for the fact that drugs employed for other types of therapy rarely have serious deleterious effects on the blood flow to the brain.

Extracranial arterial occlusive disease producing cerebral vascular insufficiency. It has been known for over a hundred years that cerebral vascular insufficiency can be produced by extracranial arterial occlusive disease. However, within the past 10 years a substantial number of patients (as many as 25 per cent) have been identified whose brain disorders are the result of pathology in the extracranial arteries supplying the brain. Many of these lesions are surgically correctable. The pathology encountered in these patients is usually the result of atherosclerosis, but a few cases can be attributed to a nonspecific arteritis. However, much work has yet to be done before a complete understanding is achieved concerning the relative importance of the clinical history, symptomatology—particularly its effect upon the

brain—and demonstrated disease. The complexity of the disease process adds to the difficulty of diagnosis, treatment and prognosis, since total occlusion in a major vessel can be present without affecting the brain, provided the collateral blood supply is adequate.

Clinical description and diagnosis. Clinical manifestations of extracranial occlusive disease vary widely. They range from minimal and transient visual disturbances, vertigo, and sensory and motor defects to complete hemiplegia. Diagnostic procedures require particular care. The physical examination, particularly the presence of a bruit, is often of considerable help. Carotid compression to precipitate transient neurological symptoms is recommended by some. Others consider it dangerous while believing ophthalmodynamometry and electroencephalography to be of value and the use of arteriography necessary for accurate clinical diagnosis. Because of the high frequency of multiple arterial involvement, it is important to consider visualization of all vessels by arteriography. Most patients should have bilateral carotid and transsubclavian-vertebral arteriography. Thoracic angioaortography should be performed on patients presenting evidence of involvement of the proximal great vessels. Such patients manifest absence or diminution of pulsations in the neck or arms, reduction or absence of blood pressure in the arms, and systolic murmurs at the base of the neck or in the subclavian region.

Treatment. Operative intervention is, as would be expected, of greatest benefit to patients with transient cerebral ischemia. It is also of value to those showing progressive neurological involvement. It is of least value to individuals who have suffered a "complete" stroke. Since prevention of cerebrovascular lesions is not always possible, the rehabilitation of the patient is of utmost importance. In addition to physiotherapy, language retraining, and the like, the motivation of the patient must be given constant attention. The patient's efforts to improve should be encouraged, and the patient must be aware that by such effort he can regain a degree of independence, self-respect, and self-esteem.

Acute Brain Syndromes Associated with Circulatory Disturbance

Under this heading are discussed those impairments of brain function which are due to disturbances within the circulatory system and which are temporary and reversible. However, it departs in a minor fashion from the ordinary definition of the term "brain syndrome" in the standard nomenclature, because it is not restricted to diffuse impairment of brain function. Included here are transient focal brain disturbances. The etiologies of many of these acute disorders are similar to those of chronic brain syndromes. The characteristic of being temporary and reversible is influenced by a number of factors, including the active intervention of treatment and the ability of

the brain to develop a compensatory mechanism of collateral circulation rapidly.

Cerebral embolism. The embolus that lodges in the brain is usually a fragment of a thrombus or clot that has broken away from a thrombus within the heart. Embolism due to air and tumor cells and fat emboli also occur. Embolic phenomena occur rapidly, and usually there is not sufficient time for adequate collateral circulation to be established. Consequently, sparing of brain tissue distal to the site of embolic occlusion is not so common as in thrombosis. No region of the brain is safe from embolic insult, but the area most commonly involved is that supplied by the middle cerebral artery. Almost any kind of heart disease can be associated with embolus, the most common cause being chronic atrial fibrillation, which is caused by atherosclerotic or rheumatic heart disease. It is also possible for emboli to result from paroxysmal auricular fibrillation. Air bubbles which are occasionally present in the systemic arterial circulation as the result of surgical or accidental trauma of the chest can result in cerebral embolism. Fat emboli are actually fragments of bone marrow which usually enter the blood stream following a fracture of a long bone; these latter fractures are particularly dangerous, since it has been estimated that 75 per cent of such cases are accompanied by some type of embolic phenomenon. Less than 5 per cent are fatal.

The clinical picture that results from an air embolus is dependent on the size of the embolus and the area of the brain involved. The type of embolus does not usually play a significant role in the development of the clinical picture. However, air embolism is more likely to be ushered in by the development of visual disturbances, caused by air circulating in the retinal vessels. Such patients are also likely to have nausea, dizziness, and headache. Fat emboli usually do not occur until 2 or 3 days after an injury or operation. As the fat particles pass through the circulatory system, pulmonary symptoms may appear first, with chest pain, coughing, and dyspnea. This is followed by restlessness, confusion, and delirium. If death does not occur by the 6th or 7th day, most patients recover rapidly, with the evidence of brain involvement subsiding over a number of hours, often overnight.

Air embolism may also be a complication of decompression disease. The treatment of choice is immediate removal to a decompression chamber that is a hyperbaric unit where the excess nitrogen dissolved in the blood can be gradually eliminated by the systematic progressive reduction in the atmospheric pressure.

In early stages cerebral symptoms resulting from thrombosis may be more transient and acute than those resulting from cerebral embolism. In a high percentage of patients who manifest or develop a stroke due to cerebral thrombosis, there is a history of fleeting warning symptoms. This can be attributed to the gradual narrowing of the lumen of the blood

vessel and other compensatory devices that make the transient symptoms possible. Such symptoms often have localizing significance; such as brief periods of speech disturbance or weakness of the limbs. Headache and transient disturbances in cognition are also common.

Hypertensive encephalopathy. This condition occurs in patients with severe hypertension. It is usually associated with essential hypertension, but it may be secondary to increased blood pressure as the result of renal disease, pheochromocytoma, Cushing's syndrome, or eclampsia. The exact cause of this syndrome is not definitely known, but it appears to be related to changes that take place within the smaller blood vessels. Examination reveals an elevated spinal fluid pressure and numerous eye changes, including papilledema, hypertensive retinopathy, and retinal hemorrhages. At postmortem examination the brain is edematous, and there are multiple small hemorrhages throughout the parenchyma. Microscopic examination reveals that small vessels have undergone necrotic arteritis.

This condition usually is ushered in by severe generalized headaches, nausea, and vomiting, followed by restlessness and mental confusion progressing to stupor. Convulsions are common. Treatment of this serious disorder includes controlling of the convulsions by the use of intravenous diphenylhydantoin (Dilantin) or barbiturates and measures to lower the blood pressure. In individuals with moderate hypertension who exhibit a relatively mild type of reaction, caution should be shown when lowering the blood pressure because dropping blood pressure too rapidly may precipitate a cerebral infarction.

Cardiac decompensation. In most cases of this type, cardiorespiratory failure has been observed prior to the onset of delirium. In addition to the delirium, the patient appears to be severely ill, and orthopnea is present. The signs and symptoms of circulatory failure are the primary basis for the diagnosis. Circulatory failure may not be the sole cause, and the stasis of the blood within the brain may enhance the effects of drugs, thereby increasing the mental symptoms. Although congestive cardiac failure is the most frequent cause, endocarditis with cerebral emboli can produce the same clinical picture. Improvement of circulation with supportive measures is the basic treatment plan.

An acute brain disorder may have prolonged adverse effects on psychological functioning which are often overlooked. Guilt and embarrassment resulting from his behavior or the thoughts he expressed during the episode often produce serious concern in the patient. Anxiety arising from this source must be recognized and relieved.

Suggested Cross References

For a supplementary discussion of organic brain syndromes associated with circulatory disturbances, see Solomon's chapter on neurology, Chapter 10. Neu-

rophysiological and neuroanatomic concepts that are relevant to the understanding of behavioral manifestations of brain damage are presented in Sections 2.5 to 2.9 in Area B, on the basic behavioral sciences.

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19.2 BRAIN SYNDROMES ASSOCIATED WITH DISTURBANCES IN METABOLISM, GROWTH, AND NUTRITION

• EWALD W. BUSSE, M.D., Sc.D.

Senile Brain Disease

Definition. In senile brain disease, also referred to as senile dementia, the symptomatology may vary from mild to severe. It is characterized by a progres-

sive organic deficit, usually occurring between 60 and 90 years of age.

Epidemiology. One of every four first admissions to public mental hospitals is a patient 65 years of age or over. Of these elderly first admissions, 80 per cent or more are diagnosed as having senile brain disease or arteriosclerotic brain disease. Because of the clinical limitations in accurately determining the diagnosis, autopsy material is believed to be more reliable. On this basis it appears that 45 per cent are ill primarily because of cerebral arteriosclerosis, 35 per cent are suffering primarily from senile brain changes, and 20 per cent have evidence of both pathological processes.

In contrast to cerebral arteriosclerosis, senile brain disease is believed to be more common in women. It is usually reported that the ratio of women to men is 2 to 1. The age of onset is somewhat later than that encountered in arteriosclerosis, as it rarely occurs before the age of 65.

The ecology of the chronic brain syndromes associated with old age is of particular interest. The studies that have been reported over the past 15 years generally support the observation that there is a high correlation between socioeconomic status and organic psychosis of the elderly requiring institutionalization. Low socioeconomic status apparently predisposes patients to early onset of severe brain changes. There is also a relationship to educational level, major occupation, urban areas of high concentrations of multiple-family dwellings, and persons living alone. A study concerned with declines in intellectual function in normal elderly subjects, rather than in those with a diagnosis of organic brain syndromes, also points to a relationship between social, physical, and mental status. Subjects occupying a low socioeconomic status are more likely to develop physical disorders, and they show a faster and earlier decline in intellectual functions. The reverse is true of people in higher economic brackets: they are relatively better off physically and do not undergo a serious decline in intellectual skills.

Etiology. There is no explanation for this disease that is sufficiently supported by scientific evidence to justify a firm statement of probable cause. Metabolic, endocrine, and vascular factors have been implicated, and genetic determinants are likely. There exists an obvious need for intensive investigations to establish the cause of senile dementia.

Pathology. The pathological process resulting in senile dementia is not adequately understood. The anatomical changes that accompany the disorder are characteristic, but some pathologists believe that senile dementia and Alzheimer's disease are one and the same disease process. There is some evidence that heredity is a predisposing factor and that this factor is a metabolic defect. Clearly, the pathogenesis has not been firmly established, and controversy continues.

Gross examination of the demented brain shows generalized atrophy, usually most obvious in the fron-

tal lobe. Accompanying the shrinkage of the cerebral cortex and the widening of the sulci is a light or moderate fibrous thickening of the pia-arachnoid.

Microscopically, senile plaques are a characteristic finding. It is true that such plaques can be found in the apparently normal aged, but in senile dementia they are present in greater abundance and size. The view promulgated many years ago that there was no correlation between mental deterioration and the number of senile plaques is not generally true. Senile plaques appear as rounded or oblong argentophilic, granular masses with irregular radiating fibrils coming from the center of the mass. Such plaques occur in any part of the cortex and in the basal ganglia and hippocampus. Senile plaques are quite rare in the white matter.

Another feature is the scarcity of ganglion cells. The degenerating ganglion cells are seen as shrunken or vacuolated, and they often contain lipid deposits. Neurofibrillary changes that are difficult if not impossible to distinguish from those found in Alzheimer's disease are present and are the basis for maintaining an association between these two syndromes. The pathological picture is further complicated by atheromatous changes in many of the large blood vessels.

Clinical description. The changes associated with senile dementia and cerebral vascular disease are frequently present in the same brain. Hence, the clinical picture is apt to be a composite, and the diagnosis is determined by the major signs and symptoms.

Senile dementia is accompanied by other evidence of exaggerated aging affecting the entire body. There is a general wasting of muscles, shrinkage of the soft tissue, loss of elasticity of the skin, thinning and graying of the hair, and easy fatigability. Gait is unsteady, and speech disturbances are common. The course of the illness, with progressive mental and physical decay, may extend over a considerable period of time. The time from onset of symptoms until death can in rare instances be as short as 1 year, but it is common for the illness to be present 10 years or more before death intervenes. Because of the patient's unsteadiness of gait and muscular weaknesses, he is apt to fall and complicate his difficulties by fracture, particularly of the neck of the femur.

Minimal changes are manifested by a self-centering of interest, emotional instability, and difficulty in understanding, properly responding to, and remembering new experiences. Deterioration of some intellectual functions may be minimal, but superimposed on this organic state are previous personality characteristics. The exaggeration of the prior psychopathology accentuates psychotic, neurotic, or behavioral reactions. The exacerbation of these symptoms may be the cause of the more disturbing symptoms.

Attempts have been made to separate patients with senile dementia into relatively distinct diagnostic categories. Such grouping has relatively limited value, as the symptoms characterizing each category do not

seem to be the result of organic change but rather are attributable to the emergence of long standing personality difficulties or patterns of adjustment.

Approximately 50 per cent do follow a pattern of simple deterioration. Why this large segment shows little more than intellectual deterioration is open to speculation. No dramatic events accompany this mental decline, and, because these people do not produce a disturbance in the community or disruption in the family, many of them are not brought to the psychiatric hospital until they have reached an advanced stage of senile mental deterioration.

However, the other half of the patients with senile dementia present complications that include depression, agitation, and paranoid- and schizophrenic-like symptoms. Paranoid reactions are the most common, constituting 15 to 25 per cent of the diagnostic category. Paranoid features may aggravate a family situation since the patient becomes suspicious of his family and often reverses commitments he had previously made in good faith to them. For example, he may change his will and do other things upsetting to those around him.

If the paranoid patient is to be placed in the diagnostic category of organic brain disease, one has to demonstrate evidence of impairment of intellectual function, that is, a decline from a previous higher level of performance. A paranoid reaction is more likely in a person who in his premorbid adult life was sensitive, suspicious, and likely to blame others for his failures. In the advancing years of his life, he interprets socioeconomic changes as events directed against him rather than as an inevitable pattern of social change. In addition, he does not accept or recognize physical changes and their accompanying disabilities. He often feels that measures are being taken against him to frustrate his attempts to utilize his abilities or to attain those rewards that are rightfully his. A significantly high proportion of the paranoid reactions of old age are coupled with serious defects of vision or hearing. The impairment of hearing is actually more disruptive to the personality than visual loss. This loss in perception, when coupled with social isolating factors, undoubtedly adds momentum to the development of paranoid thinking. The clinical picture of the aged paranoid is colored by features that are rooted in the insecurity, loneliness, fears, and unfulfilled wishes of old people. Paranoid reactions are more likely to occur in women than in men. Their delusions are apt to be concerned with poverty, money, hostility of neighbors, and the sexual designs of men.

Differential diagnosis. Differential diagnosis revolves primarily around the differentiation of senile dementia from cerebral arteriosclerosis, Alzheimer's disease, and Pick's disease. The similarity and contrasting signs and symptoms of senile brain disease and cerebral arteriosclerosis are discussed in the section dealing with cerebral vascular disorders. One of

the major distinguishing features involves age of onset. Alzheimer's disease begins before the age of 60, often as early as 40 years. A complication of differential diagnosis that has important treatment implications is the necessity of distinguishing a depressive reaction complicating senile dementia from involutional depression. An accurate history is particularly relevant, and psychological testing can be of help. In senile brain disease the electroencephalographic (EEG) finding is seldom normal, usually consisting of diffuse slowing with diminution or absence of α waves. This finding is not specific for senile dementia; it occurs in Pick's and Alzheimer's diseases as well.

Management. The psychotherapeutic measures usually employed for younger adults are of little use in many institutionalized elderly patients. Supportive psychotherapeutic measures restricted to contact with the psychiatrist are not sufficiently remembered to be carried over into the living experience of these patients. Therefore, if one expects to alter affect and behavior, it is necessary to provide continuing supportive measures in the patient's milieu. Routine patterns of living provide a measure of security, but routinization should be limited to the major events, and efforts should be made to vary constantly the intervening daily activities so that they provide both mental and physical stimulation. Objectionable behavior and the expression of exaggerations should not be ignored; they should be discussed with the patient and placed in proper perspective. Group meetings with patients with organic brain disease are valuable measures if the psychiatrist participates actively, frequently instructing as well as maintaining focus and balance. Statements made by the patients in such a meeting can often be clues to insights which result in better ward management.

Many elderly patients who have mild organic brain disease are helped by psychotherapeutic measures. To develop insight is not the objective; rather it is to have the patient feel that the psychiatrist is an authority who will help him upon request, yet is permissive and nonpunitive. In such circumstances, it appears that the elderly patient gains the most from the feeling that he has the power to protect himself by utilizing the therapist rather than from the feeling that he is liked by the therapist.

No specific treatment is known for the prevention or reduction of the pathological changes underlying senile dementia. Many approaches, including inhalation of oxygen and administration of respiratory enzymes, vitamins, and cerebral stimulants, have been given credit for improvement, but none have been of sufficient therapeutic value to become established treatments. In recent years ribonucleic acid (RNA) has been given orally and intravenously in the hope of restoring intellectual skills. This treatment has shown little promise, but the use of agents that stimulate RNA production appears to hold greater promise. It is

possible that the administration of RNA or a stimulating agent can be of greater use as a preventive measure than as a form of treatment.

Presenile Brain Diseases

Definition. The presenium is a chronological period described by different authors as being between the ages of 40 and 65. In the psychiatric literature, Alzheimer's disease and Pick's disease are frequently designated as presenile brain disorders since both are chronic brain diseases which occur during the presenium and manifest certain clinical features which closely resemble each other and are similar to those encountered in senile brain disease.

It should be noted that in the standard nomenclature of the American Psychiatric Association (A.P.A.), presenile brain disease (with Alzheimer's disease as an example) is classified as a disorder associated with disturbance of metabolism, growth, and nutrition, and Pick's disease is classified as a disorder associated with unknown cause, although, in fact, the causes of both of these diseases are unknown.

In this textbook Alzheimer's disease and Pick's disease will be discussed under the designation of presenile brain disease, and because of their close clinical similarity to senile brain disease will be described with senile brain disease. While this arrangement will then place all these entities under the section, the "Brain Syndromes Associated with Disturbances of Metabolism, Growth, and Nutrition," there is no evidence that any of these diseases are, in fact, due to such disturbance.

The student should be aware that this classification of presenile brain diseases is somewhat at variance with the A.P.A.'s standard nomenclature, which unfortunately is not clear about these aforementioned points.

Pick's disease

Definition. The designation of this disease is a tribute to Arnold Pick, who first published his work in 1892. Pick's original purpose was to illustrate the different types of aphasic manifestations that can occur in senile brain disease. It was really the efforts of other writers that established Pick's disease as a specific degenerative cerebral disease. Although Pick's disease is generally characterized as a senile dementia, it is doubtful that this classification is anything but misleading, as the disease does not appear to be the result of the premature onset of an aging process. Presenile refers to the time of onset, the age of onset being as early as 40, and the average age being 54.

Epidemiology. Pick's disease is rare, being much rarer than Alzheimer's disease, the other presenile dementia. The incidence and prevalence of Pick's disease in the general population is unknown. It constitutes a very small percentage of the autopsy material

encountered in mental hospitals. The female-male incidence ratio is 2 to 1.

Etiology. There is considerable evidence in the literature that Pick's disease is a specific heredodegenerative process that is *not* associated with rapid progression in the normal aging process. A significant number of families suffering from Pick's disease have been reported, leaving little doubt that the condition within these families behaves like a Mendelian dominant trait.

Pathology. The morbid anatomy reveals atrophy involving both gray and white matter in one or more lobes or parts of the brain, resulting in a brain weight less than normal. The area most frequently involved consists of both frontal poles and other parts of the frontal lobe, but not the precentral convolution. The second most frequent involvement is the anterior portion of the insular and the corpus callosum. It is usually more pronounced on the left than on the right. The third most frequent area affected is the temporal lobes bilaterally. In the temporal involvement, the second and third convolutions are usually affected. Occasionally, combinations of frontal and temporal atrophies are encountered, and very rarely atrophy is limited to the frontal lobe on one side. The usual pattern, apparently, is for the process to appear first in the frontal or temporal lobes and later in the parietal occipital lobes and the basic ganglia.

Microscopically, the atrophic areas reveal a loss of nerve cells, with serious disorganization of the normal cellular lamination. Close inspection of nerve cells reveals that there is atrophy of the cell body, pyknosis of the nucleus, and a distinct type of neurocellular degeneration characteristic of Pick's disease. The typical Pick cell is swollen, enlarged, and round in shape. Nissl bodies have disintegrated, and the cytoplasm is homogeneous in appearance. In the cytoplasm there are peculiar inclusion bodies the size of the nucleus of the cell and often larger. This enlarged cell, although an interesting finding, is not always found in the atrophic cortex of Pick's disorder. Iron pigment deposits are found not only in the atrophic areas but also in other areas of the brain. As cells are destroyed, they are replaced by glia. Blood vessels show no changes, and, as a rule, the senile plaques of senile dementia and the neurofibrillary changes of Alzheimer's disease are not found in Pick's disease. Figure 1 shows the distribution of cytoarchitectural changes in a case of Pick's disease.

Clinical description. Consistent with the description of the pathological progression, the illness itself is seen as a slowly progressing dementia, and the symptoms that develop are mainly those associated with the focal cortical lesion characteristic of this disorder. The symptoms resulting from the focal lesions are primarily aphasias, apraxias, and agnosias. The insidious intellectual impairment is characterized by distractibility, easy fatigability, and a peculiar ina-

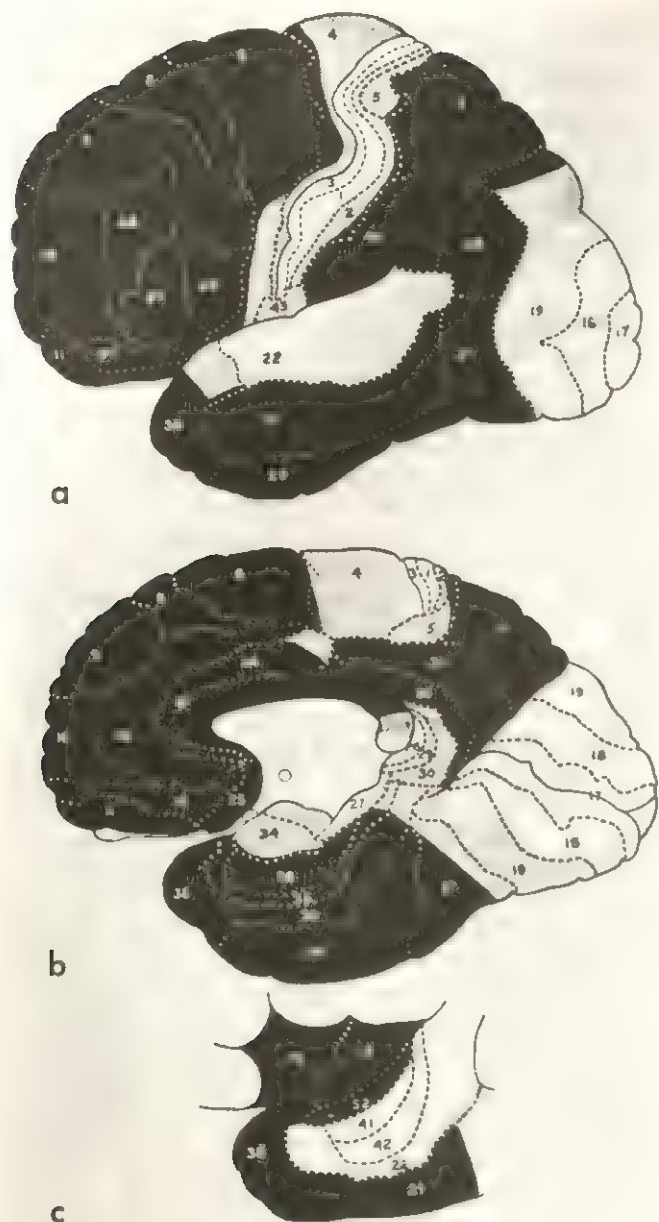


FIGURE 1. Distribution of the changes in the cytoarchitectural fields of Brodmann in a typical case of Pick's disease. The drawings show the lateral surface (a), the medial surface (b), and the temporal lobe (c). The black areas denote severe changes, the gray areas moderate changes, and the white areas mild changes in the cytoarchitectural fields of Brodmann. (Courtesy of Scharenberg, K., and Waggoner, R. W.)

bility to deal with new problems and situations other than those that are quite simple. In the early stages, memory is not significantly involved, but the attention span is progressively affected and this, in turn, is followed by a decline in memory. Depressive states are rarely encountered, and the affect of the patient is flat. As deterioration continues, restlessness, aimless activity, and senseless talkativeness can develop. Speech is meaningless and hopeless jargon. There is intellectual deterioration, with early loss of abstract thinking. Mild euphoria is occasionally encountered

rather late in the disease. Hallucinations, delusions, and confabulation do not occur in Pick's disease. In the final stages of deterioration, paralysis, contractures, and epileptic seizures are often present.

Differential diagnosis. In distinguishing Pick's disorder from other organic progressive dementias, one must take many factors into account. Of particular importance is the early onset of the disease, the possibility of hereditary features, and the characteristic signs and symptoms of focal cortical damage, usually frontal or temporal. It has been reported that some patients develop peculiar attacks of muscular hypotonia. Epileptiform seizures that develop rather late in the course of the disease are of little diagnostic value. The mental symptoms of apathy, inattentiveness, and a total lack of insight are useful diagnostic features. The electroencephalographic findings are those characteristic of all the senile dementias.

Prognosis. Pick's disease lasts from 2 to 11 years, with an average duration of approximately 5 years. The decline is continuous but gradual. Central nervous system changes are accompanied by a gradual deterioration of the physical state of the patient, who becomes confined to his bed. Infections often occur, and intercurrent disease usually terminates the life of the patient.

Management. There is no known treatment for this disorder, and the therapeutic regimen must revolve around adequate supportive health and environmental measures.

The psychotherapeutic measures employed in this slowly progressive brain disease are of limited value because the flat affect common in Pick's disease serves to block the patient-doctor interaction so necessary for effective psychotherapy.

Alzheimer's disease

Definition. This form of progressive mental deterioration was described by Alois Alzheimer in 1906. It is often considered to be a presenile dementia, that is, a condition resulting from the early onset of an aging process or a pathological process usually encountered at advanced ages. Many pathologists believe that Alzheimer's disease and senile dementia are one and the same pathological entity. However, others support the evidence that Alzheimer's disease is and should be considered a specific entity unrelated to age.

Epidemiology. Although Alzheimer's disease may appear in the early sixties, when it is easily confused with senile brain disease, it occasionally begins in the 4th decade of life. It is found in approximately 4 per cent of patients who come to autopsy with mental deterioration. Apparently, it is the most common of the dementias occurring prior to age 60. The female-male incidence ratio is 3 to 2.

Etiology. Although Alzheimer's disease is not clearly a familial disorder, families in which a hereditary disposition exists have been reported in the liter-

ature. At the present time, the cause of this disease is unknown.

Pathology. Grossly, the brain shows a generalized atrophy. Superficially, the cortex appears similar to that seen in cases of senile dementia. Microscopically, the significant feature is the degeneration of nerve cells, with the appearance of neurofibrillary tangles arranged in the forms of whirls and baskets. In addition to this characteristic change, senile plaques are usually present.

Clinical description. As in many organic disorders, in Alzheimer's disease there is a gradual intellectual deterioration. But in spite of the loss of memory and the illogical reasoning, insight is often preserved. The awareness of impending insanity is a distressing complication in Alzheimer's disease. As neuronal destruction continues, speech becomes seriously disturbed, and involuntary movements of the arms and legs are frequently observed. Epileptic seizures can develop, and after each seizure a more rapid progress of mental deterioration is commonly observed. The course of the disease is progressively downward, with invariable fatal conclusion. The disease usually lasts between 2 and 5 years; the average is believed to be approximately 4 years. No specific treatment is known for this disorder. Only symptomatic and environmental support can be offered.

Differential diagnosis. Alzheimer's disease must be distinguished from Pick's disease, senile dementia, and cerebral vascular disease. The patient with Alzheimer's disease appears to be overactive, as compared with the loss of initiative seen in Pick's disease. Emotional distress and agitation are common in Alzheimer's disease. The distressing awareness of impending disaster is apparently not encountered in Pick's disease. The clinical and laboratory characteristics of the other major disorders—senile brain disease and cerebral vascular disease—that must be considered have already been discussed.

Prognosis. The usual duration of Alzheimer's disease is 2 to 5 years, although isolated cases have been reported to survive 15 years and more. Terminally, emaciation is severe, and the patient appears to be completely decorticated.

Management. The medical and psychiatric management is similar to that described for senile dementia and other chronic brain disorders. Marked restlessness occasionally requires the use of sedatives. This hyperactivity is a transient condition.

Disturbances of Metabolism, Growth, and Nutrition

Pellagra (niacin deficiency)

Definition. Pellagra is due to a vitamin deficiency of niacin (nicotinic acid) or its amide (niacinamide or nicotinamide). This disease is characterized by dermatitis, dementia, and diarrhea. Pellagra was first described in the 18th century in Spain and Italy; in 1735 a Spaniard, Gaspar Casal, named it *mal de la rosa*.

Frapolli recorded its occurrence in the peasants of Lombardy and labeled it *pelle agra* or rough skin. In 1866 the first case was recorded in the British Isles.

Epidemiology. In the last 10 to 15 years, the incidence of pellagra has decreased sharply in the United States. Prior to 1952, a large university clinic in the South saw between 20 and 30 patients with pellagra each year; in 1952, the number dropped to 4; between 1952 and 1959, 1 or 2 were diagnosed each year; and since 1959, not a single case has been recorded. Interestingly, the last patient to be observed had a psychotic reaction associated with pellagra.

The sharp decline in the incidence of pellagra is attributable to improved diet, especially from the addition of niacin and thiamine to bread. The actual use of niacin dates from 1927, when Joseph Goldberger introduced niacin for the treatment of pellagra. However, pellagra continues to occur in backward nations and is still encountered in chronic alcoholics, whose dietary intake of niacin is often seriously deficient.

Etiology. A deficiency of dietary niacin is a major factor contributing to the development of pellagra. However, in many instances, pellagra is apparently a multideficiency disease. For example, since the amino acid tryptophan serves as a precursor for nicotinic acid, tryptophan may be substituted in a diet that is deficient in niacin. Accordingly, many feel that in pellagra there must also be a deficient intake of tryptophan. There is evidence, too, that the neurological manifestations of pellagra are related to a deficiency in B vitamins other than nicotinic acid.

Pathology. Nicotinic acid is a coenzyme that is important in carbohydrate and probably in protein and porphyrin metabolism. Apparently, if changes are to occur within the central nervous system, a polyavitaminosis must be present, for a deficiency in nicotinic acid alone is of little consequence. The pathological changes that do occur in niacin deficiency are reversible until rather far advanced.

The earliest changes occur in the Betz cells of the motor cortex. The affected cells appear swollen and rounded, Nissl particles have disappeared, and the nuclei are eccentric. Similar cerebral changes are found in the smaller pyramidal cells of the cortex, the large cells of the basic ganglia, the cells within the cranial motor nuclei, and the dentate nuclei. In the anterior horns of the spinal cord, the lesions involve symmetrical degeneration of the dorsal columns and to a lesser extent the pyramidal tracts. Some pathologists believe that these changes are similar to those encountered in subacute combined degeneration. The cerebral changes within the brain in pellagra are similar to those encountered in Wernicke's syndrome, and it is probable that the two diseases have a common etiology.

Clinical description. Pellagra is characterized by a combination of symptoms involving the skin and the digestive and central nervous systems. The initial skin changes are a persistent erythema, followed by pigmentation of the skin resembling a severe sunburn.

Commonly involved are the backs of the hands and a bandlike area extending around the waist. In some cases the palms of the hands are also affected and, infrequently, the face, neck, elbows, knees, scrotum, or vulva. The mucous membranes in the mouth become inflamed, and a painful stomatitis results. The tongue develops a glazed bright red glossitis and frequently there develops angular fissuring of the tongue. Bloody diarrhea is frequent, with periods of diarrhea occasionally alternating with constipation.

Pellagra usually has an insidious psychic onset, and the first mental symptoms are usually regarded as psychoneurotic with depressive components. Early symptoms include weakness, anxiety, irritability, headaches, lack of energy, fatigability, dizziness, difficulty in concentration, and loss of recent memory. If the disease progresses, more serious psychiatric symptomatology becomes manifest. These severe mental symptoms may include stupor or clouding of consciousness, hallucinations, depression, delirium, catatonia, acute chronic brain syndromes, other schizophrenic-like behavior or anxiety, and manic or paranoid ideas. Organic brain symptoms, such as memory loss, disorientation, confabulation, and confusion, are also common. Evidence of central nervous system involvement includes tremors, convulsions, incontinence, cogwheel muscular rigidity or twitching, and irregular involuntary movements, such as uncontrollable sucking and grasping reflexes, spasticity, ataxia, and hyperreflexia.

Differential diagnosis. There are no pathognomonic mental symptoms that make it possible to distinguish pellagra from an anxiety state or schizophrenia without considering the other clinical features of the disease, particularly those that would indicate a niacin deficiency with its associated changes in the skin and digestive systems. Although pellagra is essentially an encephalopathy, the recognition of spinal cord involvement may contribute to the diagnosis.

Prognosis. Since pellagra responds readily to treatment, the prognosis is excellent, except in very advanced cases.

Management. It is essential that the patient be provided with adequate nutrition in the form of a balanced high caloric diet and supplementary vitamins (niacin, thiamin, and vitamin B complex). If the patient is unable to ingest food and supplementary vitamins, then nicotinic acid, niacin, or nicotinamide should be administered intramuscularly. Dietary niacin is found in yeast and many protein foods; fresh or canned salmon and some liver extracts are of particular value. Protein foods rich in tryptophan, such as milk, eggs, and wheat, are also helpful against pellagra. Mild cases of pellagra may be cured by giving 100 mg. of niacin every hour for 10 hours orally during the first 2 days. Most patients will improve rapidly within the first 48 hours. Even though supplementary vitamins are given, improvement may be slow and erratic if the patient is continued on a high

fat or carbohydrate diet, and a protein-rich diet is advisable.

In most cases of pellagra 500 mg. of nicotinic acid are usually administered daily by mouth in divided doses of 50 to 100 mg. After 2 weeks the dosage is reduced over a few days to a maintenance level of 25 mg. daily. Maintenance doses are especially advisable with elderly patients, where dietary control may be unreliable.

Pernicious anemia (vitamin B₁₂ deficiency)

Definition. Pernicious anemia is a chronic macrocytic megaloblastic anemia due to a vitamin B₁₂ deficiency. It is called a secondary deficiency disease because it is not usually due to a poor dietary intake of the vitamin but is the result of impaired absorption of vitamin B₁₂. This impairment is due to a permanent deficiency in Castle's intrinsic factor in gastric juice, which normally promotes the absorption of the vitamin B₁₂, extrinsic factor, from the intestines. Pernicious anemia may also be related to folic acid (pteroylglutamic acid), since the presence of this vitamin will cause the anemia to improve but will not prevent the subacute combined degeneration of the spinal cord that develops in most pernicious anemia patients and it may, in fact, aggravate the degeneration.

Clinical description. This disease usually occurs after the 5th decade. Its onset is frequently insidious, with a characteristic glossitis, gradually increasing weakness, paroxysmal abdominal pains, and other gastrointestinal complaints. There does not appear to be a clear temporal relationship between the development of symptoms referable to the nervous system and the apparent onset of the disease. Mental changes are of great significance; it is possible that a high incidence of mental symptoms accompanies this disorder, but it is difficult to know whether the psychic changes are due to organic pathology or represent a reaction to disability and discomfort. Although no characteristic symptom complex accompanies this disease, frequently encountered symptoms are irritability, memory defects, hallucinations, disorientation, and depression.

Management. Although pernicious anemia responds to the liberal use of liver extract, vitamin B₁₂ has replaced liver extract as the treatment of choice. Usually vitamin B₁₂ is given in daily doses of 50 to 100 µg. intramuscularly for a period of 2 weeks. Somewhat increased doses are recommended if there is neurological involvement. If larger doses are injected, a high percentage of the administered vitamin B₁₂ will be excreted. After the initial 2-week treatment period, the patient is placed on a maintenance dose of a minimum of 60 µg. of vitamin B₁₂ intramuscularly every 4 weeks. If the patient is seriously ill with a severe deficiency of vitamin B₁₂, larger intramuscular doses appear to be retained by the body. As much as 5,000 µg. have been given over a short period of time, but the value of this procedure is questionable. Folic acid

may be beneficial for the anemia, but it may be dangerous, since it occasionally aggravates the neurological manifestations of pernicious anemia. For this reason, many multiple vitamin preparations do not contain folic acid.

The diversity of mental symptoms preclude a routine psychotherapeutic approach. The usual delirious reactions should be treated symptomatically. It is necessary to maintain a stable, easily recognized environment and interpersonal relationships that are supporting and reassuring.

Beriberi (vitamin B₁ deficiency). A deficiency of vitamin B₁ or thiamine results in a disease characterized by psychological, neurological, cardiovascular, and gastrointestinal symptoms. When severe, the resulting disease is known as beriberi. The major psychological symptoms are irritability, fatigability, loss of appetite, sleep disturbances, and emotional lability. In severe cases, delirium may result. Neurological symptoms include a peripheral bilateral symmetrical neuropathy. In advanced cases, memory disturbance and external ophthalmoplegia of Wernicke's syndrome or encephalopathy may occur. Other symptoms of beriberi are disturbances of the pupillary response to light, cerebellar ataxia, and peripheral neuropathy.

Scurvy (vitamin C deficiency). Scurvy is a disease due to a deficiency of vitamin C and is characterized by hemorrhagic and bone abnormalities. Weakness, irritability, and depression are encountered. Treatment consists, in adults, of administration of 1,000 mg. of ascorbic acid daily in divided doses for 1 week; thereafter, 500 mg. are administered daily until all symptoms have disappeared.

Kwashiorkor (infantile pluricarcinial syndrome). This is a disease resulting from a severe protein malnutrition in childhood. Although kwashiorkor was first described in Africa, it is now known to occur in children in all underprivileged parts of the world. Psychiatrically, instability, apathy, and depression have been reported. The basic treatment is the administration of full cream milk by mouth.

Hypervitaminosis. This is a condition induced by excessive vitamin intake. The symptoms encountered in hypervitaminosis A and D include weakness, anorexia, anxiety, nervousness, and headache.

Hypothyroidism

Definition. Hypothyroidism, which is due to a deficiency in thyroid hormone, is designated as myxedema when it develops in an adult and as cretinism when it occurs in infants or children as a result of a congenital thyroid dysgenesis or a deficiency in early life of the thyroid hormone. In 1871, C. H. Fagge at Guy's Hospital first suggested that there was a relationship between a malfunctioning thyroid gland and cretinism. Three years later, Gull described myxedema and noted the resemblance of this adult disorder to that of cretinism.

Epidemiology. Cretinism has been a rare disorder in this country since iodized salt was introduced as a prophylactic measure. Although hypothyroidism in adults is a relatively common diagnosis today, progression to a state where the diagnosis of myxedema is justified is infrequent and declining. Adult myxedema occurs five times as often in females as it does in males. Its most frequent age of onset is between the ages of 30 and 60 years.

Etiology. This disorder is usually attributed to primary or secondary causes. Cretinism is usually considered a primary disorder, since it is due to a congenital absence or deficiency of thyroid hormone. Other primary etiologies are the destruction of the thyroid gland by disease or its removal surgically. Secondary hypothyroidism results from anterior pituitary gland failure.

Pathology. Deficiency of thyroid hormones has a widespread effect on the body. Since it affects the metabolic processes of the individual cells rather than any one system or particular organ, generalized changes can be seen in the skin, hair, heart, gastrointestinal tract, reproductive system, and central nervous system. One of the major functions of thyroid hormone appears to be the maintenance of excitability of nerve cells. Consequently, one finds cerebral manifestations as well as disturbances in the functioning of the cranial and peripheral nerves.

Clinical description. In hypothyroidism without myxedema, patients complain of easy fatigability, poor emotional control, vague aches and pains, menstrual disturbances, and anemia. It is evident that these symptoms are similar to many complaints associated with various psychoneurotic reactions. As hypothyroidism increases in severity, the patient's skin may become dry and brittle, with a loss of eyebrow and pubic hair. Cardiac changes include bradycardia and angina. Mental changes progress from mild mental dullness, apathy, drowsiness, memory defects, anxiety, and irritability to overt psychosis, "myxedematous madness." Although depressive and paranoid symptoms are very common, psychotic symptomology has no characteristic features and is apparently determined by the premorbid personality. Involvement of the cranial nerves, particularly the optic nerve, occurs, and central scotomata and other visual defects have been reported. Eighth nerve involvement may be present, as manifested by tinnitus, vertigo, hearing loss, and coordination difficulties.

Hypothyroidism of childhood or cretinism is commonly associated with mental retardation, delayed growth, dental abnormalities, a characteristic thick tongue and sharp, flat nose, widely spaced eyes, and a typically vacuous facial expression. The children are dwarfed and characteristically have a protuberant abdomen. The child's mental status may vary from dullness and apathy to euphoria. Many infants do not take on the characteristic cretinous appearance until the 2nd or 3rd month of life, when they have depleted

the supply of hormones transmitted in utero from the mother.

Differential diagnosis. Little difficulty should be experienced in the diagnosis of classical cretinism or myxedema. The inexperienced clinician may confuse a cretin with a mongoloid infant, but the mongoloid's characteristic eyes and facial features and his normal skin and hair texture readily distinguish him from the cretin. In adulthood, a patient with chronic nephritis may manifest mental changes quite similar to those seen in myxedema. Facial expression may be similar, but physical examination and laboratory findings should readily help in differentiating these disorders.

Prognosis. In cretinism there is a positive correlation between the degree of intelligence that can be attained and the speed with which thyroid therapy is started in the first few months of life. The prognosis is better in juvenile than in congenital cretinism. Adequate early treatment of cretins should cause a favorable response in all intellectual areas, and between 60 and 75 per cent attain normal intelligence. Unfortunately, this optimism in regard to restoration of normal mental functions as the result of the replacement of thyroid is not encountered in cretinous adults, where the prognosis is more guarded.

Management. The adult patient who has serious myxedema may return very slowly to normal if permanent changes in his psychic functioning have not occurred. In such individuals, the premorbid personality, particularly the psychic determinants that prevented the patient from obtaining adequate medical help, plays a role in the persistence of psychiatric problems. Accordingly, all patients diagnosed as myxedematous should receive psychiatric help.

A daily dose of 30 mg. of desiccated thyroid substance is the treatment of choice for all types of hypothyroidism, except cases due to specific iodine lack; then iodine therapy is instituted. It is usually recommended that therapy be started with a relatively small dose of thyroid, as sudden changes in the metabolic level of activity can have adverse effects on mental and cardiac functioning.

Hyperthyroidism

Definition. Hyperthyroidism or thyrotoxicosis is also known as Graves' or Basedow's disease. Robert James Graves, an Irish physician who lived during the first half of the 19th century, first described the characteristic symptoms of this syndrome and associated it with enlargement of the thyroid gland.

Caleb Hillier Parry, an English physician who died in 1822, was among the first to describe the symptoms that accompany exophthalmic goiter. Graves and Basedow, between 1835 and 1842, independently published articles describing this disorder in greater detail.

Epidemiology. Thyrotoxicosis appears to be common in cold climates and civilized societies. A low

incidence of hyperthyroidism is reported in Africa, China, and India. Professional and sedentary people are more frequently afflicted than are laborers. The disease is much more frequent in females than in males. In nongoitrous areas the ratio of incidence in females to males is approximately 4 to 1, but in endemic goitrous areas the ratio is lower. The disease usually appears after the 3rd decade of life and seems to be associated with other endocrine changes, such as pregnancy and the menopause.

Etiology. This disorder results from the excessive production of thyroid hormone. While hyperthyroidism is frequently associated with an increase in the size of the thyroid gland (goiter), some symptoms of the disease can occur with relatively little change in the size of the thyroid gland. True exophthalmic goiter is invariably associated with a diffuse enlargement of the thyroid gland. The actual enlargement and hyperplasia of the thyroid parenchyma are associated with and affected by changes within the central nervous system and the pituitary gland. The onset of this disorder is frequently associated with psychoendocrine changes and with a psychic trauma.

Pathology. In hyperthyroidism associated with exophthalmic goiter, the thyroid gland is bilaterally diffusely enlarged. Approximately three fourths of the patients with thyrotoxicosis show a diffuse type of hyperplasia; the remainder manifest nodular enlargements. Nodular hyperplasia is often termed "toxic adenoma." Typically, microscopic study of the enlarged thyroid gland reveals parenchymatous hypertrophy and hyperplasia. This microscopic picture provides cytological evidence of increased glandular secretory activity.

Clinical description. The clinical signs and symptoms of Graves' disease include goiter or enlargement of the thyroid gland, exophthalmos, fine tremors, restlessness, anxiety, irritability, increased perspiration, and emotional instability. Although anorexia occasionally occurs, there is usually no loss of appetite, but there is a progressive loss of weight and strength. An intolerance to heat develops, and the patient complains of cardiac palpitations, paroxysmal arrhythmias, and dyspnea. Other prominent psychiatric symptoms are hypersensitivity, suspiciousness, apathy, and depression. About 20 per cent of hyperthyroids may develop overtly psychotic symptoms. Most develop a manic excitement with schizophrenic-like symptoms—delusions and hallucinations. Less often, depressive psychotic symptoms and delirium are encountered.

Mental symptoms and changes are thus an important component of the clinical picture of thyrotoxicosis. As in other types of hormonal disturbances, it is difficult to establish the cause and effect relationship between the role of psychic conflict and the hormonal imbalance. The psychosomatic aspects of this disorder, particularly the role of psychic factors in its etiology, have been explored by a number of investi-

gators. Traumatic events were reported to precede the onset of the disease by several days to weeks. Other studies have confirmed that upward of 80 per cent of patients had severe emotional shocks preceding the onset of the illness. Many workers have reported that hyperthyroid patients were excessively dependent on a specific situation or person (a cardinal relationship). When the relationship was seriously threatened, hyperthyroidism was precipitated. Hyperthyroid patients are chronically anxious, and the anxiety is supposedly related to a fear of separation from a needed person. Such an individual may try to protect himself from loss of love by constantly giving to others and by displaying a pseudomaturity and independence. The affective state that most frequently accompanies hyperthyroidism is that of anxiety aggravated by depression. Some anxiety results from excessive thyroid hormone, but the exact role of anxiety both etiologically and symptomatically is controversial in hyperthyroidism.

Differential diagnosis. Anxiety states with accompanying tachycardia and weight loss may resemble thyrotoxicosis, and the differential diagnosis is often difficult. The vasomotor instability that accompanies anxiety is likely to result in a cold extremity rather than the warm extremity of hyperthyroidism, but this is an unreliable differential point. Determination of the basic metabolic rate is not only inaccurate but has been replaced by easier and more reliable methods, such as the determination of the serum level of protein-bound iodine or the establishment of the rate of radioactive iodine uptake following the oral administration of a tracer dose.

Prognosis. Symptoms are likely to recur in a successfully treated hyperthyroid, but the prognosis is improved when other modalities are used in addition to antithyroid drugs. Since it has been estimated that 50 per cent of hyperthyroid patients treated with thiourea drugs will have a relapse and recurrence of the disease within 1 year if the therapy is stopped, such patients must remain under constant medical surveillance. The prognosis is improved when other methods are used, such as radioactive iodine treatment. However, there is some controversy today about the most effective medical and surgical treatments of hyperthyroidism.

Management. Surgical therapy is the treatment of choice for most toxic nodular goiters. At least 75 per cent of patients with diffuse toxic goiters can be effectively treated with radioactive iodine, but this treatment is contraindicated in pregnancy and in nodular goiter. Other treatments used include thiourea drugs and surgical removal of the gland. Regardless of the therapeutic approach used, it is believed that most such patients benefit from psychotherapy. During critical phases of the disease, supportive psychotherapy is advisable. Insight therapy is employed when the thyrotoxic component of the illness is under reasonable control. Psychotherapy in the

management of hyperthyroidism is not a primary treatment—which should be medical or surgical—but is a valuable adjuvant therapy.

Hypoglycemia

Definition. Hypoglycemia is a state in which there is an abnormally low concentration of glucose in the blood. It may be cryptogenic or without demonstrable cause, or it can be symptomatic and therefore attributable to a number of disorders. Cryptogenic, spontaneous, or idiopathic hypoglycemia, although a relatively rare phenomenon, is of considerable importance to psychiatry.

Etiology. Symptomatic hypoglycemia may be due to an increase in insulin production by the β cells of Langerhans' islands. Such overproduction of insulin may be functional in 70 per cent of the cases, but it may also be due to a tumor of the pancreas or to insulin-producing neoplasms in other locations within the body. Hypoglycemia may also accompany the adrenocortical and adrenohypophyseal insufficiency that may occur in chronic liver disease, and it is occasionally found in encephalitis.

Pathology. The neurons of the central nervous system of man are markedly dependent on oxygen and glucose. Hypoglycemia quickly produces changes within the brain. If the glucose supply is not restored, the results are often serious. The effects of hypoglycemia, like those of anoxia, find the gray matter much more vulnerable than the white matter.

Clinical description. The early symptoms of hypoglycemia are similar to those produced by excessive epinephrine or in an anxiety state. The patient complains of flushes, sweating, tremors, headache, dizziness, nausea, weakness, and syncope. With prolonged hypoglycemia, sensory changes take place, such as numbness, tingling, and parasthesias in the extremities, tongue, and lips. Auditory and visual disturbances may develop, with illusions and hallucinations appearing. Diplopia and convulsions can occur, and changes of body image have been reported.

The effects of hypoglycemia on the brain seem to occur progressively, paralleling levels of brain function development; that is, the higher mental functions are affected first, and the more primitive and stable brain stem functions are the last to be involved.

Hypoglycemia must be considered when the patient reports episodes of extreme anxiety progressing to confusion and the development of focal neurological signs. Sometimes a periodicity relating to food intake is reported. At times, hypoglycemic episodes may closely resemble acute alcoholism. To complicate the problem further, hypoglycemic reactions may exist in some persons who apparently have a normal blood sugar and glucose tolerance test. It has not been established whether such individuals suffer from a faulty threshold mechanism or are for some reason unable to utilize the glucose available to them.

Differential diagnosis. Determination of fasting

blood sugar levels and glucose tolerance curves are of utmost importance. Those individuals suffering from cryptogenic hypoglycemic episodes have a hypoglycemic-like syndrome without significantly lowered blood sugar, and they present a fascinating and difficult clinical problem. The electroencephalogram may be of value, but it is affected in varying degrees from one subject to another. However, when changes are present, the restoration of glucose level by the ingestion or injection of dextrose leads to a prompt return to normal in the EEG; sometimes only a mild increase in blood glucose levels results in a rapid change in the EEG.

Treatment. When hypoglycemia is found to be symptomatic, it is evident that the underlying pathology must be the focus of treatment. When it is determined to be cryptogenic, efforts must be made to maintain the glucose level by multiple feedings and by avoidance of physical activity and stress situations. Treatment must be individualized and related to the frequency, severity, and duration of hypoglycemic episodes.

Diabetes mellitus

Definition. Diabetes mellitus is a chronic disorder resulting from a relative or absolute deficiency of insulin and a consequent disturbance in carbohydrate metabolism. Aretaeus, a famous Greek physician who lived in the 2nd century A.D., described and named the disease. Chinese medical writings as early as the 7th century mentioned the characteristic symptoms of polyphagia, polydipsia, and polyuria. Although many famous scientists were interested in this disorder, it was not until 1921 that Banting, Best, and Macleod developed a crude extract of insulin. Thereafter, other scientists eliminated the toxic substances from the extract and concentrated the active principal insulin.

Epidemiology. Diabetes mellitus is an increasingly prevalent disease, appearing most often in the middle and later years of life. The high incidence of diabetes among females represents a sex difference that does not become apparent until after the 4th decade. Occurrence varies in different races. It is very high in Jews and is infrequent among Chinese, Japanese, and East Indians. When it does occur, it is apparently mild in the latter group. It is frequently associated with obesity.

Etiology. The exact mechanism that underlies the development of diabetes has not been established. The three factors that appear to be related to diabetes are heredity, obesity, and a hormonal disturbance. The latter is much more complex than merely a deficiency of insulin. Experiments indicate that the pituitary gland and the adrenals play an etiological role in diabetes mellitus.

Clinical description. The development of the disease may be rapid, without obvious symptoms, or it may be insidious and remain undetected for a long period of time. It is common for the unsuspecting dia-

betic to seek medical assistance for the disturbing complications of the disease and for the metabolic disorder to be discovered during the examination. Complications that lead to detection include infection, pain, coldness of the extremities, and delayed healing after injury. Patients with well established diabetes mellitus complain of generalized weakness, increased thirst, frequent urination, and gradual loss of weight in spite of a good appetite. Pruritus is especially common and usually involves the genitalia. Impotence in the male and amenorrhea in the female are frequent presenting complaints of early diabetes. The degenerative changes are particularly disturbing, as they include generalized arteriosclerosis, early development of cataracts and retinitis, and serious infections.

A number of these symptoms and signs may be associated with or result from psychic conflict. Itching involving the genitalia and the decrease in sexual interest contribute to emotional complications. Obesity is probably the symptom most often related to psychological tension. The oral gratification derived from overeating as a substitute for affection and security often appears to be prominent in the premorbid personality makeup of the diabetic patient. In addition to this complex interaction of psyche and soma, it appears that a significant number of diabetics are pushed into the overt disease by a stressful situation. Psychoses caused by diabetes are rare, but when they do occur they are usually deliriums.

Differential diagnosis. Although the diagnosis of diabetes mellitus is occasionally suggested by the medical history, in most instances the discovery of glycosuria in a routine examination is the major factor in uncovering the disease. Glycosuria may be related to Cushing's syndrome and acromegaly and therefore must be differentiated from these conditions. Diabetic coma also presents a critical and difficult differential diagnostic problem, as glycosuria can accompany a cerebral vascular accident. It is also important to differentiate diabetic coma from a hypoglycemic reaction.

Management. Excessive anxiety and repeated exposure to stress complicate the management of this metabolic disorder. For example, the adult diabetic must resolve conflicts regarding the hereditary aspects of the disease, and the female diabetic must face increased risks in childbearing. For a parent of a juvenile diabetic, dietary restrictions and other limitations must be properly handled psychologically, so that the young patient will not feel abnormal or invalidated.

The treatment of diabetes mellitus includes controlling the patient's glucose and metabolism, maintaining general health, correcting nutritional abnormalities, educating the patient in self-care, and preventing and ameliorating the physical and psychological complications of the disease. In addition to diet, therapeutic measures include the use of regular

or modified insulin and the use of oral antidiabetic sulfonylurea compounds. Some juvenile diabetics use coma as a type of self-destruction; avoidance of this and other self-induced complications requires skillful psychological intervention.

Cushing's syndrome

Definition. Harvey Cushing in 1932 first published a description of the syndrome now known by his name. The clinical manifestations of Cushing's syndrome are caused by prolonged exposure to excess adrenocortical hormones. It is characterized by muscle wasting, obesity, osteoporosis, atrophy of the skin, and hypertension.

Epidemiology. Cushing's syndrome is a relatively rare disorder occurring in middle-aged people and somewhat more frequently in women than in men.

Etiology. This syndrome was originally associated with a basophilic adenoma of the pituitary gland. However, such tumors account for a very small proportion of individuals with this syndrome—less than 1 per cent of all pituitary tumors are of the basophilic type. It is now known that this syndrome has many causes, including exogenous steroids taken for therapeutic reasons. The most common causes include bilateral adrenocortical hyperplasia, adrenocortical adenoma and carcinoma, nonendocrine neoplasms (usually pulmonary in origin), adrenal rest tumors of the ovaries, and pituitary adrenocorticotrophic hormone-secreting tumors. These result in hyperfunctioning of the adrenal cortex and the excess production of adrenocortical hormones.

Pathology. In addition to the various types of primary pathology described above, the pathophysiology is important. Adrenocortical hormones influence many bodily functions and may result from an excessive secretion of pituitary adrenocorticotrophic hormones. Consequently, there are disturbances in electrolyte balance, carbohydrate and fat metabolism, protein regulation, and androgenic activity; the last results in virilism.

Clinical description. Patients with Cushing's syndrome have a characteristic appearance. There is an accumulation of adipose tissue, confined to the face, neck, and trunk, with the extremities being spared. Such patients are often described as having a buffalo appearance. In addition to this unusual fat distribution, there is an osteoporosis with dorsal kyphosis. It is not unusual to find purple striae over the abdomen, thighs, and upper arms. These patients bruise easily, with poor wound healing and a weakness and wasting of muscles. Fatigue and complaints of pain in the adipose tissue are common. Women are usually amenorrheic, and the masculinizing effects of the hormones produce a deepening of the voice, hirsutism, growth of the clitoris, and acne. Males are usually impotent.

This disorder is traumatic to the individual's psychic balance. Adjustment to a new body image that is repulsive to the person and to others, the pathology in the patient's sexual organs and interests, and the

consequent sexual confusion result in enormous anxiety. The patient's embarrassment restricts his normal social contacts, and a reactive depression or even a psychosis may result. These patients are usually withdrawn, emotionally labile or unstable, apathetic, impulsive, paranoid, and depressed.

Differential diagnosis. The diagnosis is established by finding the aforementioned symptoms and signs plus excessive excretion of steroids in the basal state. Further differentiation requires an exhaustive study of the individual, considering all the possible etiologies previously defined.

Management. If this syndrome is due to exogenous steroids, it is best to reduce steroid intake to the smallest effective dose or, if possible, to substitute a different type of therapy. Although many manifestations of Cushing's syndrome are reversible, two serious ones—hirsutism and osteoporosis—usually persist, despite the withdrawal of steroids. Adrenalectomy occasionally intensifies an accompanying depressive reaction, and during the postoperative period the suicidal risk is increased. An electrolyte imbalance due to disturbance in aldosterone may also occur postoperatively and result in delirium.

This disease may produce a traumatic experience that permanently affects the personality of the patient, even after removal of the cause of the pathology. The patient must be helped to find new methods of obtaining affection and of maintaining self-esteem. Previously established intimate relationships are often destroyed by the inability of friends or relatives to adjust to the change in the patient, and new relationships may have to be sought.

Acromegaly and gigantism. These are growth disturbances due to hyperfunctioning of the pituitary eosinophilic cells governing bodily growth. Since gigantism occurs in childhood, before epiphyseal closure has already occurred, there is an overgrowth of terminal parts of the skeleton, such as hands, feet, and jaw. Psychiatric symptoms include headache, loss of libido, and depressive and paranoid symptoms. These patients are frequently homosexual.

Addison's disease (chronic adrenal cortical insufficiency). This is an insidious disease caused by adrenocortical hypofunction and characterized by weakness, loss of appetite, nausea, loss of weight, pigmentation of the skin and mucous membranes, hypotension, and poor hydration. Psychiatric symptoms encountered are fatigability, mental instability, anxiety, depression, delirium, and overt psychoses characterized by paranoid hallucinations. Most of these symptoms are reversible with steroid therapy.

Porphyrrias

Definition. Under this heading are included at least two types of metabolic disorders—congenital or erythropoietic porphyria and acute intermittent or hepatic porphyria. The latter disorder is of interest to medical historians, for British psychiatrists recently

advanced the view that this was the psychotic disturbance that affected King George III, the monarch who initiated the repressive policies that caused the American colonies to rebel and ultimately achieve independence.

Epidemiology. Acute intermittent porphyria is the more common disorder of the two general types. It is more frequent in females (60 per cent) than in males (40 per cent) and is transmitted as a Mendelian dominant trait, although it may be sporadic or solitary. Congenital porphyria is a rare condition, more common in males than in females, and is transmitted as a Mendelian recessive trait.

Etiology. Porphyria is the result of an inborn error of metabolism. Porphyrin compounds occupy an important role in metabolic processes and are found throughout the body. In the congenital type of porphyria, the abnormal production of porphyrins is believed to occur in the bone marrow. In the acute intermittent type, excessive amounts of porphobilin and uroporphyrin are apparently produced in the liver. In the congenital type, the central nervous system rarely shows direct effects of the disorder. However, in the hepatic type, the central nervous system is frequently involved, and the patient may manifest disturbances in any area of thought and behavior.

Clinical description. Acute intermittent porphyria can manifest various symptoms, signs, and complications. It is believed that the majority, if not all, of the clinical findings can be explained on the basis of a disruption in the functioning of the nervous system. Abdominal pain is the most common symptom encountered. This symptom is thought to be the result of an autonomic neuropathy leading to an imbalance in the autonomic innervation of the gastrointestinal tract and other viscera. Other manifestations include convulsions, skin pigmentation, and excretion of a dark brownish red urine. Mental disturbances and polyneuritis are also frequently encountered. The mental symptomatology covers a wide spectrum of behavioral disturbances. If possible, an attempt should be made to distinguish those mental reactions that are a psychological response to the disease from those that are metabolic in origin. Responses can vary from extreme excitement to catatonic-like reactions. Hallucinations accompany the episodes of confusion. The entire treatment plan is complicated by the fact that these patients respond adversely to certain drugs.

Differential diagnosis. The differential diagnostic process does not usually include that of the common psychiatric disorders. However, acute porphyria must occasionally be distinguished from the neurological syndrome of Guillain-Barré. Often there is an excretion of a dark brownish red urine that points to the proper diagnosis. Other laboratory procedures are useful for diagnosis and therapy. For example, serum sodium frequently falls during an acute attack. This is thought to result from hypothalamic involvement,

which produces a transient secretion of an antidiuretic hormone.

Prognosis. The threat to life is directly related to the severity of the neurological involvement. In severely disturbed patients, the mortality may reach 80 per cent; it falls below 20 per cent in those who have little central nervous system involvement.

Management. These patients are sensitive to certain drugs that can precipitate or aggravate an attack of the disease. Barbiturates should never be administered under any conditions. Other agents that may precipitate attacks include the sulfonamides, ergot preparations, chloroquine, and alcohol. Because of their autonomic blocking activity, the phenothiazines are of considerable value. In addition to this blocking activity, the tranquilizing effect of these drugs adds immeasurably to the management of the disease. A dose of 25 to 30 mg. of chlorpromazine intramuscularly or orally may be given three times a day. Doses may be increased to 100 mg. four times a day. Rauwolfia alkaloids have been used with some success, and meprobamate is a safe substitute for barbiturates.

There is no specific treatment for this metabolic disorder, and for this reason avoidance of precipitating agents and other precautionary measures is advised. The ingestion of alcohol should be avoided. Relatives of patients with hepatic porphyria should be studied to determine whether latent porphyria is present in them.

Uremia

Definition. Uremia results from the kidneys' inability to remove toxic substances from the blood. These toxic substances are primarily the end products of protein metabolism and their derivatives.

Etiology. The breakdown products of protein metabolism appear to be a major etiological factor in this syndrome, but a detailed understanding of the mechanism of the toxic actions of these products remains relatively obscure. Although a major factor is the accumulation of urea, it is not the only one. Other possibilities that have to be considered are creatinine, uric acid, and the accumulation of inorganic and organic acid, proteolytic enzymes, and several other substances. Contributing factors are hypocalcemia, dehydration, acidosis, and hyperkalemia.

Pathology. Numerous toxic substances accumulate and circulate in the blood supply throughout the body. Brain cells are relatively easily damaged and hence the importance of preventing accumulation of toxic substances. Early in the course of the disease, cortical neurons and astrocytes undergo irreversible changes. As the disease continues, perivascular areas of necrosis occur within the brain, and there is demyelination in the cerebral hemisphere.

Clinical description. Early in the course of this disease, the patient reports the feelings of apathy, fatigue, and anxiety, increased drowsiness, and an

inability to concentrate, retain newly acquired information, and make decisions. A dull headache is common. Unlike hypertensive headaches, they are not focalized but are vague and generalized. The central nervous system manifestations occasionally undergo remission, and for brief periods of time the patient may feel better, think more clearly, and perform adequately. As the uremic state worsens, the memory defect worsens from recent to remote areas, speech becomes slurred, and the patient's generalized muscular weakness interferes with coordination. Irritability is characteristic, and depressive paranoid features are rather frequent. Delirium may ensue, as may other overt psychoses. These mental changes and the cyclic course of the disease are of considerable importance in establishing testamentary capacity in older patients with uremia. Often the patient progresses through a confusional state to coma and finally death. Consistent with this picture, the patient may manifest focal neurological disturbances. Generalized seizures occur in the terminal stages.

Differential diagnosis. The two most common metabolic disorders that result in impairment of brain function are uremia and diabetes. Today it is rare that the existence of uremia is not known prior to the onset of mental symptoms. This is not the case in diabetes. Although seizures may accompany uremic coma, they may also continue after recovery from a uremic episode. In addition to focal brain changes that may produce epileptogenic foci, there is a persistence of generalized cortical irritation. Therefore, the recurrence of seizures is not an indication that the level of toxic substances in the blood stream has again increased.

Treatment. In recent years the use of external hemodialysis, the artificial kidney, has been very useful in preventing the development of uremia in many patients, even though the long term prognosis is guarded when dialysis is used. Reports indicate that, in some instances, external hemodialysis can produce a reversal of mental and neurological abnormalities. However, in continued dialysis over a prolonged period of time, depression is often encountered. Otherwise, treatment is based on the medical or surgical management of the underlying kidney pathology and the proper handling of the emotional reaction to a severe life-threatening disease.

Suggested Cross References

See Solomon's Chapter 10 on neurology for further discussion of the senile and presenile brain diseases. Paranoid ideation and depression, which commonly form a part of the clinical picture of these conditions, are discussed in greater detail in Chapter 17 on the affective reactions, in Section 16.1 on paranoid reactions, and in Section 24.2 on the neurotic depressive reactions. Milieu therapy, which constitutes a

major management modality in these conditions, is further discussed in Chapter 36.

Various hormonal disorders are covered in Cleghorn and McClure's section on the psychosomatic aspects of endocrine disease (Section 30.9). For information regarding the biochemical processes associated with hypoglycemia, see Section 2.2 on neurochemistry in Area B, on the basic behavioral sciences. For a more detailed discussion of cretinism, see Cytryn and Lourie's chapter on mental retardation (Chapter 22). Subacute combined degeneration and its relationship to pernicious anemia are covered in Waggoner's section on brain syndromes associated with diseases of unknown cause (Section 19.3).

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19.3 BRAIN SYNDROMES ASSOCIATED WITH DISEASES OF UNKNOWN CAUSE

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Paralysis Agitans

Although paralysis agitans, as first described by Parkinson nearly 150 years ago, afflicted people in the senile or presenile period, the term has since come to include conditions with comparable symptoms caused by processes other than senility and vascular disease. As originally described, it was a degenerative extrapyramidal system disease involving primarily the basal ganglia. Since the original description—especially since the recognition of various other causes, such as encephalitis—the syndrome has been classified as idiopathic, postencephalitic, vascular, or toxic.

Etiology. The cause of the idiopathic variety, as the name implies, is unknown. Some cases develop years after the patient has had an encephalitis. Certain encephalitic epidemics seem to result in more postencephalitic paralysis agitans cases than others. This was true of the epidemic occurring after World War I. The condition may also result from certain intoxications, such as carbon monoxide.

Pathology. Although the pathology is primarily in the basal ganglia affecting the substantia nigra, the lenticular nucleus, and the caudate, pathological changes have been found in other parts of the central nervous system as well. Some authors consider the substantia nigra to be most seriously affected in postencephalitic cases.

Clinical description. The symptoms are primarily extrapyramidal. They develop gradually and are usually characterized by tremor, slowness in movement, and fatigue. There is also an increase in muscle tone of the type described as rigidity, which results in a characteristic body posture and facial expression, the latter being described as a masked facies, with absence of blinking. The tremor is coarse, involving primarily the upper extremities and may be seen best in the hands. It may be unilateral or bilateral, and the characteristic movement of the thumb and fingers is described as "pill rolling." The tremor and to a certain extent the rigidity may disappear in reaction to a sudden stimulus.

There is marked slowing of movement except for the momentary reaction to an exciting stimulus. Movement of an extremity by the examiner may result in a kind of jerky resistance described as the cogwheel sign. Frequently, there is an involuntary tendency to increase the speed of gait (festination), the patient being able to stop only by coming against a solid object. The handwriting may be small, cramped, and quavering, and it is quite characteristic.

Some authors, such as Diller and Riklan, think that there is no parkinsonian type of personality but do suggest that a large percentage of patients come from broken homes and describe their childhood as having been unhappy. In Diller and Riklan's series, 59 per cent were considered to have been normal or neurotic, 14 per cent to have had mental deterioration, and 5 per cent to have been schizophrenic.

Mitscherlich, in a series of 40 patients, noted that such patients had in common a compulsive, neurotic character with closely associated aggressive impulses. Other authors have observed that some paralysis agitans patients are driving and reckless, have assertive personalities, and do not respond favorably to medical therapy.

Most authors think that significant mental symptoms in patients with paralysis agitans are not usual. In general, such patients appear to have their symptoms coincidentally with the extrapyramidal disease rather than as a result of or in association with it. The following case is illustrative of this point of view.

A 48-year-old white female had a history of paralysis agitans symptoms, beginning approximately at the age of 45. There was no history of a preceding encephalitis, even though the onset of symptoms in this instance was somewhat earlier than might be expected in the idiopathic type. At about age 25, the woman had severe phobias and obsessional thinking. By the time of the onset of the Parkinson syndrome, the phobic and obsessional reactions were being manifested as delusions and were associated with a severe depression. The patient had been the aggressive member of the family, taking almost the entire responsibility for the children and even for her husband's business. The severe depressive reaction, with much suicidal preoccupation, was apparently concerned primarily with her basic anxiety and her awareness of the inevitable progression of her disease.

In this patient, the psychiatric symptoms preceded by several years the onset of the paralysis agitans, and the two conditions were actually coincidental.

If a sufficiently careful history is taken, it will almost inevitably be determined that there is not a significant relationship between mental symptoms and paralysis agitans other than those associated with anxiety and depression. The exceptions are those instances where the symptoms are the result of generalized cerebral disease, as in encephalitis or with vascular changes.

Differential diagnosis. The differential diagnosis is usually not particularly difficult, although early in the disease hereditary familial tremor may be confused with paralysis agitans.

Prognosis. The prognosis in paralysis agitans is one of inevitable progression over a number of years. Death usually results from an intercurrent infection or coincidental disease. Some of the mental symptoms may result from an awareness of the inevitable progression of the disease.

Treatment. Treatment of paralysis agitans is palliative only. Adequate rest is of vital importance. Drugs with parasympatholytic action are most effective. There are several synthetic drugs of this type, such as trihexyphenidyl (Artane) and benztropine methanesulfonate (Cogentin). Antispasmodics, such as procyclidine (Kemadrin) and cyerimine (Pagitane), may be of value. It is often necessary to try several drugs or combinations before the best treatment for the individual patient is found.

Surgical procedures have been reported to be of great value in selected cases. Psychiatric symptoms associated with paralysis agitans should be treated in accordance with the type of symptom manifested. Thus, paranoid reactions may be controlled in some cases by the use of phenothiazines such as Stelazine, but care must be exercised not to exaggerate the muscular disability. In depressive reactions, antidepressant drugs such as imipramine (Tofranil) or desipramine (Norpramin) may be useful. The author has found that the monamine oxidase inhibitors are at times of value. Appropriate precautions in the use of such drugs should always be observed.

Subacute Combined Sclerosis

The condition described as subacute combined sclerosis or posterolateral sclerosis occurs most commonly in association with pernicious anemia. It may also be seen in various toxic states and in conjunction with or as a result of various infectious diseases causing some disturbance in the nutritional state of the individual. Since it may occur in association with so many different types of difficulty, the symptoms are likewise extremely variable.

Pathology. The pathological changes are primarily in the spinal cord and consist of degeneration of the posterior and lateral columns of the spinal cord. There is loss of myelin with some reparative gliosis.

Clinical description. It is characterized in general by subjective and, at times, objective sensory changes and by motor symptoms. The sensory symptoms are primarily those of various types of paresthesias. The motor symptoms are associated with varying degrees of incoordination, muscle weakness, and fatigue and by variable manifestations of pyramidal tract involvement, such as spasticity, increased reflexes, and abnormal reflexes, such as Babinski's sign. There is loss of vibratory and position sense in the lower extremities and a positive Romberg's sign.

Pernicious anemia is defined as a chronic macrocytic hyperchromic anemia with megaloblastic hyperplasia of the bone marrow. It is inevitably associated with absence of hydrochloric acid in the gastric con-

tents. This finding may be present for many years before the onset of symptoms. The laboratory and clinical manifestations are assumed to be the result of the reduced ability of the individual to absorb vitamin B₁₂ from the gastrointestinal tract secondary to failure of the gastric mucosa to secrete the intrinsic factor. Pernicious anemia occurs most often in the white race and after the 5th decade of life.

Patients with severe anemia may have transient mental changes, consisting of irritability, memory defects, hallucinatory manifestations, and even disorientation. If the diagnosis is made early and treatment promptly instituted, such symptoms tend to disappear when the blood count is restored to normal.

Lewin suggested that depression may be a common denominator in the etiology of pernicious anemia by "reducing the intrinsic factor below the critical level required for normal erythropoiesis," and he concluded that a genetic factor leaves certain people prone to such events. Wiener and Hope have pointed out that pernicious anemia is associated with a subacute degeneration of the brain that is essentially the same as the more familiar subacute degeneration of the spinal cord, and noted that there is nothing consistently characteristic about the resultant mental symptoms. They pointed out that the various behavioral disorders may appear years before the anemia is diagnosed. Numerous reports in the literature indicate varying degrees and types of mental symptoms from mild states of depression to actual psychosis. Wiener and Hope emphasized that those patients with neurological and psychiatric manifestations require a greater amount of therapy than is required to maintain a normal blood picture.

It is vitally important that the diagnosis of pernicious anemia as a possible factor in the patient's mental symptoms be determined early, since the degenerative changes associated with this condition can be prevented by early and active therapy but, once established, usually persist.

Behavioral changes are often seen as the earliest sign of the disease. The following case illustrates this sort of reaction.

The patient, a 55-year-old white housewife, had a history of almost chronic depression but with marked exaggeration in episodes occurring over a period of 18 years. The patient believed that the original depression was precipitated by a hysterectomy. Because her mother had had pernicious anemia, a gastric analysis was done at the time of the hysterectomy, and a histamine-fast achlorhydria was found. However, no treatment for the potential pernicious anemia was given, since the blood picture, with the exception of a low white count, was considered to be within normal limits. Over a period of years, the patient was in a number of hospitals with varying treatments for her depression, including shock therapy.

During the course of evaluation for the fifth acute episode of depression, the history of the achlorhydria found 18 years previously was noted. A gastric analysis demonstrated the continuation of this finding and blood changes that were suggestive of pernicious anemia. The patient's blood picture returned to normal with the injection of 100 µg. of vitamin B₁₂ every week for 2 weeks, followed by 100 µg. every 3

weeks. However, the depression, complicated by a number of phobias, continued, and so the vitamin B₁₂ injections were increased to twice weekly, with considerable improvement of the depression but with continuing anxiety, which was controlled by a mild tranquilizer medication.

Differential diagnosis. In the differential diagnosis, it must be remembered that endocrine dysfunction, various infectious diseases, and nutritional and toxic conditions may be associated with posterolateral sclerosis. Similar clinical neurological pictures may be found in multiple sclerosis, primary lateral sclerosis, and various other spinal cord syndromes. Since the most common source of such cord changes (subacute combined sclerosis) is pernicious anemia, it must be carefully looked for in the diagnostic studies.

Treatment. In those patients where the diagnosis of pernicious anemia can be established, vitamin B₁₂ injections should be used, generally in much larger doses than are ordinarily used for pernicious anemia without neurological or psychiatric symptoms. A dosage of 50 µg. intramuscularly every other day until remission of symptoms occurs is recommended. Folic acid is contraindicated since it may aggravate the neurological lesions. Vitamin B₁₂ can be used in conjunction with antidepressant drugs in those patients who have a significant degree of depression. Symptoms such as irritability and memory defects, tend to disappear soon after the beginning of adequate treatment for the anemia. If such symptoms persist, they should be treated as comparable symptoms in a chronic brain syndrome.

The prognosis is somewhat variable, dependent on the source of symptoms and time of diagnosis. Similarly, treatment is dependent on the source of symptoms, with good results frequent when treatment is instituted early.

Systemic Lupus Erythematosus

Systemic lupus erythematosus is a disease condition characterized by skin eruption, prolonged fever, visceral lesions, and other constitutional symptoms. The severity of the condition may vary considerably from that of a very mild involvement to a severe and fulminating type of condition. Patients with this condition may have involvement of any part of the nervous system, accompanied by severe neurological or psychiatric disturbances. Clark and Bailey pointed out that these symptoms may be of the utmost variation and may be misinterpreted, leading to a mistaken diagnosis.

Clinical description. The disease is found most commonly in young women but may affect persons of either sex and at almost any age. Its course may vary from acute to subacute to chronic. Occasionally the serological reaction for syphilis may be falsely positive. The condition may involve almost any organ of the body and is associated with a leukopenia and a positive lupus erythematosus blood clot test. Lupus erythematosus cells may be found in the sternal mar-

row. The disease is an inflammatory process involving connective tissue and smaller blood vessels. The clinical picture varies with the acuteness of the disease and the organ involved.

In Clark and Bailey's series of 100 cases, psychiatric phenomena were found in 17 patients. Seven had anxiety with personality changes and memory defects, 3 showed emotional lability, and there was mental deterioration in 2, depression in 2, obsessive trends in 1, paranoid reaction in 1, and hallucinations with fever in 1.

In another series of 40 patients reported by O'Connor, 22 patients had psychotic episodes during one or more hospitalizations, four had neurotic symptomatology, and only 14 had no significant psychiatric symptoms. O'Connor feels that those patients who became psychotic had a more severe form of systemic lupus erythematosus and that a larger amount of steroid, nearly twice as much, was necessary to control the symptoms than in the nonpsychotic patients. He also concluded that the presence of a psychosis is not a good reason for the complete and immediate withdrawal of steroid therapy.

McClary et al., after studying 14 patients, feel that there is a predominance of obsessional features in the personality patterns of patients with disseminated lupus erythematosus. Since the condition results in a restriction of physical activity, this becomes a severe threat to those persons who have made use of activity as a means of relieving anxiety and depression. They raised the possibility that the emotional tensions generated in personal conflicts may contribute to the tissue pathology of the disease. O'Connor pointed out that psychotic reactions in this disease were described before the advent of hormonal therapy. Since both neurotic and psychotic reactions occur during the use of cortisone and adrenocorticotrophic hormone and since these are used in the treatment of lupus erythematosus, some correlation might be expected. Cortisone, he said, may be a potentiating factor in the development of the psychosis rather than the cause. He differentiates between an acute brain syndrome with delirium and a schizophrenic-like reaction. He believes that more than one factor is responsible for the psychiatric disturbances seen in systemic lupus erythematosus. The possible factors are diffuse organic brain damage, large doses of steroids, and psychological factors, such as a previous personality disorder or acute emotional trauma. All these factors must be considered in order to manage the individual patient appropriately.

Astimofeev, in reporting on 18 patients with systemic lupus, states that all had psychic disturbances. These were described as delirium, hypnotic hallucinations, anesthetic manifestations, and psychotic symptoms of an organic nature with epileptiform seizures, memory disorders, and dementia. There was some discussion of the effect of hormone preparations on the psychiatric symptoms.

Messel and Sullivan have reviewed the literature of the past 60 years concerning the association between psychosis and systemic lupus erythematosus and reported that 227 cases of this association were found. The average incidence of psychosis in the cases reviewed was about 22 per cent. The psychiatric manifestations are variable and may be associated with a neurological disorder. The behavioral disorders, including psychosis, may antedate by many years the other features of the disease and psychosis due to the disease may respond to steroid therapy.

Differential diagnosis. This condition is of particular importance in the differential diagnosis from functional psychosis. The psychiatric symptoms demonstrated by patients with systemic lupus erythematosus should be considered as manifestations of an organic brain syndrome, acute or chronic, as demonstrated by the history of the individual case.

Prognosis. The process may run a very acute course, with death occurring in a few weeks or months, or there may be remissions, with the disease lasting several years. The prognosis must be considered serious.

Treatment. The treatment of systemic lupus erythematosus is primarily by the use of steroids. Some authors recommend a decrease in the amount of steroid therapy if psychiatric symptoms develop. Other authors feel that the dosage should be increased under such circumstances. There is fairly general agreement that steroid therapy should not be discontinued if psychiatric symptoms appear. The physician's judgment concerning the individual patient must be exercised in such instances. Phenothiazines may be used in conjunction with steroid therapy. The types of phenothiazines used should be correlated with the kind of psychiatric symptom complex. Thus, in those with paranoid or hallucinatory manifestations, the more potent phenothiazines are apt to be more useful; antidepressant drugs should be tried for those patients with depression as the significant psychiatric symptom.

Wilson's Disease

Wilson's disease or hepatolenticular degeneration is a disease entity with characteristic clinical and neuropathological features.

Pathology. The pathology consists of atrophy of the lenticular nuclei with loss of cells and with glial overgrowth. Associated with these changes is a disturbance of liver function, usually a cirrhosis. One case has been reported of fracture of the liver, followed by fairly characteristic symptomatology of Wilson's disease. At autopsy, loss of cellular formation and overgrowth of glia in the lenticular nuclei were found.

Clinical description. The disease is characterized by a chronic, progressive course, with a rigid type of hypertonicity, involuntary movements, and mental

disturbances. It generally occurs in the 3rd to 5th decade and is associated with liver sclerosis and with degeneration, primarily of the lenticular nucleus but with occasional involvement of the caudate nucleus as well. There is a general disturbance of protein metabolism, primarily involved with the inability to bind serum copper.

Usually, the onset is gradual, with a tremor not unlike that of paralysis agitans and hypertonia also similar to that of paralysis agitans. In the characteristic case, there is a Kayser-Fleischer ring, a greenish brown ring in the cornea. In the majority of cases, some emotional disturbance occurs, and this varies considerably in degree and quality. In some cases the behavioral disturbance takes the form of loss of impulse control and, in other cases, emotional lability. There is a characteristic organic brain syndrome of the chronic type associated with suspiciousness, impairment of memory and judgment, and progressive mental deterioration. In some instances, psychosis with delusions and hallucinatory manifestations may occur.

Knehr and Bearn reported a study undertaken to examine the nature and extent of psychological impairment in seven patients with Wilson's disease. There was loss of capacity for conceptual thinking in all cases, a lowered flicker frequency threshold, and prolonged after-image. On the other hand, the accuracy of simple pattern perception and size of visual span of attention was similar to that found in normal subjects.

Etiology. There is much discussion in the literature about the pathogenesis of the condition. A number of theories have been advanced: (1) that the primary disease occurs in certain areas of the brain, which results in disease of the liver; (2) that the findings of pathology in both brain and liver are expressions of an heredodegenerative process; (3) that an underlying metabolic difficulty is responsible for changes in both organs; (4) that changes in the brain are produced by disease of the liver; and, more recently, (5) that disturbances in copper metabolism are primarily the source of the difficulty. Reports in the literature indicate that factors of the last three hypotheses may all be involved in the etiology of this difficulty.

Differential diagnosis. In the differential diagnosis, multiple sclerosis may be considered, but the type of tremor and hypertonicity are quite different. Paralysis agitans may present a quite similar clinical picture, and the differential diagnosis may be quite difficult. The most characteristic difference is the Kayser-Fleischer ring.

Pseudosclerosis (Strümpell-Westphal disease) is considered by some to be in the same category as Wilson's disease. Others consider it to be a separate entity. The clinical and neuropathological findings are essentially the same, and it does not seem to be important to make a differential diagnosis. These

cases also demonstrate significant mental disturbance with restlessness, emotional instability, and progressive mental deterioration.

Progressive pallidal degeneration (Hallervorden syndrome) is a somewhat similar condition associated with degeneration of the pallidum and with degenerative changes in the striate body and in the cerebrum. The condition occurs in childhood or adolescence, and the course may run for several years. There is an associated rigidity, difficulty in speech, and the development of involuntary movement. In all such cases there is reported progressive dementia. Premortem diagnosis is difficult.

Prognosis. The prognosis is not good, since the disease is progressive.

Treatment. Recently, chelating agents have been used with some possible benefit. In cases that manifest suspiciousness or paranoid symptomatology, particularly if there is a tendency to act on such ideas, the more potent phenothiazines may be used; the muscle symptoms under such circumstances may be exaggerated.

Friedreich's Ataxia

Friedreich's ataxia or hereditary spinal ataxia is a condition that occurs fairly early in life, usually beginning in the first or second decade. It is characterized by the gradual development of ataxia, until walking and eventually even standing and sitting become impossible.

Etiology. The cause of the disease is not known, but it is generally considered to be both inherited and familial, although it may appear sporadically. The transmission of the disease is frequently through the mother. The symptoms often appear to have been precipitated by infection.

Pathology. The neuropathological changes are found primarily in the spinal cord, although some changes may be found in the cerebellum. Some degeneration of the pyramidal tracts may occur, but the more marked changes are found in the posterior column and the spinocerebellar tracts.

Clinical description. The signs and symptoms, as indicated by the name, are primarily those of ataxia with loss of position sense. Muscle irritability may be noted. Nystagmus is almost always present. Tendon reflexes in the lower extremity are usually lost early, but late in the disease evidence of pyramidal tract disease may be found.

Since the disease affects primarily the posterior and lateral columns, both sensory and motor changes are noted. The sensory changes are manifested primarily by loss of position and vibration sense; tactile, pain, and temperature senses are usually normal. The condition is associated frequently with pes cavus, and in many cases there are changes in the spine.

In most instances there are other neural and extra-neural abnormalities. In families in which the disease occurs, members of the family who do not have

symptoms of the disease may be found to have various other abnormalities. Malformations or somatic anomalies may be present almost anywhere in the body. The condition commonly occurs in individuals who are mentally retarded; focal changes have been reported. Various kinds of mental disturbance have been reported, including paranoid delusions, outbursts of excitement, and depressive and confusional states. The condition runs a slow, progressive course; Lowenberg and Waggoner reported the case of a patient who was first seen in 1916 and who died 14 years later.

Differential diagnosis. The differential diagnosis is not difficult except from heredocerebellar ataxia, which usually manifests itself later in life. The presence of nystagmus, speech disturbance, ataxia with evidence of posterior and lateral column involvement is characteristic of Friedreich's ataxia.

Prognosis and treatment. The disease is a slow, progressive one, with inevitable complete incapacity. There is no treatment for the disease other than the control of aberrant behavior by the use of psychotropic drugs.

Diffuse Cerebral Sclerosis

Diffuse cerebral sclerosis is a term used to describe a large number of degenerative conditions characterized by widespread subcortical demyelination, usually associated with some neuronal degeneration and glial proliferation. Although rare, Schilder's disease is the most common of a number of similar types, which include Pelizaeus-Merzbacher disease.

Pathology. The neuropathology of diffuse sclerosis is characterized by discrete and confluent areas of demyelination, somewhat similar to the findings of multiple sclerosis. Gliosis develops as the disease progresses.

Clinical description. Schilder's disease occurs primarily in infants, adolescents, and young adults. The disease can begin without warning and is manifested early, primarily by mental changes and by visual disturbances. There is a decline of intellectual capability, accompanied by character changes. The child may become apathetic and confused within a few weeks; there is often evidence of pyramidal tract disturbance. The onset may be either acute or insidious, with the occurrence of symptoms of various sorts, but characteristically the picture is one of a chronic organic brain syndrome, which may be complicated by the occurrence of convulsive attacks and visual disturbances.

Differential diagnosis. It may be difficult to differentiate this condition from encephalitis and perhaps even brain tumor. However, there is no clinical evidence of infection, as is frequently seen in encephalitis, nor is there evidence of increased intracranial pressure, as in brain tumor. There are more mental changes than occur in multiple sclerosis.

Pelizaeus-Merzbacher disease is an unusual form of diffuse sclerosis. There seems to be a strong heredo-familial trend in this disease. It is characterized by a combination of cerebellar and cerebral symptoms. The symptoms are manifest early in life, but it is a slow, progressive disease, usually lasting for a number of years. The mental changes are those characteristic of an organic brain disease associated with mental deterioration. Although this disease may be confused with Schilder's disease, the course of the disease is quite different—that of Schilder's disease being much more rapid. The mental symptoms of both Schilder's disease and other forms of diffuse sclerosis are not characteristically diagnostic.

Prognosis and treatment. The prognosis is bad, and there is no known treatment. However, aberrant or hyperactive behavior should be controlled by the use of psychotropic drugs.

Huntington's Chorea

In 1872, Huntington described a hereditary disease associated with progressive degeneration of the basal ganglia and cerebral cortex and characterized by choreiform hyperkinesia and a chronic progressive mental deterioration. The initial symptoms usually appear between 35 and 50 years of age. It is commonly an inherited familial disease. It involves both Caucasian and Negroid races. The disease is without known etiology.

Pathology. Neuropathological changes are found primarily in the striatum, neostriatum, and cerebral cortex. Neuronal degeneration is followed by gliosis.

Clinical description. Its onset is insidious, with restlessness, clumsiness, purposeless involuntary movements, and serious mental changes. These symptoms are followed by facial grimacing and involuntary choreic movements of the fingers. Difficulty in speech occurs early, and in severe cases there are choreic movements of the tongue, lips, palate, larynx, and diaphragm. Muscular hypertonicity occurs, with grotesque postural attitudes.

There is no difference with regard to sex involvement, and occasionally cases occur without definitive family history. Once the disease has developed in a family, it tends to continue from one generation to another. As many as half of the members of the family may develop the disease. As has been pointed out, the disease is degenerative in character.

Mental symptoms occur in all cases and are those of a progressive, chronic, organic brain syndrome, characterized by indifference, apathy, impaired comprehension, and loss of memory. There may be associated periods of irritability and of impulsive behavior. In some instances the patient may develop characteristic paranoid ideation, and there may also be evidence of anxiety reaction and contrasting euphoria and depression.

Prognosis and treatment. The disease is progressive, inexorable, and incurable. Treatment is of

no significant value, although the phenothiazines seem to give some relief for the muscular hyperactivity.

Myasthenia Gravis

Myasthenia gravis is a condition characterized by excessive fatigability of the voluntary muscular system. There is marked weakness or temporary paralysis of muscle groups after exercise. Those muscles innervated by the bulbar nuclei are usually the first and most seriously involved. Some involvement of involuntary and smooth muscles has also been reported. The actual cause of the condition is not known, although numerous factors have been blamed—the most common one being an involvement of the thymus gland.

Clinical description. The picture of mild curare poisoning is clinically similar to that of myasthenia gravis, and myasthenic muscles respond to a much greater degree to curare than normal muscles. The age of onset is usually in the 2nd to 4th decade, and it is said to occur more commonly in females than in males. The most common presenting symptoms are disturbance of extraocular movement and drooping of the eyelids. The symptoms become more marked on exercise and are relieved by rest.

The disease is usually slowly progressive but may not be so in all cases. Mental symptoms are not of the organic brain syndrome type but, rather, are those of a reactive depression secondary to the presence of the symptomatology of the disease or of anxiety.

Prognosis and treatment. The prognosis of the disease is fair, with considerable relief from the symptoms by the use of a cholinesterase inhibitor such as pyridostigmin bromide (Mestinon). Antidepressants may be used with caution if indicated by the patient's condition. In these patients the amphetamines should be used only with extreme caution. Anxiety, when present, is best treated by the less potent phenothiazines such as chlorpromazine (Thorazine), rather than by such tranquilizers as chlordiazepoxide (Librium), diazepam (Valium), or meprobamate, which may increase the muscle disability.

Periodic Psychoses Associated with Peculiarities of Water Metabolism

These are unusual conditions in which a marked increase in the intake and output of water is associated with the development of an acute brain syndrome. The author has seen two such cases in which, apparently as the result of an emotional disturbance, both patients markedly increased their water intake and subsequently demonstrated disturbances in attention and concentration, confusion, disorientation, and delusional and hallucinatory manifestations. The patients were both female. Hospitalization and control of fluid intake resulted in a disappearance of the symptoms within 3 and 4 days, respectively. One patient was seen during the fifth episode of acute psychotic reaction, the other patient during the

second episode. No other source of mental symptoms had been demonstrated by previous studies.

Lesokhina, in reporting on some peculiarities of water metabolism in periodic psychoses, described 27 women, the majority of whom had had more than five psychotic attacks with motor agitation. During the attacks the hydrophilic properties of the body tissues were increased as compared with normal and interattack figures. Posterior pituitary preparation (Pituitrin) given during the attack had no effect on the water output. In the apparently normal intervals, it produced the usual effect. Lesokhina suggested that the increased tissue avidity for water and the other associated somatic changes are manifestations of stress reaction to an unknown toxin. Such a reaction probably occurs in a response to a significant degree of emotional stress.

Treatment. In the treatment of such psychoses, the patient must be under careful medical supervision, which can be adequately done only in a hospital situation. The primary purpose of hospitalization is to limit the fluid intake for a sufficient length of time, so that the patient does not revert to this type of behavior when supervision is discontinued. Psychotherapy is of value for the underlying neurosis.

Amyotrophic Lateral Sclerosis

Amyotrophic lateral sclerosis is a disease involving the cells and pathways of the pyramidal tract from the cortex to and including the spinal cord. It generally manifests itself in the 4th and 5th decades, but it may occur at other ages. The cause of the condition is not known. It is primarily a disease of the spinal cord and is associated with progressive muscular atrophy. There is some suggestion that the condition may be familial or hereditary, but it is not generally considered in this category.

Etiology and pathology. A trauma has been considered a causative or precipitating factor by Hassin and others. Waggoner and Lowenberg, however, do not believe that trauma is significant etiologically. They reported a case in which pathological evidence of trauma to the spinal cord existed coincidentally with the characteristic neuropathology of amyotrophic lateral sclerosis. These changes are manifested by reduction in pyramidal cells of the motor cortex, demyelination of the pyramidal tracts, and loss of the anterior horn cells of the spinal cord.

Clinical description. Atrophy of muscles, fibrillary tremors, spasticity, exaggerated tendon reflexes, and positive Babinski's signs are characteristic neurological findings of amyotrophic lateral sclerosis.

The mental symptoms are those of a chronic brain disorder but are not characteristic of the disease. Memory loss, difficulty in attention and concentration, emotional instability, and unmotivated laughing and crying may occur. There is usually a depressive reaction, associated with an awareness of the progressive nature of the disease. Some authors

consider the mental symptoms to be fortuitous, and others think the mental symptoms are directly related to brain changes.

Prognosis and treatment. The prognosis is inevitably bad, since the disease progresses to a fatal issue in 1 to 3 years after the appearance of the first symptoms. There is no treatment useful in controlling the progress of this disease. Some relief from discomfort may be obtained from the use of tranquilizers, particularly those that tend to have a muscle-relaxant effect, such as Valium and meprobamate.

Cerebral Palsy

The term "cerebral palsy" refers to a variety of conditions in which there is a motor deficit resulting from defect of or injury to the motor centers or pathways in the central nervous system. The term derives its usefulness from the fact that it describes a group of patients who require similar specialized programs of therapy, management, and education. It applies to sequels of brain disease, particularly when the disease is congenital in origin. It is not usually thought of in connection with progressive disorders or the active phase of an acute disease process. Generally, it applies to illnesses that lead to disability during childhood. It covers such disorders as hemiplegia, spastic diplegia or paraplegia, complex diplegia or quadriplegia, choreoathetosis and related dystonic states, and ataxia.

Etiology. The etiology is some kind of intrauterine defect or birth injury resulting in damage to the motor system.

Clinical description. Such patients have weakness or paralysis of involved motor structures with incoordination and dystonic movements often occurring as a prominent feature. Not infrequently there are also choreoathetotic movements on the involved side.

Mental changes do not occur as a consistent manifestation of any of these conditions but occur only in those cases in which the cerebral involvement is of such nature as to produce mental disability. The condition is not commonly complicated by mental symptoms. The most common manifestation is a motor disorder. In some instances it may be associated with a degree of mental retardation.

Prognosis. The condition is not progressive or degenerative. With appropriate training and exercises, considerable improvement is possible.

Treatment. Since the manifestations of this condition are extremely variable, the treatment must be directed at the specific symptomatology the patient presents. In those instances where mental changes occur, curative treatment offers little of value; hyperactivity or disturbing behavior may be controlled by appropriate tranquilizing medication.

Creutzfeldt-Jakob Disease

This is a diffuse degenerative lesion involving both the pyramidal and extrapyramidal systems. The condition usually occurs in the presenile period. There is

some indication that it may be a deficiency disease. The actual cause of it is not known, and it is probably better considered as a degenerative condition.

Clinical description. Warick et al. suggested that a number of similar disorders in which the etiologic factors are unknown should be grouped together. They described three stages of the disease, the first characterized by mental changes of depression, anxiety, loss of interest, memory loss, and episodes of inconsistent behavior. These become associated with some disturbances of gait, loss of sleep, and impairment of speech. The second stage is characterized by overt psychotic and neurological changes, with progressive narrowing of interest, confusion, agitation, apathy, and intellectual deterioration. The third or terminal stage is characterized by extreme dementia, generalized hypertonicity, and profound speech disturbance.

The condition should be considered a progressive degenerative disease with the mental symptoms of a chronic brain syndrome. The usual course is about 1 year, and it usually occurs in the 3rd to the 5th decade. The first manifestations are usually those of irritability, anxiety, and depression, with gradual development of various motor disturbances. There are no characteristic mental changes, but the findings rapidly become those of a severe dementia.

Prognosis and treatment. The prognosis is inevitably bad, and there is no known treatment.

Suggested Cross References

Schilder's disease and cerebral palsy, which are mentioned in this section, are presented in terms of their effects on intellectual functioning in Chapter 22, on mental retardation. Paralysis agitans, subacute combined sclerosis, Friedreich's ataxia, Huntington's chorea, and amyotrophic lateral sclerosis are further discussed from a neurological point of view by Solomon in Chapter 10 on neurology.

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Chapter 20

Brain Disorders. III: Associated with Trauma, Poisons, Drugs, Infection, and Neoplasm

20.1 BRAIN SYNDROMES ASSOCIATED WITH TRAUMA

HENRY W. BROSIN, M.D.

Introduction

The need for careful review of the medical status of brain disorders associated with trauma has become increasingly evident. On the one hand, the diagnosis, evaluation, and treatment of head injuries have become more complicated. Concurrently, psychiatric syndromes following injury to the head are of growing medical interest because of their frequency, severity, and medicolegal importance.

Changing medical concepts. Prior to 1940, psychiatrists and neurologists were concerned primarily with the demonstrable organic damage which resulted from head injury, and with the treatment of gross sequelae, such as epileptiform attacks and major deviations in behavior, which were readily apparent. However, over the past 40 years, physicians have gradually come to realize that injury to the head does not necessarily involve injury to the brain. Nor does brain injury inevitably result in demonstrable disabling symptoms or mental disorders.

In brief, current medical concern is no longer restricted to the nature and residual effects of permanent brain damage. It has been extended to apply to all syndromes following head injury, which may, or may not, involve brain damage. And, concomitantly, clinicians have become aware of the innumerable complex and subtle variables which must be considered in connection with such phenomena. These include the patient's pretraumatic personality (including his capacity for object relationships, and the conscious and unconscious factors which governed his relations with other people); his occupational and

domestic history; and, in some cases, the circumstances of the accident itself. Investigation of the patient's post-traumatic behavior is equally crucial, of course. And, in fact, although evaluation of the complex interaction of psychosocial variables is an inherent part of psychiatric practice, perhaps nowhere is a more intricate combination of organic, social, and psychological components encountered than in the stages of adaptation following head injury.

Medicolegal implications. Finally, as mentioned above, current interest in head injuries can be ascribed to their increasing medicolegal importance. According to the National Safety Council, approximately 10,200,000 injuries due to accidents were reported in 1963. It is further estimated that many of these accidents (which occurred at work, were due to motor vehicles, etc.) involved head injury. In recent years, a larger proportion of the victims of such accidents have been insured against personal injury; an increasing number of psychiatrists work for industry; and to ensure the equitable settlement of such legal actions, the court must exert more compelling pressures on plaintiff and defendant alike. The presence of brain damage is rarely disputed, although the precipitating events may be the subject of endless legal debate. However, many attorneys, claims adjusters, and medical examiners fail to recognize that head injuries which do not involve brain damage may be equally debilitating, although such after-effects may be transient. Nor are the subtle symptoms which may accompany such traumata fully understood.

In summary, it has become increasingly apparent that the accurate legal assessment of syndromes following head injury and the efficacy of treatment in such cases (regardless of the presence or absence of brain damage) depend on further understanding of the neurological, biosocial, and psychological factors involved.

Overview

Nosology. The classification of brain disorders associated with trauma delineated in *The Standard Nomenclature of Diseases and Operations* issued by the American Medical Association, has been adapted by the American Psychiatric Association (A.P.A.) for inclusion in its *Diagnostic and Statistical Manual, Mental Disorders* (and is almost identical with other national and international nomenclatures). This classification is used here as well, as the most comprehensive—yet the simplest—nosology available.

Nomenclature. According to the official nosology, the application of the word “trauma” in this context is restricted to designation of *physical injury* to the head, unless otherwise indicated. Thus, this limited use of the term is distinguished from the broader concept employed by many psychiatrists, who, following Freud’s theoretical formulations, have extended it to include various social or psychological events and experiences, internal or external, which precipitate feelings of sudden danger, fright, and helplessness, and which, in turn, trigger regressive defenses, giving rise to symptom formation.

The classification of brain disorders caused by or associated with trauma, within this frame of reference, is listed below.

- Acute brain disorders
 - Disorders due to, or associated with trauma
 - Acute brain syndrome associated with trauma
- Chronic brain disorders
 - Disorders associated with trauma
 - Chronic brain syndrome associated with birth trauma
 - Chronic brain syndrome associated with brain trauma
 - Chronic brain syndrome, brain trauma, gross force
 - Chronic brain syndrome following brain operation
 - Chronic brain syndrome following electrical brain trauma
 - Chronic brain syndrome following irradiational brain trauma

Diagnosis. Recent methodological advances in the study of brain function, made possible by new instruments, including computers, would seem to proclaim concomitant improvements in methods for the clinical diagnosis, evaluation, and recording of the changes in the brain, and in the behavioral patterns of the brain-damaged patient. Yet, despite these advances, essentially, the clinician is as dependent on clinical observation of patients (the natural history method) today as he was in 1787, when Benjamin Bell wrote his outstanding description of concussion.

Assessment of behavioral defects. The behavioral defects associated with acute head injury may be relatively simple or highly complex. In addition to the routine physical and laboratory examination for anatomic and physiological dysfunction, the testing of a comatose or unresponsive patient involves the neurological examination of his sensory, motor, and reflex functioning. Immediately after the patient has regained consciousness, behavioral defects can be detected by careful examination of his mental status.

The battery of tests devised by Henry Head for aphasia in 1920 has proved most useful for this purpose: (1) recognition and identification of objects; (2) recognition and identification of colors; (3) the man, cat, and dog tests; (4) the clock tests; (5) the coin-bowl tests; (6) the hand, eye, and ear tests; and (7) reading, writing, and drawing puzzles.

These simple tests do not require complex psychological testing equipment. Nevertheless, they represent effective methods for evaluating the patient’s mental functioning, in terms of such standard parameters as orientation to person, place, and time; memory for recent and remote events; vocabulary; serial subtraction and simple arithmetic; and capacity for abstract thinking, as demonstrated by interpretations of proverbs, similarities and contrasts, and stories. During the anamnesis and testing, the nature and quality of the patient’s mental functioning, the relevance and coherence of his thoughts, and his general intellectual ability are noted. The patient’s mood and affective state, his relation to other people, and his attitude toward various topics are also considered. His insight into and reaction to his current injury are particularly significant. Occasionally, the nature of the accident itself produces reactions of overpowering fright, panic, helplessness, or confusion which are reminiscent of the reactions of soldiers who have experienced acute stress in battle. These reactions may “trigger” psychiatric symptoms which, in fact, are not related to the brain injury. In any event, after some weeks or months, more elaborate tests may be administered to establish the precise nature and severity of the deficit.

Finally, there is ample evidence that many patients whose persistent complaints are not justified by the severity of their head injuries had difficulties in their interpersonal relations prior to their accident. For example, Ruesch, Harris, and Bowman studied 125 patients with chronic post-traumatic syndromes and 140 control patients, 70 of whom had suffered acute head injuries. Not surprisingly, those patients in the control group with acute injury and obvious organic damage had more complaints than those whose head injuries did not involve brain damage. On the other hand, those patients who had suffered minimal injury were apt to have more complaints than patients with gross brain damage and chronic brain disorders. Moreover, their complaints tended to increase and become more diffuse with time.

Treatment. In the past 2 decades, with greater understanding of the sequelae of head injuries, the views of most workers in this field with regard to the treatment of patients who have suffered such traumata have been altered considerably.

The establishment in general hospitals of special trauma centers, which are specially equipped for the diagnosis and emergency neurological and physiological treatment to such patients, is a universal recommendation. Many investigators believe that a psy-

chiatric evaluation should be a routine part of this diagnostic work-up. And, in fact, the clinical evidence has demonstrated that this procedure, when combined with subsequent formal psychiatric interviews, where indicated, facilitates the patient's recovery.

Apart from such emergency measures, the crucial importance of supportive medical and psychological care by physicians, nurses, and hospital staff in the early phases of the patient's illness cannot be overemphasized. The fact that such procedures can eliminate (or, at least, diminish) the undesirable sequelae of head injuries is generally recognized. Certainly, this is borne out by the proven effectiveness of multidisciplinary teams (such as the one developed by Howard A. Rusk at New York University's Institute of Physical Medicine and Rehabilitation) in reestablishing functional competence in patients with anatomic impairment or disability.

An equally crucial determinant of clinical progress is the attitude of the patient's family and friends toward his injury. Sir William Osler stated that "tuberculosis is a social problem with medical aspects." A similar statement can certainly be made about head injuries. Careful attention to the total patient in his environment as well as the clinical setting is absolutely essential for his optimal recovery. To elaborate on this very briefly, Paul Schilder pointed out that in our society even a minor injury to the head is usually the source of greater anxiety and emotional conflict than is a serious injury to an arm or leg. In susceptible patients, the daily impact of the minor pain or transient disability produced by head injuries may lead to anxiety, discomfort, and fatigue, which in time may be organized into patterns of neurosis and invalidism. The sequelae of head injuries may also produce primary and secondary gains similar to those associated with neuroses and character disorders. In fact, in a study he conducted in 1942, Sir Aubrey Lewis found that in many instances no essential distinction could be drawn between the behavior of patients with conventional neuroses and those who suffered from the chronic effects of head injury. These findings were subsequently confirmed in 1945 in a similar investigation by Ruesch, Harris, and Bowman.

Acute Brain Disorders Due to or Associated with Trauma

Definition. This category is described as follows in the A.P.A. *Diagnostic and Statistical Manual*:

Here are to be classified those cases of acute brain syndrome developing immediately after head injury produced by external trauma of a gross physical nature, including surgery. Mental disturbances following injuries to other parts of the body are not to be classified here. Brain syndromes in which head trauma acts as a contributing or precipitating cause should be diagnosed under the proper etiological heading and not included in this group. This category does not include the chronic organic results of head injury.

Accordingly, concussion, traumatic coma, traumatic delirium, and Korsakoff's (amnesiac-confabulatory) syndrome are usually subsumed under this heading, although they are not specifically classified as such in the *Standard Nomenclature*.

Psychological reactions to acute brain disorders. The psychological reactions to organic cerebral deficit, as described by psychiatrists and neurologists, may take various forms: The patient may be consciously or unconsciously aware of his defects, to varying degrees, and he may try on a conscious or unconscious level to overcome and, in general, to avoid awareness of these defects in many ways. The defense mechanism of denial (of defects) is typical in such cases. Confabulation, that is, the attempt to replace memory loss by fantasy or reality which, however, is inappropriate to the occasion, is equally common among this patient population. Irritability often represents an expression of the patient's anger at his inability to perform; it is also a way of reducing the tension inherent in those situations which threaten the patient's uneasy equilibrium. Even those patients who seem placid, or even euphoric, can often be easily upset by searching questions and may employ crude and inappropriate humor in an effort to ward off threatening persons and experiences.

Prognosis. The prognosis for such disorders will depend on the nature of the lesion, the patient's pretraumatic personality, the efficacy of treatment, and environmental factors. Under optimal circumstances, final evaluation of the residual loss of function can be made from 12 to 18 months after the injury. The central nervous system has excellent recuperative powers, so that this final assessment should reveal that for the most part, if not entirely, the patient's mental functioning has been restored to normal, as demonstrated by psychological test findings, psychiatric examinations, and observations of the patient's behavior by his family, friends, and employer.

Concussion

Clinical description. Concussion is caused by a head injury, resulting in an interruption of brain function which is accompanied by a loss of consciousness. Usually, the loss of consciousness is of brief duration and is followed by spontaneous and complete recovery, although there may be brief (post-traumatic) amnesia for the events which occurred a few moments prior to the injury. In other cases, where the loss of consciousness is more prolonged, there may be a sudden awakening without psychiatric sequelae; or, on the other hand, the patient, despite his apparent consciousness, may manifest post-traumatic amnesia, confusion, and disorientation. For example, boxers have been known to continue to box or to perform some routine activity following a concussion for many hours before they become fully oriented once again.

The clinical significance of the duration of loss of consciousness, or, more specifically, the possible correlation between the duration of loss of consciousness and the extent of the injury to the brain (as measured by the severity of psychiatric sequelae) has been the subject of considerable controversy. It is generally agreed that no such positive correlation can be established in instances where the period of unconsciousness is relatively brief. The symptoms in such cases, which typically include headache, apathy, dizziness, dullness, inability to concentrate, defective memory, irritability, fatigue, insomnia, and decreased tolerance for noise, light, heat, and alcohol, usually subside within 6 weeks after the injury, without evidence of permanent damage. If these symptoms persist, however, or if other symptoms denoting impairment of brain function appear after restoration of consciousness, the patient should be reexamined carefully for new evidence of brain damage, and intensive treatment should be initiated. Most authors believe that when there is no evidence of brain damage, but the patient has a delayed reaction to the injury, in all probability those symptoms which appear or become more severe a few days or weeks after the injury are psychoneurotic in origin.

From the neuropathological point of view, concussion is usually attributed to numerous minute, but definite, contusions, lacerations, and hemorrhages in the brain. A few authors postulate neuronal disturbances at the submicroscopic level. These disturbances may produce changes in the surrounding fluids and altered electrical discharge, which may render the patient unconscious.

Perhaps there are delayed changes in the nerve cells themselves which are vital to the development of the chronic brain syndrome following head injury. Interestingly, after brain trauma, there is usually little change in spontaneous electrical activity at various levels of the central nervous system, although occasional flattening and slow wave activity are seen.

Recent experimental work on monkeys at the National Institute of Neurological Diseases and Blindness has shown that similar organic damage (contusions, swelling, and hemorrhage) may accompany a whiplash injury. This type of injury results when the head is suddenly jerked forward and then backward (when one's car is hit in the rear, for example). While often there is no external evidence of injury immediately, symptoms typical of head injury may develop subsequently. Air studies, arteriograms, and echoencephalography may be used to establish the presence of organic injury in such cases.

Finally, in a series of over 1,000 head injuries studied by Sumner, the frequency of post-traumatic anosmia was 7.5 per cent. Primary and secondary cerebrospinal fluid rhinorrhea have also been seen occasionally. In closed head injuries, pneumoencephalographic findings are a valuable diagnostic aid. Diffuse and more or less symmetrical enlarge-

ment of the ventricles, with dilation of the third ventricle, has been reported in post-traumatic psychosis.

Treatment. The treatment of concussion will, of course, vary with diagnosis of the extent of the injury to the brain and the rest of the body. However, in general, both the physical and the psychological sequelae of concussion require attention. During the state of unconsciousness, the tongue falls back, blood and vomitus accumulate, and the patient's breathing may be obstructed. Thus, the physician requires some knowledge of tracheal intubation and bronchoscopy if he is to maintain an open airway; in addition, blood loss must be estimated accurately, and shock must be treated promptly.

In most patients suffering from mild concussion with closed head injury, the early stage of neurogenic shock passes quickly; if it persists, every effort should be made to determine the cause. Such phenomena may be due to bleeding inside the head or in the body, metabolic disturbances, renal dysfunction, or damage to vital central nervous system centers. Subdural hematoma must be kept in mind, as well. (Carotid angiography is considered an extremely useful procedure for diagnosis of this lesion.)

With respect to medication, most physicians avoid the use of narcotics and stimulants in the treatment of concussion. If sedatives are required to facilitate bed rest, paraldehyde is usually considered the drug of choice because it does not disturb pupillary signs, is relatively nontoxic, and is easily eliminated. Minimal use of mechanical restraints and headboards is recommended. The patient should be kept reasonably warm, but every precaution should be taken against burns from hot water bottles, heating pads, etc. While x-rays of the skull are desirable to detect fractures and their possible sequelae, the physician may be justifiably reluctant to request such procedures if the patient is restless or shows signs of cerebral compression or shock. If the patient becomes unconscious after an interval of consciousness, a neurosurgeon should be called in for consultation without delay, for the patient may be suffering from extradural, subdural, or intracerebral hemorrhage, cerebral edema, or meningitis. Finally, after all medical and surgical procedures have been completed, continued bed rest and observation of the patient, with special attention to vital signs and indications of delayed bleeding, are essential.

Psychological factors must be considered from the outset. From the time the patient is first seen, the physician in charge should take steps which will enhance his recovery and minimize those factors which may contribute to the formation of neurosis. Admittedly, psychiatrists are rarely consulted as a matter of routine at an early stage in the treatment of such patients. However, physicians who are aware of the value of a comprehensive treatment program should include psychiatric care where there is unusual anxiety, depression, and preoccupation with

morbid concerns. Apart from the benefits derived from these formal treatment procedures, patients have attached great significance to the attitudes and behavior of physicians, nurses, and other hospital personnel immediately after they regained consciousness and in the early post-traumatic phase of their recovery. Similarly, friends and relatives may engender—or alleviate—the patient's anxiety, fear, or guilt by their attitudes and what they say.

Traumatic coma

Clinical description. Traumatic coma is characterized by a profound loss of consciousness, similar to that suffered in concussion, together with the absence of voluntary motor activity and failure to respond to stimuli. Coma is usually regarded as severe and prolonged if it persists for more than 2 hours; even a semicomatose state, in fact, which lasts for 24 to 36 hours without improvement may indicate brain tissue contusion and should arouse concern for the welfare of the patient. Changing neurological signs, blood in the cerebrospinal fluid, increased intracranial pressure, or electroencephalographic and x-ray evidence of fracture should alert the physician to rising intracranial pressure (as, for example, in subdural hematoma) and the possible need for surgical intervention.

Treatment. If such intervention is necessary, psychiatric care should be considered after surgery to minimize symptom formation and invalidism and to prepare the patient for whatever rehabilitative procedures may be required. Traumatic coma may be followed by stupor, traumatic delirium, Korsakoff's syndrome, or a clearing of consciousness.

Traumatic delirium

Clinical description. Delirium is a disordered state of consciousness which may occur in many toxic, disturbed metabolic, or febrile states, as well as in cases of head injury. Furthermore, since a similar state of personality disorganization may be precipitated by emotional factors, it is not always easy to estimate the role of organic factors. Delirium is characterized by partial disorientation for time, place, and person; confusion; disordered sensorium; and restlessness. It is often accompanied by anxiety and irritability. These variables usually fluctuate in character and depth. However, several specific behavioral patterns have been observed, and this syndrome is easily identified. Some patients behave as though they cannot understand what has happened to them, belligerently demand to be released from the hospital, or demand that they be detained just as belligerently, for their own self-protection. Other patients wander about in a daze and require constant supervision to prevent accidental injury.

Treatment. Delusional patients, particularly paranoids, require special nursing care to prevent them from attacking personnel, who are misidentified as

enemies; from inadvertently hurting themselves while escaping from imagined enemies; and from committing suicide. Apart from such specific considerations, delirium, which lasts for longer than a week, usually indicates the presence of serious brain damage. However, the final assessment of brain damage should not be made for a year, for mental and focal defects frequently clear up spontaneously.

Korsakoff's syndrome (amnesiac-confabulatory)

Clinical description. Korsakoff's syndrome is a psychiatric disorder which may follow an acute delirium, twilight state, or stupor. In its classical sense, Korsakoff's syndrome is associated with chronic alcoholism, polyneuritis due to thiamine (vitamin B₁) deficiency, and, occasionally, pellagra-like skin lesions. Obviously, however, in those cases which are caused by head injury, there is no evidence of neuritis or dermatitis unless there is a coincidental severe thiamine deficiency.

Frequently, but not always, such patients evidence conspicuous memory loss. Concurrently, the mechanism of confabulation, described above, is often employed to compensate for this deficit. It has been hypothesized that this memory failure is not due to the defective storage of information. Rather, it is due to a lack of access to the information in storage and to the lack of new input. In addition to possible memory loss, confusion, severe disorientation, and amnesia for recent events are present, but the principal defect is the patient's inability to form new associations. The questions asked in the routine mental status examination to test the accuracy of the patient's perception, memory, attention span, capacity for abstract thinking, etc., will usually reveal marked defects. In contrast, this may or may not be true of patients with acute brain disorders due to surgery (e.g., brain tumor or lobotomy) or immediately following electric convulsive treatment.

Chronic Brain Disorders Associated with Trauma

Definition. In the American Psychiatric Association's *Diagnostic and Statistical Manual*, Chronic Brain Disorders associated with brain trauma are defined as follows:

Here will be classified the post-traumatic chronic brain disorders, which produce impairment of mental function. Permanent brain damage which produces only neurologic changes because of its focal nature, without significant changes in the areas of sensorium and affect, will not be classified here. Generally, trauma producing a chronic brain syndrome would have to be diffuse and would have to leave permanent brain damage. Post-traumatic personality disorder associated with chronic brain syndrome will be placed in this group with the appropriate qualifying phrase.

If the brain injury occurs in early life, it may manifest itself primarily in a developmental defect of intelligence. . . .

A head injury may usher in, or expedite the course of, a chronic brain disease, especially cerebral arteriosclerosis. The differential diagnosis in such cases may be extremely difficult. If the case history shows symptoms of circulatory disturbance,

particularly arteriosclerosis, before the injury, and the physical examination confirms the presence of arteriosclerosis, the case will be classified under Chronic Brain Syndrome associated with cerebral arteriosclerosis.

To elaborate on this concept very briefly, as mentioned earlier, it is difficult to evaluate the nature of the post-traumatic process in an individual patient because there are no valid methods available for the quantitative measurement of anatomic damage or alterations in physiological, biochemical, electrical, or psychological function. Only rarely do symptoms which exert a manifest effect on behavior persist for more than a year; most patients do not demonstrate marked residual changes after 2 years have elapsed. Consequently, if a patient shows an obvious change in personality or has specific and severe complaints 2 years after a head injury, he will fall into one of the chronic groupings. Nevertheless, the clinician is urged to make a primary diagnosis (e.g., of arteriosclerosis, psychoneurosis, or outright malingering), whenever appropriate.

Nomenclature. There is no uniform nomenclature for the clinical entities subsumed under this major heading. Most authors follow the classifications indicated below, more or less, because of their clinical and medicolegal value: (1) post-traumatic personality disorders; (2) traumatic constitution (Meyer); (3) post-traumatic general cerebral syndrome (Foerster); (4) minor contusion syndrome (Symonds);

(5) encephalosis (Ritter); (6) traumatic encephalopathy; (7) traumatic psychopathic constitution (Ziehen); and (8) postconcussion syndrome.

The assumption underlying each of these conditions is that organic brain damage—not neurosis—causes a chronic impairment of brain function, which results in altered behavior, usually accompanied by symptoms which can be identified as *directly* related to this organic damage, whether anatomic, biochemical, or electronic. The major problem posed by this assumption of significant organic damage, although it may appear to be justified by inference, experience, and autopsy studies, is that it cannot be demonstrated, nor can it be disproved, by physical examination: gross neurological signs of a disordered nervous system are encountered only rarely. On the other hand, evidence of changes in deep or superficial reflexes, vasomotor functions, motor skills, coordination, or sensory organization are usually not impressive enough to be convincing. A second underlying assumption is that either true psychoneurotic processes or conscious malingering, or both, may be associated with the organic damage.

Pathology. Organic sequelae to brain injury are usually thought to be due to the direct effect of the trauma on the brain or surrounding tissue; this effect, in turn, is due to changes in circulation and hemorrhages (as demonstrated in Figure 1). Changes are seen in the ganglion and glia cells, blood vessels,

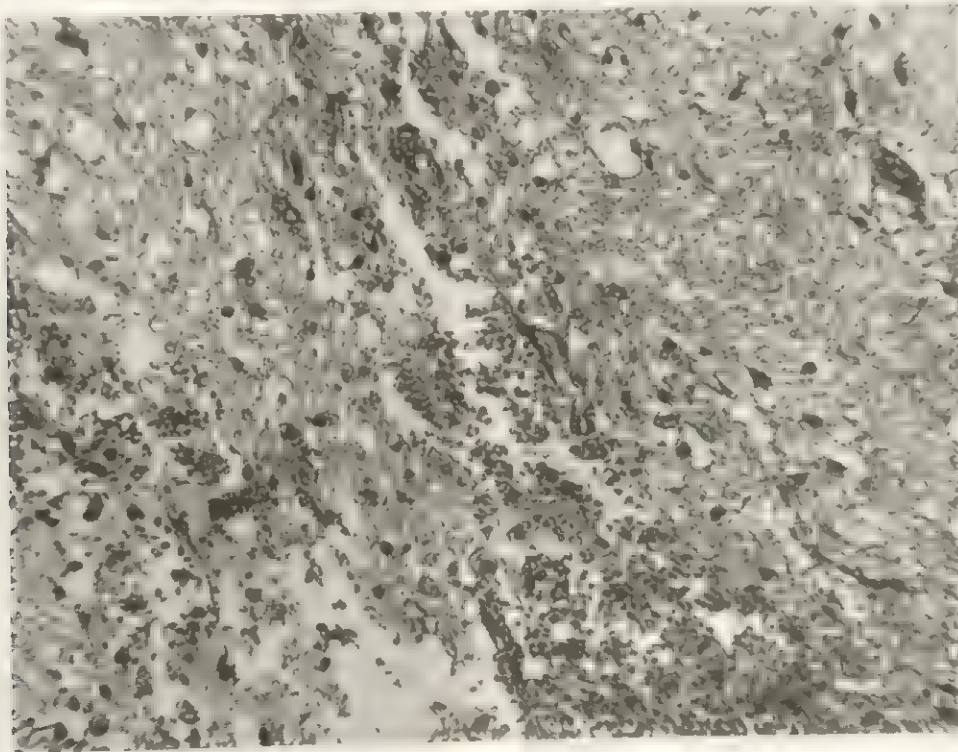


FIGURE 1. Recent contusion, orbitofrontal cortex. There are pallor, swelling, early fragmentation of parenchyma, patchy nerve cell loss with remaining neurons showing acute changes, numerous petechial hemorrhages. Hematoxylin and eosin. 200 \times . (Courtesy of Dr. John Moosey, University of Pittsburgh.)

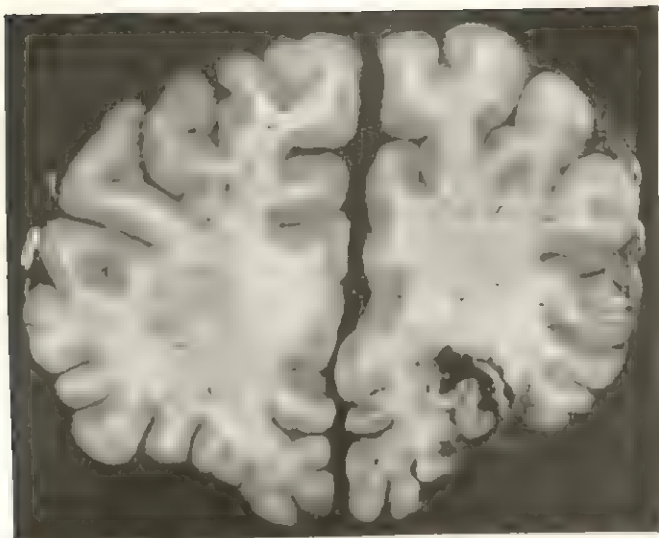


FIGURE 2. Old contusion, orbitofrontal cortex. (Courtesy of Dr. John Moosey, University of Pittsburgh.)

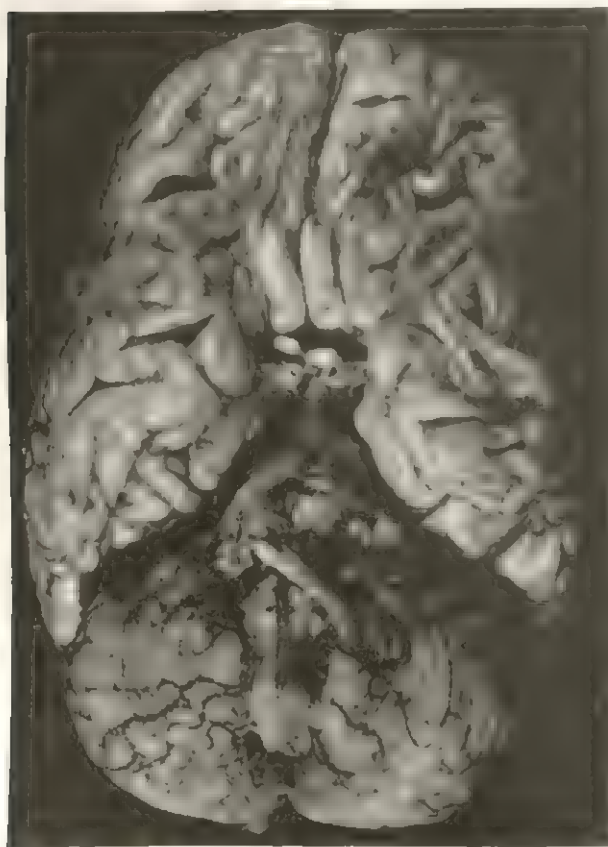


FIGURE 3. Old contusion foci, orbitofrontal and temporal. (Courtesy of Dr. John Moosey, University of Pittsburgh.)

choroid plexus, the meninges, and the subarachnoid and subdural spaces they enclose. These changes vary with the nature, location, severity, extent, and duration of the injury. Figure 2 shows the gross appearance of bloody discoloration, contusions, and lacerations of the brain. The atrophy, scarring, and trau-

matic destruction of the brain may be seen in Figure 3. Subdural hematoma with encapsulating membranes is shown in Figure 4.

Around the area of injury there may be anemia, numerous minute hemorrhages, and foci of softening or scars. The normal arrangement of the cellular layers may be altered, with the usual evidence of injury and attempts at repair (see Figure 5). Atrophy is commonly found at autopsy. Ventricular distortion and meningoencephalitic adhesions are sometimes demonstrated in encephalograms and ventriculograms. However, most authors warn against trying to diagnose the nature of head injuries from electroencephalographic findings. There may be a fracture of the inner table of the skull, even though the external table remains intact.

Diagnosis. Although generalizations are not useful because of individual variations, a careful check of the criteria listed below will help the physician to distinguish between symptoms due to organic factors, as opposed to those which are due to pretraumatic personality disorders: (1) roentgen evidence of skull fracture; (2) bloody spinal fluid; (3) bleeding from skull orifices (especially from the ears); (4) focal neurological signs; (5) convulsive states proved to be post-traumatic; (6) ventricular distortion proved to be post-traumatic; (7) history of prolonged loss of consciousness; (8) headache which occurs periodically, is throbbing, and may be altered by postural change (stooping) or physical exertion; (9) sluggish mental functions, in a sanguine patient; (10) continuous symptoms which cannot be modified by suggestion; (11) the patient's interest in rehabilitation, rather than compensation; (12) a continuity and consistency in the development of symptoms after the injury; and (13) results of psychological testing (by the procedures described earlier).

Often, a definite diagnosis cannot be made in dif-

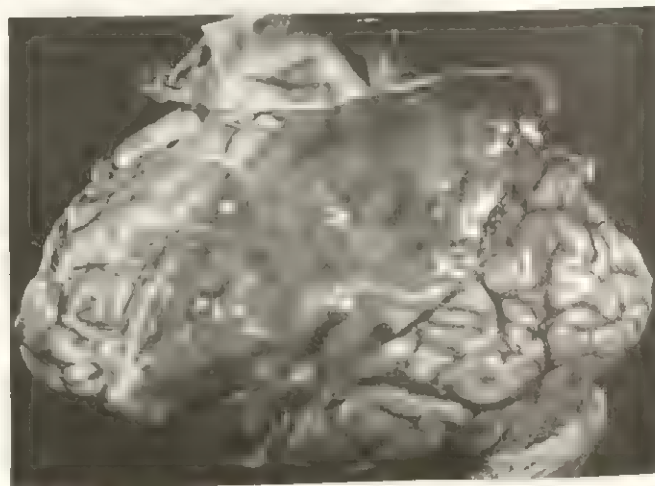


FIGURE 4. Subdural hematoma with encapsulating membranes. (Courtesy of Dr. John Moosey, University of Pittsburgh.)

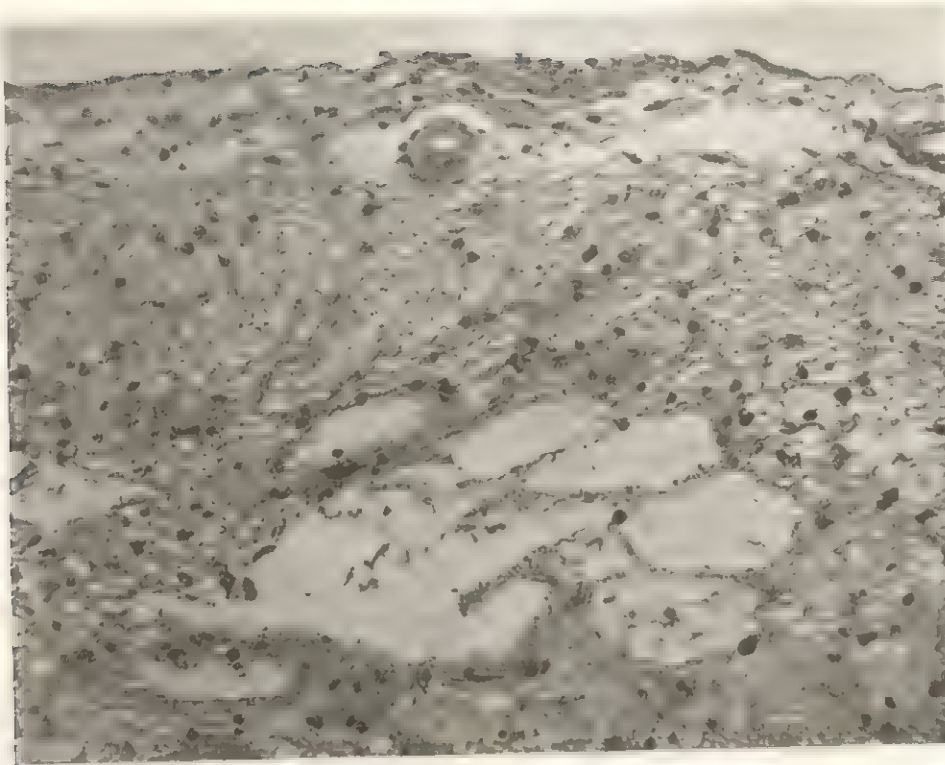


FIGURE 5. Old contusion, orbitofrontal cortex. There are derangement of architecture, loss of nerve cells, diffuse astrocytosis with microcystic change, and pigment-laden phagocytes. Hematoxylin and eosin. 200 \times . (Courtesy of Dr. John Moosey, University of Pittsburgh.)

ficult cases until the patient has been carefully re-examined at regular intervals over a prolonged period. Apparently, some patients who have suffered severe injuries and prolonged loss of consciousness may recover without detectable organic or psychological deficit. In contrast, patients with apparently minor injury to the head may prove to have suffered significant brain damage.

Psychiatrists have a valuable contribution to make to both diagnosis and therapy in these cases. Repeated careful examination of the patient's mental status will often reveal hitherto unsuspected disabilities in the perceptual, cognitive, affective, and executive spheres. Evidence of changes in abilities, moods, and personality patterns which have their onset at the time of the trauma are suggestive of organic damage, particularly if the patient has functioned well previously.

Psychological reactions to chronic brain disorders associated with trauma

General theoretical formulations. Disturbed ego functioning following trauma, used in a broader sense to refer to massive or life-threatening stress, has been discussed by Freud, Hollós and Ferenczi, Goldstein, Schilder, and Kardiner.

A traumatic experience triggers a neurotic reaction in which the event is interpreted, because of guilt feelings, as a punishment by parental figures or an

impersonal fate, as a threat of loss of parental love and protection, or even as a direct attack, which is the equivalent of earlier fantasies of castration. The ego regression engendered by the feelings of helplessness, hopelessness, and fear which this interpretation gives rise to results in the restriction of ego functions. Since the adult finds such restriction intolerable, he engages in persistent attempts at experimental mastery. If these fail, his anxiety increases with concomitant loss of confidence and fear of anticipated dangers. The sleep disturbances which are so common in these cases (and in the war neuroses, as well) have been interpreted as repetitive attempts to master the noxious emotions associated with the traumatic event.

If a patient who has a strong need to feel superior to his environment suffers a humiliating failure or accident, his internal controls (superego) or external controls may not be strong enough to keep him from using unconscious neurotic defenses (hysterical amnesia and paralyzes, obsessional, paranoid, or hypochondriacal preoccupations) or from seeking secondary gains through fiscal compensation or sympathy from his family and colleagues. Because these potential secondary gains may seem attractive and are achieved at a seemingly low psychic cost, some patients will be tempted to take advantage of the situation if they are not helped to see that invalidism is ultimately self-defeating.

In fact, however, it is the experience of physicians working in this field that conscious malingering is rare and can be detected relatively easily. There may be some exaggeration of neurotic complaints, but neuroses are genuine clinical conditions which are beyond the conscious control of the patient. The defensive behavior patterns seen in other patients with organic brain disorders or systemic diseases are seen in this patient category as well. These include irritability, as a sign of general dissatisfaction or fear of a potentially threatening situation; impaired memory; restricted interests; apathy, which represents defensive withdrawal from external threats; and increased preoccupation with self. The last of these patterns is precipitated by the patient's realization, on both a conscious and unconscious level, that his capacities for thought and action have been seriously impaired.

Patients in this category may also be burdened with the knowledge that they are vulnerable to injury and death, which disturbs earlier images of omnipotence. Depressive moods are common, and compensatory periods of euphoria are rare. Defense mechanisms, such as projection, displacement, and rationalization, appear with alterations in the crucial ego functions of integration, sensory perception, and motor and executive control. At the same time, the ego is less able to control discharge of id impulses, and there is a deterioration in the patient's functioning in the external world, in the domestic, occupational, or socioeconomic spheres. However, one factor is of crucial importance in determining the severity of these symptoms: as mentioned earlier in this section, for many sensitive people, injury to the head has special emotional significance. Those patients who do not overevaluate the head may not have the same intense concern about such injuries. Nor will their symptoms be as severe.

Concomitantly, several investigators have expressed some doubt as to whether the progressive deterioration of the patient's behavior which is so common in cases of chronic brain disorder can, in fact, be attributed to head injury alone, in the absence of other organic or psychosocial factors. The finding, cited earlier, that most patients with poor adaptation following a head injury had a prior history of poor adaptation would seem to lend support to this speculation.

For example, Schaller found that headache occurred frequently in only 23 per cent of the postcontusional cases he studied, although 97 per cent of the neurotic patients investigated complained of headache frequently.

In Anderson's series all patients who did *not* complain of headaches showed neurological signs of brain injury. The comments cited earlier by Sir Aubrey Lewis merit repetition in this connection. In brief, on the basis of detailed studies of these patient groups, Sir Aubrey Lewis concluded that, in

many instances, there was no essential difference in the behavior patterns of postcontusional patients and those with a common neurosis. Ruesch, Harris, and Bowman also found that, in a large proportion of their patients, brain damage itself was of secondary importance; the pretraumatic personality was of primary importance in determining the nature of the post-traumatic clinical state. The contention that injury to brain tissue, in itself, cannot adequately explain mental deficit has been further borne out by clinical investigations similar to that conducted by Bruell and Albee, who reported on a patient who showed no behavior defects following hemispherectomy for a brain tumor.

In short, in cases of deterioration due to aphasia, epileptiform seizures, deafness, motor weakness, or paralysis, which ostensibly resulted from brain injury, two possibilities must be carefully investigated: the presence of a preexisting idiopathic convulsive state, cerebral vascular attack, or arteriosclerotic confusion; and, secondly, the patient's pretraumatic personality.

Psychiatric treatment. The treatment programs should emphasize support by the medical team, the family, the rehabilitation team, and other significant figures, where indicated. Brain-injured patients may seek quiet and rest initially, in order to collect their energies, allow the disturbed ego functions to heal, and gradually regain ego mastery. They may also try to regain mastery by active attempts to deal with repetitive belated discharges, such as nightmares, motor discharges, and other emotional activity. The psychiatrist can facilitate rest by reassurance and by satisfying the patient's passive-dependent wishes, or he may facilitate the patient's efforts at active mastery by utilizing such methods as active catharsis, which encourage the patient to relive the traumatic experience, and conscious analysis and clarification of the disturbing conflicts. Skill and experience are required to use both methods to advantage. Grinker and Weinberg recommended narcotherapy or hypnosis for severe anxiety or regressive states associated with such disorders.

Finally, it is the general consensus that financial compensation over a long period of time may be a deterrent to therapeutic progress. Therefore, most authorities favor lump sum settlements where justified.

Chronic brain disorder: Simple type. This diagnosis is made when the patient complains of headaches, dizziness, irritability, fatigue, insomnia, and poor tolerance for excitement, alcohol, sunlight, and exertion. Anxiety is usually a prominent symptom and may be interpreted as a signal system to help the patient ward off noxious psychological stimuli.

Traumatic encephalopathy with deterioration. This diagnostic category differs from other forms of organic brain disorders in degree, but not in kind. If

it can be shown that there is a definite loss of skills not due to any other causes, then presumably this loss is a result of the head injury. In this disorder, the symptoms and signs described earlier appear in more severe form. And, in addition, the patient may demonstrate a loss of initiative and sense of responsibility, an inability to plan for the future, and a lack of concern about factors which are not of immediate concern. Ego controls, especially the repression of unconscious impulses, continue to fail, and as ego defenses become less effective, impulses are discharged in cruder form.

A diagnosis of traumatic encephalopathy with deterioration requires definite evidence of the loss of specific skills. The physician must then eliminate any other factors which might account for this impairment in brain functioning, before it can be finally attributed to head injury.

Chronic brain disorders with convulsive states (traumatic epilepsy). A lack of knowledge with regard to the pathophysiology of convulsive states precludes clear differentiation of the post-traumatic cases (where the epilepsy is a sequelae of brain injury) from those which derive from preexisting conditions. The work of Penfield and Jasper and others on the surgical removal of focal lesions was a major advance in demonstrating that post-traumatic cerebral lesions can cause convulsions. Another advance was the postulate that idiopathic epilepsy was not predominantly hereditary but was often the result of traumatic, toxic, and infectious diseases in infancy. This hypothesis is currently receiving strong support from many quarters, including those workers who are engaged in studies of the battered child syndrome.

Treatment. Drugs play an important part in the treatment of traumatic epilepsy. However, their use for sedation or stimulation has not been clearly defined, primarily because of the paradoxical reactions in brain-damaged children.

Traumatic encephalopathy due primarily to head trauma with secondary psychogenic symptoms. Compensation cases, which require a greater precision in demonstrating both the organic and the psychological components of a post-traumatic state, are often classified under this heading. More specifically, it is essential in such cases to relate all objective signs of brain injury to the subjective complaints and altered behavior of the patient, for there is ample documentation that the latter, in particular, may occur in the absence of injury to either the brain or the body. Apart from such considerations, the patient's pretraumatic personality, the psychological and socioeconomic circumstances under which the injury occurred, and the post-traumatic personality reorganization are often crucial determinants of the course of convalescence.

Post-traumatic functional disorders due secondarily to head injury

Post-traumatic hysteria. Frequently, patients seen in the emergency room of the general hospital following head trauma do not manifest organic injury (according to the criteria listed above). Rather, their post-traumatic disorders are hysterical in origin. In fact, almost any form of neurotic reaction may be precipitated by head injury. However, hysterical phenomena occur most frequently. At the same time, it should be pointed out that admixtures of neurotic trends exist in almost all people, and any one of these may be activated in the individual who is so predisposed.

The increased suggestibility of hysterical patients may also lead them to exaggerate the intensity of their injury and to accept eagerly the status which accompanies disability or to demand compensation when such action is suggested by physicians, lawyers, relatives, or friends.

Compensation neurosis. Although this category is listed as a separate entity, psychiatrically it is considered an hysterical process because the unconscious wish for compensation is a powerful factor in symptom formation. Consequently, it has significant medicolegal implications.

On the other hand, even where there is no possibility or question of compensation, hysterical symptoms may occur in many cases of head injury, demonstrating that the compensation motive is not always essential. Another group of patients who consciously express a wish for compensation improve with therapy whether or not such compensation is forthcoming. And still a third group are inaccessible to therapy but recover once they have received lump sum settlements. Apparently, this third group does not represent a large proportion of the post-traumatic population, although the number of such patients may increase once current legislation has made compensation more easily available.

Traumatic neurosis. This term, which is rarely used today, was introduced by Horn in 1916 and subsequently adopted by Wechsler, Strauss, and Savitsky ("terror neurosis"), Ebaugh and Benjamin, and others to designate a relatively specific (but infrequent) panic state in which anxiety and hysteria are prominent. This extreme reaction is typically precipitated by a significant threat to survival, e.g., major disasters involving fire, explosions, and earthquakes. However, it is rarely observed in ordinary industrial or automobile accidents. In this context, trauma refers to both physical injury and noxious psychological factors causing personality disorganization. Theoretically, the psychodynamics of traumatic neurosis differ from those evident in hysteria in that the premorbid personality is free from neurotic predisposition.

Choice of symptoms. As mentioned above, hysterical processes are the most frequent neurotic sequelae to head injury, but other syndromes may be seen as well. The pretraumatic personality probably plays a major role in the choice of symptoms. The familiar obsessional defenses (with or without such paranoid trends as internalization of anxiety with preoccupations, counterphobic attitudes, avoidance of initiative, aggressive attempts at restitution, ritualistic protective devices) or more complete regressive patterns may occur.

Malingering. Most psychiatrists agree that genuine, conscious simulation of symptoms is uncommon. Such actions are difficult to plan and even more difficult to maintain consistently, and the exaggerations of subjective symptoms and overt behavior are usually apparent to the trained observer. Therefore, they are easy to detect during repeated neurological and psychiatric examinations. However, Keschner has described in detail a variety of simulations, involving disturbances of motor power; paroxysmal attacks; and abnormality of movement, sensation, coordination, speech, and the senses, particularly vision and hearing.

Diagnosis becomes more difficult when purposeful simulation is motivated by a genuine neurotic process with hope of secondary gain. Until more physicians and lawyers recognize that neurotic processes are beyond the conscious control of the patient and that these processes are often amenable to psychiatric treatment, the disposition of such cases will continue to involve endless debate.

Acute and Chronic Brain Diseases Associated with Other Syndromes

The relationship between brain injury and psychosis is complex and controversial. The following possibilities must be considered in connection with the claim that a psychosis was precipitated by a brain injury.

1. *The relationship exists as claimed.* As a rule, there is no evidence that brain injury, as such, can precipitate a major psychosis, such as schizophrenia or manic-depressive psychosis in a previously healthy person, but in rare cases, complex phenomena may occur. Such cases have been described by Lewis and by Feuchtwanger and Mayer-Gross.

2. *The patient had a major physical or mental disorder prior to the accident.* Post-traumatic dementia may occur in patients suffering from cerebral arteriosclerosis, chronic alcoholism, or similar diseases. In such cases, it is necessary to investigate the possibility that the accident itself was due to an arteriosclerotic seizure or dizziness. Even in a sick or aging patient, however, the possibility exists that the patient will defend himself against threats to his ego integrity which are typical sequelae to head injury, by the usual psychological defenses.

3. *The patient had a latent physical or mental disorder which was aggravated by the brain injury or its psychological sequelae.* General paresis or psychosis due to syphilis of the meningoencephalitic type is generally considered to represent an organic cerebral disorder which can be activated by an injury, although the claim has also been made for other diseases. In such cases, it is necessary to establish that the accident was not caused by a fall or convulsion resulting from the basic parietic disease.

Recent studies, following Hollós and Ferenczi's investigations in 1925, stress the importance of pretraumatic personality factors in such disorders. But these recent studies have offered convincing evidence in support of the hypothesis that some of the symptoms of paretics are due to organic deficit and related compensatory behavior by demonstrating that some functions of personality deterioration and dementia, e.g., memory loss, grandiosity, euphoria, or depression, are not merely arbitrary or adventitious failures. Rather, they believe that these malfunctions are the result of emotional (motivational) conflicts that can be recognized as meaningful. The most common mechanisms employed in such conflicts are denial, regression, and isolation, but other defense mechanisms can be observed as well. The phenomenon of "flight into health" following recovery from a serious organic disease, such as pneumonia, or a blow on the head, can be better understood in the light of this hypothesis. Finally, although there is no convincing experimental evidence that a head injury can activate general paresis, there is some statistical evidence for this hypothesis.

Chronic brain syndrome following electrical brain trauma. This category is concerned with massive assaults on the brain due to accidental exposure to electricity. There is a 17 per cent mortality among patients in this group. Further, it has been reported that permanent disability was almost always the result of burns, without any psychogenic or other organic complications.

Therapeutic electroconvulsive therapy usually causes some mild impairment of memory of variable duration, but there is no evidence that there is permanent impairment of memory or intellectual deterioration, even when the patient manifests severe disorientation as seen in Korsakoff's syndrome.

Chronic brain syndrome following irradiational brain trauma. Due to an increasing number of reports that small amounts of ionizing radiation had produced behavioral and electrophysiological changes in mammals, the International Atomic Energy Agency sponsored symposia on the effects of ionizing radiation on the nervous system, which were published in 1962 and 1964. Studies of humans have also been described in various U. S. Atomic Energy Commission reports.

There is relatively little published work on the be-

havioral changes in radiated human subjects. Those physicians who have had some acquaintance with patients who are under severe stress due to exposure to radiation report that these patients acted like other patients under comparable conditions. Following the incident, there is, at first a tendency by both the patient and the health physicist to underestimate the dosage considerably. Later, if there are adverse biological responses, there is a tendency to overestimate the dosage.

Conclusions

In summary, much work has been done in recent decades to improve the usefulness of psychological testing in evaluating organic brain injuries. However, although many methods have been developed and the skills of clinical psychologists continue to grow, there are no sufficiently reliable measures of loss of cortical function due to brain tissue damage which are entirely foolproof. In any event, there is some doubt as to whether the demonstration of organic damage alone is of key relevance. Behavior patterns, whether they emerge in life or in tests, cannot be strictly interpreted in terms of damage to specific brain areas. The basic defenses of the individual—which may appear neurotic, regressive, psychosomatic, or psychotic—may obscure the organic lesion. Nevertheless, the physician should be sufficiently acquainted with the strengths and limitations of the most useful tests, even though he may not administer them himself, for test findings may help to highlight the patient's personality assets and defects, and so provide valuable data in planning therapy.

Suggested Cross References

More detailed information regarding methods of psychiatric and psychological examination may be found in Area E, which deals with psychiatric assessment. The reader is especially referred to Sands' section on the mental status examination (Section 11.2), Linn's section on psychiatric symptoms (Section 13.1), and Benton's section on psychological tests for organic brain damage (Section 12.2). Neuropathology and the neurological examination are discussed in Chapter 10, on neurology. Some of the specific syndromes mentioned in this section, such as epilepsy, Korsakoff's psychosis, delirium and hysteria, are discussed in different contexts in the section on epilepsy (Section 21.1), alcoholism (Section 27.3), delirium (Section 18.3), and conversion reactions (Section 23.2). Information regarding fundamental concepts of neuroanatomy and neurophysiology may be found in Sections 2.5 to 2.9 in Area B, on the basic behavioral sciences. Sharoff's section on narcotherapy (Section 35.4) in the chapter on organic treatment contains a more detailed discussion of the use of the Pentothal interview in traumatic neurosis.

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20.2 BRAIN SYNDROMES ASSOCIATED WITH DRUG OR POISON INTOXICATION

EBBE CURTIS HOFF, M.D., PH.D.

Toxic psychoses may be caused by the ingestion or inhalation of or continuous contact with a wide variety of substances. In fact, most agents acting on the central nervous system may, under certain circumstances, produce inappropriate and disturbed behavior. Bromides, barbiturates, belladonna alkaloids, sulfonamides, penicillin, sympathomimetic amines, and

disulfiram are known to cause toxic effects—both neurological and psychological. The same is true of general anesthetics, certain hormones, various gases and vapors, industrial chemicals, and heavy metals. These substances constitute industrial and therapeutic hazards, and problems of dependency may be encountered with many of them. The substances to be considered here may be differentiated from a group of drugs, including mescaline, marihuana, lysergic acid diethylamide (LSD), and psilocybin, that may be responsible for profound and unusual mental states with relatively no disorientation or delirium and minimal disturbances in neurological function.

In general, the mental symptoms associated with misuse of various drugs and medications or related to metabolic disorders, nutritional deficiencies, or infections are not in themselves specific to a particular chemical substance. But the symptoms do differ, and the different potentially toxic agents vary in their potency in generating psychotic states. The abnormal behavioral responses depend not only on the toxic agent but also on quantitative, temporal, and other conditions under which the person is subjected to the agent. Personality, past experience, age, and other attributes of the individual as well as the intensity, duration, and type of the intoxication are significant factors in determination of the clinical picture.

The acute toxic psychotic reactions are characterized essentially by mental clouding and a confused state; other symptomatic components may or may not be present in a given case. Clouding of consciousness is variable, and attention may be poorly sustained. Concentration may be difficult, and the field of attention may be narrowed. The patient may tire readily and sink back into confusion. There may be growing disorientation for time, place, and person. Memory impairment may be present, especially for recent events. The patient may be restless, and this may vary from tremor to highly purposive and coordinated movements, for example, driving imaginary cars or fighting imaginary enemies. The patient may be unusually suggestible and responsive, and this may be associated with confabulation. Hallucinations, when they occur, are primarily visual, especially in the acute intoxications. There is commonly misinterpretation of actual objects. Auditory hallucinations are less common and may appear after gross confusion has disappeared. Paranoid attitudes and delusional ideas are typically transient and poorly systematized.

In summary, in the full blown, acute organic brain syndrome, one sees a restless, suggestible, confused patient in a clouded state with a high frequency of visual hallucinations and paranoid tendencies and ideas. The mood is labile, and the person may be predominantly irritable, anxious, fearful, and depressed. Sometimes the mental disturbance may be chiefly or solely confined to the nighttime and associated with bad dreams and nightmares.

The chronic toxic reactions are essentially charac-

terized by intellectual deterioration, with impairment of orientation and disturbance of both remote and recent memory. There may be various types of abnormal emotional reactions.

The diagnosis of toxic psychoses depends on a reliable history, making full use of information from relatives as well as the patient himself. Emphasis must be placed on a careful psychiatric evaluation, physical examination, and appropriate laboratory studies. The possibility of the toxic effects of drugs and other chemicals must be kept in mind in any unexplained confusional state and a careful search made for such causes.

In a toxic psychosis there may be a fatal issue, sometimes unexpected. This may be the case in physical prostration resulting from great restlessness and excitement. There is also the risk of suicide in these patients.

Treatment, in general, rests on a number of therapeutic objectives. Appropriate attention must be given to the underlying chemical agent. With some toxic substances, withdrawal may be abrupt, with symptomatic support and treatment of symptoms by other and less toxic sedatives and tranquilizers. In the case of such toxic agents as barbiturates, a carefully planned, gradual withdrawal is necessary. If misuse of a potentially toxic agent is diagnosed early enough, psychotic reactions may be prevented.

Skillful nursing care and management in a protective hospital setting are essential. Due attention must be given to the idiosyncrasies and susceptibilities of the individual patient. With competent nursing and appropriate medication, patients can be soothed and quieted. They should be kept in a quiet, evenly lighted environment with minimal danger of misinterpretation of objects. Constant reassurance, preferably from the same familiar nurse, is important.

Adequate nourishment and fluid intake, if necessary by tube feeding and intravenous fluids, must be provided. To intravenous fluids may be added 2 cc. of vitamin B complex, 100 mg. of thiamine hydrochloride, and 100 mg. of sodium ascorbate. As the patient improves, this may be followed by 100 mg. of ascorbic acid by mouth every day plus a multivitamin capsule orally each day and a daily intramuscular injection of 1 cc. of vitamin B complex. Parenteral sedatives are given as needed and indicated.

In general, use of sedation should be conservative, and barbiturates are generally to be avoided, as is paraldehyde in most cases. For hallucinating patients, 50 mg. of promazine may be given intramuscularly every 3 hours or 50 to 100 mg. of chlorpromazine, intramuscularly every 3 hours, or 20 to 40 mg. of trifluorpromazine, intramuscularly every 4 hours, provided circulatory collapse is not impending. Blood pressure, pulse, and respiration should be checked every 30 minutes in the acute patient and complications treated. Chlordiazepoxide has been used successfully in

the management of delirium tremens, and it has been found to act effectively when 100 mg. are given intramuscularly, immediately followed by 50 mg. four times a day by mouth. Sometimes, larger doses are required. In the treatment of delirium tremens with chlordiazepoxide, it has been found that, although hallucinations may persist in some cases, they are much less terrifying and more tolerable with the drug. If circulatory collapse is threatened, plasma expanders or parenteral fluids should be given. As needed, 10 mg. of metaraminol bitartrate, intramuscularly every 3 hours, may be administered; or 4 cc. of levarterenol bitartrate in saline, intravenously, 30 drops per minute, may be given. Serial electrocardiograms should be taken. If respiratory depression supervenes, 0.375 gm. of nikethamide should be given intramuscularly or subcutaneously, every 2 hours as needed or 20 mg. of methylphenidate hydrochloride, intramuscularly, every 4 hours as required.

As the patient recovers from the psychotic reaction, it is important to make long term plans for total rehabilitation insofar as this may be possible. Such planning includes medical and psychological therapy for residuals and sequelae of the acute psychotic reaction. An assessment to identify the factors underlying and leading up to the toxic psychosis must also be undertaken for preventive and rehabilitative intervention.

Bromides

The psychoses due to bromide intoxication may be cited as a model in a discussion of the toxic psychoses, since the mental aberrations caused by the misuse of bromides are the best understood among the various intoxications causing behavioral disturbances. This is partly because reliable quantitative serum bromide tests have been available for a long time and a large and complete literature has been developed on the bromide psychoses.

Incidence. Levin has expressed the conviction that the method of reporting drug psychoses in mental hospitals tends to minimize the importance of mental derangement due to bromides. He has criticized reported figures on the admissions of patients to mental hospitals for psychoses due to drugs or other exogenous poisons. Malzberg reported that psychoses due to drugs or other poisons represented very few first admissions to hospitals for mental disease in New York State. Such psychoses averaged only about 0.2 per cent of all initial admissions. Psychoses due to drugs were described as being more frequent among females than males. Moore et al. reported that 841 cases out of 115,845 admissions to Massachusetts Mental Hospitals from 1917 to 1937 were associated with excessive use of drugs. Among these 841 cases, the order of frequency of involvement was: opium derivatives, 363 cases; barbiturates, 208; bromides, 101; other sedatives, 27; analgesics, 15; gases, 19; and metals, 18. There were 54 miscellaneous cases and 36 not veri-

fied. In terms of all admissions, patients admitted because of bromides represented 0.09 per cent. These authors have pointed out that the recovery rate of cases of mental disease due to drugs is high, and the death rate is low. The immediate prognosis in mental illness due to drugs is more favorable than in all other types of acute mental disorder. Levin, in criticism of Malzberg's report, has given a figure of 3.3 per cent of admissions as due to drugs and exogenous poisons.

Levin has raised a medicolegal issue regarding the adequacy of warnings printed on the labels of medicines containing bromides and sold over the drug counter. Against the desirability of adequate label warnings, it has been argued that the bromide psychoses are rare, and it has been asserted that, when bromides are given experimentally to human subjects, they do not produce substantial signs of intoxication, even when the serum bromide concentration attains a high level, that is, 150 mg. per 100 cc. Also, it has been claimed that, when bromides do produce a psychosis, the fault lies not with the drug but with the victim's abnormal predisposition to mental disorder.

In disagreement with these arguments, Levin has objected that the incidence of drug psychoses listed by mental hospitals does not reflect the true incidence, since most hospitals are governed by statistical policies based on the direction that cases developing a psychotic reaction from the use of drugs in the treatment of other forms of psychosis should be recorded according to the primary psychosis and not as drug psychoses. In criticizing experimental studies of the bromide tolerance in normal human subjects, Levin has raised the point that in no case was the drug given to experimental subjects for longer than 4 weeks. He thinks that a basic defect in such experiments is the failure to appreciate the fact that the patients' reaction to bromide depends not only on the level of serum concentration but also on the length of time the concentration has remained at a high level. With regard to the point that the fault is not with the drug but with the victims' abnormal predispositions, Levin has asserted that it is precisely those members of the public with abnormal predisposition who, because of nervousness, are the largest consumers of bromides and who, therefore, require protection from dangerous uses of the drug. He has stressed the need for routine study of serum bromide level in all patients admitted with acute psychoses. Since bromide psychoses can easily be overlooked, the test should not be delayed. A high serum bromide level does not always mean that a bromide psychosis will supervene, but this information will alert the physician.

Acute bromide intoxication. This condition tends to be unusual, since quantities of this drug large enough to raise the blood bromide level to a toxic stage can scarcely be taken by mouth and retained

without emesis. Although acute fatalities from bromides appear to be extremely rare, there are reports in which death has been ascribed to the ingestion of a single, large dose of bromide or the taking of large amounts over a period of days. For example, an early case was described of a female patient who was found comatose and irrational after taking approximately 85 grains of potassium bromide every 4 hours for 4 days. Other cases have been described of acute poisoning by bromides, with recovery, in which the principal symptoms were depression with lethargy, confusion, weakness, and ataxia or psychosis with delirium and hallucinations. Disturbances of equilibrium with staggering gait, loss of memory, and indifference to the surroundings have also been reported. These cases are sometimes complicated by incontinence and difficulty of speech.

An experimental study of the symptoms of bromism based on self-observations has been reported by Schabelitz. He remained for 2 weeks on a low salt diet and then took daily amounts of 5 gm. of sodium bromide in single doses for 22 consecutive days. One hour after the first dose, he complained of irritability and numbness of the head, staggering gait, and a feeling of intoxication, which abated after 3 hours. From the beginning of the study, there were variations of mood, euphoria alternating with irritability.

Chronic bromide intoxication. The fact that the continued use of bromides involves the possibility of accumulation in the body and chronic poisoning is not always fully appreciated. Bromides are not invariably as safe and mild as they have traditionally been supposed to be.

Levin has pointed out that the bromide psychoses are not all similar, and he has listed four varieties: simple bromide intoxication, delirium, hallucinosis, and transitory schizophrenia associated with paranoid symptomatology. He has warned against regarding bromide psychosis, bromide intoxication, and bromide delirium as synonymous. The patient may have bromide intoxication without becoming psychotic and may exhibit a bromide psychosis without being delirious.

Simple bromide intoxication. This condition is characterized by progressive dullness, sluggishness, forgetfulness, and irritability as the bromide accumulates in the nervous system. The pupils are irregular and may become sluggish and even fixed to light. There are tremors, unsteadiness of gait, and general incoordination, and there may be slowing of speech. However, the patient remains oriented and rational. Should the intoxication be permitted to persist, the patient may become a victim of one or more of the three other varieties, and of these, delirium is the most significant.

Delirium. In a study of 100 patients suffering from bromide intoxication, Moore et al. found that the most common psychotic manifestation was delirium, which was observed in 66 per cent of the pa-

tients. According to these authors, bromide intoxication is most frequently seen in the 40 to 60 age group; 64 per cent of all the cases studied were women, and 36 per cent men. Among the 100 patients reported, 63 per cent had taken bromides on medical prescription, self-medication accounted for 22 per cent, and 15 per cent gave no adequate information. In this study, the bromides played a subordinate role in suicidal attempts. The duration of use of the drug varied; in the majority of the cases, it had not been longer than 3 months. The characteristic manifestation of bromide delirium is disorientation. The patient may suffer for some weeks with a simple intoxication and then may become confused as to time. There may be disturbances of mood, restlessness, apprehensiveness, inability to sleep, delusions, and hallucinations.

Transitory schizophrenia. Bromide intoxication is one of the toxic conditions that can bring about a transitory schizophrenia. This bromide schizophrenia is associated with paranoid symptomatology. The patient, usually a female, is typically one with a schizoid personality who has taken bromides for some neurotic symptom and after a time becomes dull and shows other signs of simple intoxication.

The distinction between this and other schizophrenic reactions may be made on the basis of the clinical course. In bromide schizophrenia there is a relatively acute onset in the course of a bromide intoxication, and this clears up some weeks or months after the drug has been withdrawn. There may or may not be disorientation. That is to say, there may be an admixture of delirium. Bromide schizophrenia, however, is to be differentiated from delirium and from hallucinosis. Continuing to take bromides, the patient begins to have ideas of reference, delusions, and hallucinations of the type seen in paranoid schizophrenia. In this type of bromide psychosis, there are disturbances of rapport and affectivity that characterize schizophrenia in general. The patient is aloof, withdrawn, suspicious, and negativistic. By contrast, delirious patients without schizophrenia, however confused they may be, are in good rapport. They are usually friendly and accessible and, far from being withdrawn, cling to the nurse or physician and beg for protection. The delirious patient tends to confuse the unfamiliar with the familiar. For example, he may mistake the nurse for his wife, and his mistakes are not bizarre. In bromide schizophrenia, however, when disorientation is present, it tends to have an outlandish nature. Moreover, self-reference is tremendously increased in bromide schizophrenia. In bromide delirium, there may be many fears of disaster, but the patient does not seem to be singled out as the sole victim; rather, he sees himself as one of many who are threatened. Thus, he remains a socially oriented person, not isolated from others. In bromide schizophrenia, however, the patient conceives himself to be alone in the danger and isolated.

Hallucinosi. Bromide hallucinosis is to be differentiated from delirium by the fact that the patient remains well oriented in spite of his hallucinations.

Signs and symptoms. The most prominent manifestations of chronic bromide intoxication are neurological and mental disturbances, and these comprise the most grave aspects of the condition. The symptoms have been listed in the following order of diminishing frequency: headache, irritability, emotional instability, weakness, lethargy, slurring speech, irrelevant speech, delusions, disorientation, hallucinations, loss of memory, cyanosis, vacuous facies, dilated pupils, stupor, blurred vision, fabrication, ataxia, mental confusion, disordered dreams, vertigo, and loss of libido. These symptoms may develop slowly, and it is generally agreed that disturbed mental states do not usually appear until the blood bromide concentration reaches or exceeds 150 mg. per 100 cc. There are, however, disputes as to the toxic level of bromide, and many patients become delirious before this level is attained. The level alone is not critical but must be considered in terms of the duration over which the drug has been taken and the elapsed period of withdrawal from the drug.

The signs and symptoms vary greatly from one patient to another and are highly dependent on individual personality and metabolic factors. Bromide intoxication may simulate a number of neurological or mental diseases and may be complicated by these conditions. The presenting state may be that of coma, or the patient may be stuporous, drowsy, depressed, or confused. In severe cases, delirium, delusions, auditory or visual hallucinations, or other acute psychotic symptoms become predominant and severe. Weakness, sluggishness of movement, motor incoordination, faulty gait, ataxia, and reflex disturbances are prominent features of chronic bromism. Visual disturbances include diplopia, blurred vision, disturbance of color vision, and photophobia. The pupils may be dilated, unequal, or irregular.

Since bromism may simulate or be mistaken for a number of neurological disorders, a suspicion that drug intoxication is present should always be entertained in making the diagnosis of any unusual nervous or mental condition. If there is a doubt as to the diagnosis, blood bromide and chloride levels should be examined. As Levin has stated, such patients may be admitted to the hospital in a low muttering delirium, lying quietly in bed without making any disturbance. On the 3rd or 4th day after withdrawal of the drug, the patient may become terrified and violent. Levin has pointed out that the pitfall is the assumption that the frenzy is a bad sign. On the contrary, he feels that it is a good sign. On admission, the patient was helpless and almost comatose, but as the neurological recovery proceeds and as restitution is on the way, differential return of function in different brain areas may account for the hyperactive behavior.

In a number of cases of chronic bromide intoxication, there seems to be a special idiosyncrasy to the drug. The duration of taking of the drug in intoxication cases varies. In a majority this has not been longer than 3 months. It has been emphasized that bromide acne is the most pathognomonic criterion in the diagnosis of bromide intoxication. However, it should be made clear that acne is frequently absent in intoxication with very high blood bromide levels. Moreover, bromide acne may be present in cases with quite low bromide levels. Attention should also be drawn to the variability of the neurological manifestations and to the fact that these are often obscured by preexisting conditions not associated with bromide intoxication. After discontinuation of the bromides, the average duration of intoxication has been estimated as between 2 and 6 weeks.

Levin's criticisms of a report by Millikan and Paul require presentation. The latter authors administered varying doses of sodium bromide to 36 hospital patients over prolonged periods of time. Eleven of the patients developed bromide intoxication, characterized by increased desire for sleep, dulling of higher mental functions, slurred speech, unsteady gait, and clouding of consciousness. The lowest blood bromide level at which any patient developed intoxication was 195 mg. per 100 cc. Eight patients showed evidence of intoxication between 200 and 300 mg. per 100 cc. One patient exhibited toxic signs at 319 mg. per cc. Toxic symptoms in nine patients included delusions, hallucinations, and disorientation. Signs such as crying, excitement, and confabulation developed secondarily. All patients who were made psychotic by the ingestion of sodium bromide were either suffering from a psychoneurosis or were described as psychopaths. Millikan and Paul asserted that they were unable to produce this syndrome in any patient having a stable personality. It was in criticism of these findings that Levin emphasized the importance of long continued high levels of serum bromide as an essential factor in bromide delirium.

Levin's criticism has also extended to reports by Jellinek et al. These investigators achieved serum bromide levels averaging 142 mg. per 100 cc. in the course of 4 weeks of bromization in 78 normal subjects through the administration of daily doses of 50 mg. of sodium bromide per kilogram of body weight. From time to time the dosage was adjusted to assure blood levels between 100 and 200 mg. per 100 cc. In 20 psychotic patients a mean bromide level of 134 mg. per 100 cc. was reached after 6 weeks of medication. It was reported that the normal subjects showed no symptoms of either bromide psychosis or intoxication but only the effects of sedation, manifested for the most part in deeper sleep and in some defects of concentration considered due to relaxation brought about by sedation. Of the 20 psychotic patients, only 2 gave evidence of mild intoxication; the others revealed only sedation and even some clinical improvement. It was admitted that the psychotic subjects may have been somewhat more susceptible to bromide effects than normal subjects. A group of 28 psychotic patients was given 75 to 100 mg. of sodium bromide per kilogram of body weight daily for 6 to 8 weeks. These patients reached a mean serum bromide level of 228 mg. per 100 cc., with a maximum of 310 mg. Of this group, 57 per cent of the patients revealed some evidence of bromide intoxication, such as decreased reflex activity, loss of pupillary reaction to light, and extreme drowsiness. It was reported, however, that there was no considerable increase in the psychotic symptoms. Jellinek et al. concluded that normal individuals are not likely to develop toxic symptoms at serum bromide levels between 100 and 200 mg. per 100 cc. and that mental hospital patients with long hospitalization are only slightly

more susceptible to bromide effects at comparable levels. At bromide levels between 200 and 300 mg. per 100 cc., however, mental patients of the same type showed definite signs of intoxication but little if any exacerbation of their psychotic symptoms. Levin believed that Jellinek et al. overlooked the fact of duration at a given serum bromide level and considered that these studies may cast doubt on or minimize the fact that bromides can cause mental derangement.

As has been stated by Goodman and Gilman, there appears to be no absolute correlation between the severity of bromide poisoning and the level of bromide in the blood, and many factors are concerned in determining whether a patient with a given blood bromide level will show evidence of intoxication. Among these undoubtedly are the physical and mental condition of the patient; the food and salt intake; and the presence or absence of dehydration, vomiting, diarrhea, and impaired renal function. Goodman and Gilman have pointed out, for example, that a patient who is cachectic, dehydrated, and on a poor chloride intake may exhibit severe symptoms of bromide intoxication when the blood bromide level is only 100 mg. per 100 cc., that is, when only 12.5 per cent of the blood chlorides have been replaced by bromide. Again, epileptic patients may continuously have blood bromide levels of 100 to 150 mg. per 100 cc. with only mild sedation. Goodman and Gilman, however, have placed the definitely toxic zone at blood bromide levels of 150 to 200 mg. per 100 cc. and have asserted that most patients with the latter concentration will show unmistakable evidence of poisoning. The literature is replete with case histories in which severe mental symptoms have been reported with blood bromide levels of this magnitude. Goodman and Gilman have also stressed the fact that the urinary content of bromides does *not* present a reliable guide in the detection of bromide intoxication.

Published case reports of bromide poisoning with mental symptoms show that the earliest symptoms of bromide intoxication are fatigue and sleepiness, with gradually increasing ataxia. Early signs of cardiac involvement (weakness and irregularity of the pulse) are frequent, and severe disturbances of heart action may occur. There may be poor appetite, severe constipation, loss of weight, and cachexia. Broken sleep occurs as an early sign. A relatively small number of patients suffering from bromide intoxication develop delirium, characterized by clouding of consciousness, disorientation, difficulty of comprehension, exaggerated fears, and dreamlike hallucinations, predominantly visual, in which colors, lights, and large animals are frequently reported. The duration is from 10 days to 2 weeks, unless constitutional factors, such as manic or depressive components, exert a dominant influence. Diethelm has stated that bromide delirium occurs more frequently in the United States than in Europe, probably because the lower chloride content in American food does not offer sufficient balance to the bromides. He

stressed the fact that chronic intoxication and delirium occur easily in patients with cardiorenal disorders and structural brain involvement, as in cerebral arteriosclerosis. Chronic alcoholics probably have a lower resistance because of cardiorenal and cerebral damage. Epileptics may have a phenomenal resistance to bromides. Diethelm cited the case of one epileptic patient who had a blood bromide level of over 400 mg. per 100 cc. without showing more than sluggishness and ataxia. Such a level is ordinarily incompatible with life for any length of time.

Treatment. Adequate treatment of bromide intoxication can be undertaken only after a definite diagnosis has been made. Determination of bromide poisoning utilizes clinical evaluation as well as investigation of blood bromide and chloride levels. Treatment of bromide intoxication also includes careful investigation of and therapy for the underlying condition for which the patient originally took the bromides. All possible sources of bromide intake should be withdrawn at once and treatment undertaken to effect the elimination of bromide from the body as quickly as possible. Psychological and neurological as well as other symptoms should receive attention as indicated. The use of other sedatives is generally contraindicated, but measures may be required to quiet disturbed or delirious patients.

It has been suggested that paraldehyde is the drug of choice in sedation of these patients; 15 cc. of paraldehyde may be given every 4 to 6 hours by mouth or 4 cc., intramuscularly, in each buttock every 6 hours. In some psychiatric services, paraldehyde is not administered intramuscularly because of the possibility of local necrosis. Chlorpromazine may be given intramuscularly, 50 mg., every 4 hours.

Although measures to speed excretion of bromide are recommended, there is no indication that they will necessarily hasten recovery. There is commonly a definite lag in the onset of psychotic symptoms and their resolution in comparison with the rise and fall of the blood bromide level. Thus, while the drug is accumulating in the blood, delirium may not set in until a level of 300 mg. has been reached, but it may persist after the level has dropped to as low as 75 mg. per 100 cc. This supports the view that the serum bromide determination gives only a partial account of the actual status of the nerve cells bathed in the cerebrospinal fluid.

Elimination of bromide is hastened by administration of sodium chloride. This is given by mouth or by the intravenous infusion of physiological saline. The total daily therapeutic amount of sodium chloride varies from 6 to 12 gm., given in divided doses over and above the salt contained in the diet. It is important that a high fluid intake be maintained to insure diuresis and to prevent loss of body water as a result of the large doses of salt. Adequate food intake, if necessary by gavage, is necessary to combat

malnutrition, which may often complicate chronic bromide poisoning.

The value of niacinamide in the treatment of bromide intoxication has been recommended. Studies of human patients and volunteers have also shown that bromide is excreted and symptoms are relieved more rapidly with ammonium chloride than with sodium chloride treatment alone. The reasoning behind this is that ammonium chloride, aside from adding chloride, also acts as a diuretic. The use of mercurial diuretics in the treatment of bromide intoxication has also been investigated as a means of overcoming poor success with some patients in reducing the bromide level by chloride administration alone. In treating cases of chronic bromide poisoning with 6 gm. of sodium chloride added to the daily diet, 2 cc. of the mercurial diuretic meralluride (Mercuryhydrin) are injected intramuscularly at intervals of 2 or 3 days. Clinical studies have shown that Mercuryhydrin increases the excretion of bromide both by promoting urinary output and by raising the bromide concentration in the urine. This drug has been recommended for use with either sodium chloride or ammonium chloride. Subcoma insulin has also been used to aid elimination of the bromides.

Adrenal cortical extract may be administered in conjunction with sodium chloride. The combination of sodium chloride and deoxycorticosterone has also been used. Patients treated with this combination have been found to improve more rapidly than those given sodium chloride alone. On this treatment regimen the recovery time has been found to be between 10 and 24 days. The time necessary for the reduction of blood bromide by 50 per cent varies between 8.5 and 14.5 days for patients treated with salt alone and between 4 and 8 days for patients treated with deoxycorticosterone as well as salt. In general, it has been found that recovery requires from 1 to 3 or more weeks when chloride is administered adequately. As indicated, it is found that, as the blood bromide concentration falls, symptoms of intoxication disappear at a bromide level that is usually lower than that at which they originally made their appearance.

Barbiturates

Symptoms. Mild, simple intoxication with barbiturates results in acute and chronic symptoms somewhat similar to those observed in alcohol intoxication. There is dullness, sluggishness, sleepiness, slowness of speech and understanding, impaired memory, and disturbances in thought processes and judgment. Patients exhibit a narrowing of the range of their attention and may be emotionally labile, exhibiting querulousness, petulance, and irritability. They may be morose and hostile and show paranoid ideation. Inappropriate emotional behavior is common, and the victim may laugh or cry irrelevantly. It is characteristic for them to become untidy and

careless of their appearance, work, and habits. The patients make mistakes in meticulous tasks requiring precise attention and concentration. Neurological manifestations include slurring of speech, nystagmus, diplopia, strabismus, faulty accommodation, vertigo, ataxia, disturbances of muscle tone, and decrease in superficial reflexes.

Treatment. Following acute barbiturate poisoning, there may be confusion and more serious psychotic manifestations. Protection and continued nursing care are essential, and sedation may be given in the form of small amounts of paraldehyde to induce sleep. Treatment may be required for pulmonary disturbances resulting from inhalation of liquid or semiliquid foods. Subsequent psychiatric evaluation and appropriate treatment (as of attempted suicide) is mandatory.

In barbiturate addiction, psychotic disturbances may occur between the 4th and 7th day following withdrawal. Hallucinations are predominantly visual but may be auditory as well. Delirium is apt to be worse at night, and the patient is likely to be disoriented as to time and space but not as to person. The psychosis usually terminates abruptly after 3 to 5 days and is succeeded by sleep for 8 to 12 hours. There is partial memory of hallucinatory material. During delirium the body temperature is usually elevated 1.8 to 3.6° F. A rapidly rising temperature is an ominous sign and may indicate a fatal termination. Also, if delirium has developed during withdrawal from chronic barbiturate intake, prognosis must be guarded, since this condition is occasionally fatal.

Abrupt withdrawal of barbiturates from addicted persons is absolutely contraindicated. The patient should be hospitalized where control of the environment can be effectively achieved. If a diagnosis of barbiturate addiction can be made before objective signs of withdrawal appear, the patient should be given pentobarbital in amounts sufficient to maintain a state of mild barbiturate intoxication. Usually 0.2 to 0.3 gm. of pentobarbital every 6 hours until all necessary examinations have been completed is sufficient. After this, a gradual withdrawal is accomplished by reducing the daily administration by no more than 0.1 gm. If symptoms appear, the reduction is discontinued until they abate. Withdrawal is usually accomplished within 14 to 21 days. If barbiturate addiction is diagnosed after a major convulsion or after psychosis has appeared, the patient should immediately be given 0.3 to 0.5 gm. of pentobarbital either orally or parenterally. Then barbiturates are administered every 4 to 6 hours in amounts sufficient to cause a mild intoxication. After re intoxication with barbiturates has been achieved, gradual withdrawal is carried out. When withdrawal is complete, psychiatric evaluation and appropriate psychotherapeutic planning are necessary.

Withdrawal may sometimes better be accomplished

by reducing the dosage every other day. Convulsions can be prevented by giving 100 mg. of diphenylhydantoin (Dilantin) three times a day by mouth for 2 weeks.

Withdrawal effects. Delirium and other psychotic manifestations may supervene after withdrawal of barbiturates, and cases have also been observed in which delirium began even while the patient was presumably taking the drug. In patients who have become dependent on barbiturates, withdrawal may be characterized by tremulousness, asthenia, anxiety, and inability to sleep. Mild withdrawal effects may be limited to paroxysmal abnormalities in the electroencephalogram (EEG), but in severe cases there may be grand mal seizures.

Studies by Fraser et al. have shown that a daily dose of 0.4 gm. of pentobarbital for 3 months is a precondition for abrupt withdrawal effects characterized by paroxysmal EEG changes alone. In subjects withdrawn after 1 to 2 months on 0.6 gm. per day, one half exhibited minor symptoms, such as tremor, loss of appetite, and insomnia; seizures occurred in some. However, in subjects given 0.9 to 2.2 gm. per day for a number of months, three quarters experienced seizures, and approximately two thirds became delirious. Sleepiness, tremor, and loss of appetite were seen in all these subjects.

The anxiety, tremulousness, and weakness following withdrawal of short-acting barbiturates occurs within the first 12 to 16 hours, and the symptoms may become maximal during the 2nd or 3rd day, during which time seizures are most common if they occur at all. With the longer-acting barbiturates, the maximal period for most intense withdrawal symptoms is later. As is the case with withdrawal from alcohol, delirium may develop after 2 or 3 days. The patients are anxious and plagued by horrifying dreams and inability to sleep. The hallucinatory material is usually visual, as with alcohol delirium tremens, and the patient experiences the sense of being persecuted or attacked. He may be disoriented, agitated, and exhausted. Delirium, if it occurs, is most common between the 4th and 7th day after withdrawal and ordinarily subsides by the 8th to 10th day, even without therapeutic intervention, and the patient is left depleted and sleepy. As with delirium caused by withdrawal from alcohol, hallucinations may continue for many weeks or months, in which case the diagnosis of an underlying psychotic condition should be explored.

Amphetamines

Amphetamines are commonly prescribed in the treatment of overweight patients and as mild antidepressants, and, although they do cause an enhanced sense of well being, addiction to these drugs is apparently not common. A psychotic reaction may occur after a single excessive dose (say 55 to 75 mg. of dextroamphetamine). Manifestations may occur in 36 to 48 hours and may be extremely difficult to dif-

ferentiate from a schizophrenic reaction. There are characteristically excitement, auditory and visual hallucinations, paranoid thinking, and looseness of logical associations between successive items in the stream of talk. The sensorium remains clear. Unless the drug is continued, the condition is usually limited to about 7 days. Continued overuse of the amphetamines for many weeks or months may also result in a toxic psychosis.

In a report on psychoses due to amphetamine consumption, Beamish and Kiloh have described case histories supporting the point that, in the majority of cases of psychotic illness occurring in association with amphetamine consumption, the picture resembles that of paranoid schizophrenia. Without an accurate knowledge of the drug intake, it is easy to misdiagnose the condition as a schizophrenia. Beamish and Kiloh have also pointed out that the psychotic symptoms usually disappear within a few days of drug withdrawal, responding quickly to hospitalization, no matter what the treatment. In the majority of cases, withdrawal is without danger. In one of the cases reported by Beamish and Kiloh, delirium occurred as a withdrawal phenomenon, but in this case barbiturates may have complicated the situation.

In amphetamine psychosis, 25 to 50 mg. of chlorpromazine may be given intramuscularly every 4 hours for sedation.

In general, the therapy of amphetamine intoxication is entirely symptomatic. The patient should be hospitalized, reassured, protected, and sustained in a quiet, constant environment. As stated, the psychotic symptoms usually clear rapidly after discontinuance; abrupt withdrawal causes no major observable physiological disruptions that would require gradual reduction of the drug. Clearance of amphetamine is usually accomplished within a week. In some cases, gradual withdrawal of the drug may be desirable.

A male patient began to take benzedrine as a college student. Several years later, he was admitted to a mental hospital with a diagnosis of paranoid schizophrenia. He continued to obtain amphetamine while in the hospital and showed wide mood swings. After several hospital admissions, the patient was treated with a prefrontal lobotomy. After this intervention, the patient continued to take amphetamines.

A 23-year-old man complained of cramplike pain over the precordium, a tingling sensation over the face, and difficulty in breathing. The symptoms were of 5 hours' duration, and the patient had been using a benzedrine inhaler to relieve nasal obstruction over a period of 18 hours prior to the onset of symptoms. His respiration was shallow and rapid, he was sweating profusely, and his pupils were dilated but reacted to light and accommodation. The pulse was 140 per minute, the blood pressure was 200/100 mm. Hg, and the blood glucose was 125 mg. per cent. There were signs of confusion and tachypnea (50 per minute). Tachycardia (160 per minute) developed, and there were auditory hallucinations. Treatment with 10 cc. of paraldehyde by mouth twice quieted him, and the symptoms disappeared. It was estimated that about 265 mg. of benzedrine had been taken into his body.

A 32-year-old woman ingested 200 mg. of dextroamphetamine 12 hours before examination. She was aggressive, suspicious, and restless. There was flushing, profuse sweating, and

dryness of the mouth. The symptoms cleared rapidly on sedation with paraldehyde.

Other cases of acute amphetamine poisoning have been recorded in which there were visual or auditory hallucinations, excitement, confusion, paranoid delusions, and depression. There are also cases of amphetamine poisoning in children 2 to 4 years of age who inadvertently swallow tablets containing amphetamines. In one case, a 4-year-old boy took about 70 to 90 mg. of amphetamine. He became overactive, elated, and delusional and had auditory illusions. He seemed to hear music and soft voices. The patient recovered in 10 hours after minimal sedation. Another child, two years of age, swallowed an undetermined number of tablets, each containing 2.5 mg. of amphetamine. He became very restless and talked all night, sometimes incoherently. In other such cases, the amount of amphetamine taken, when known, varied from 55 to 115 mg.

Belladonna Alkaloids

The sudden onset of bizarre psychological and neurological symptoms should always lead to the suspicion of drug toxicity, and poisoning by atropine should always be considered. Drugs of the belladonna group can cause severe delirium. Indeed, in both children and adults, toxic effects can be induced even in such small doses as are used by conjunctival instillation to dilate the pupils. Toxic sequelae of serious proportions have resulted from using atropine or scopolamine instead of homatropine in eye drops.

The psychotic manifestations of overdose of atropine may be observed with doses of 10 mg. and more and are associated with burning and dryness of the mouth, difficulty in deglutition and speech, and intense thirst. The pupils are widely dilated, with blurring of vision and sensitivity to light. The skin is hot, dry, and flushed and sometimes exhibits a rash. Alarming hyperexia (over 109° F.) may complicate the situation. In addition to weakness, nausea, vomiting, and other manifestations, there are acute disturbances of the sensorium, with clouding of the memory and faulty orientation. The hallucinations are particularly visual.

It is possible to confuse atropine psychosis for an acute schizophrenic reaction. Signs of paralysis of parasympathetic end effects should be sought, that is, dry mouth, wide dilatation of the pupils, hyperthermia, and racing heart. Dameshek and Feinsilver have suggested administration hypodermically of 10 to 30 mg. of methacholine as a diagnostic procedure in doubtful cases, since atropine abolishes the sweating, lacrimation, salivation, and nasal discharge that are typical effects of methacholine.

When the drug has been taken by mouth, victims of atropine poisoning must be treated without delay by measures to limit absorption of the drug into the blood stream. If sedatives are used to allay excitement, these should not be given in large doses, since central nervous system depression, which may occur later, may thus be potentiated by the sedatives.

Mundy and Zeller have reported the successful treatment of a case of scopolamine psychosis with chlorpromazine. Chlorpromazine may be given in amounts up to 800 mg. daily. It is suggested that

one half of the dose be given orally and one half intramuscularly. As the patient improves, the intramuscular dose may be discontinued, and 50 mg. may be given orally every 4 hours as necessary.

Thiocyanates

Sodium thiocyanate and potassium thiocyanate have been used in the treatment of hypertension. However, there is a high incidence of toxic reactions, even at blood levels as low as 8 to 12 mg. per cent. There is accumulation of thiocyanates in the body, even when the dosage is stabilized, especially when the intake of sodium chloride has been limited. The toxic effects include sleepiness, asthenia, irritability, confusion, hallucinations, and delirium. Since thiocyanate is sometimes still used in the treatment of high blood pressure, a thiocyanate psychosis may be mistaken for hypertensive encephalopathy. The determination of a thiocyanate blood level establishes the diagnosis. Measures should be taken to accelerate the clearance of the substance from the body by administration of large amounts of chloride.

Cases of recurrent thiocyanate psychosis have been reported. In one case, the psychosis cleared within 7 to 14 days of each admission to the hospital, without specific therapy. This patient had been taking potassium thiocyanate for 10 years. She had used more than the prescribed dosage when she felt badly and had a blood level of 36 mg. per cent on her most recent admission. This was reduced to 15 mg. per cent on the 9th day of hospitalization. Clinical improvement paralleled the removal of the thiocyanate.

Another patient became disoriented and had paranoid delusions 2 weeks after taking 0.22 gm. of sodium thiocyanate three times daily. On the 2nd day of hospitalization, the patient was less agitated, and the serum thiocyanate level was 19.7 mg. per cent. She became less responsive, however, and the deterioration of her clinical state prompted the use of extracorporeal hemodialysis on the 3rd hospital day. Dialysis was continued for 5 hours. The serum thiocyanate level fell to 3 mg. per cent just after completion of the dialysis but rose to 7.0 mg. per cent 8 hours later. Twenty-four hours after dialysis, the patient was improved, and on the 15th day after dialysis she had returned to her normal mental state. The patient was discharged on the 27th hospital day with a serum thiocyanate of 2.1 mg. per cent.

It appears, therefore, that in urgent cases of thiocyanate psychosis, the most satisfactory procedure is hemodialysis. Sedatives may be used. It is well to point out that a survey of the recent literature reports a mortality of 37 per cent in a series of 53 cases of thiocyanate psychosis. The mechanism by which the thiocyanate ion induces the psychosis is not known. Prevention by avoiding the drug seems indicated.

Anesthetics

The volatile anesthetics are inert in the body and rapidly excreted. Toxic psychotic reactions in patients who have undergone surgery under the influence of volatile anesthetics are due to incidental causes associated with the operative procedure in which there is for one reason or another a faulty

transport of oxygen to the tissues. The disturbance, therefore, is essentially the result of central nervous system hypoxia.

Nitrous oxide can cause cerebral damage with mental defect, epilepsy, and extrapyramidal syndromes. Here again, the symptoms are to be ascribed to damage caused by oxygen deficiency.

Cocaine, used locally, can result in overexcitement, delirium, and convulsions. The likelihood of such contretemps may be minimized by the use of such vasoconstrictors as epinephrine with the cocaine. Some patients are unusually sensitive to cocaine when locally injected.

Psychotic problems arising from anesthetics are very rare, and preventive measures are usually effective. Treatment consists in symptomatic therapy and in dealing with the basic causes of hypoxia.

Hormones

A certain percentage of the psychotic reactions associated with the therapeutic use of hormones may be complications of some of the diseases for which the hormones are given. For example, there is a greater than normal occurrence of psychiatric disturbances among patients with Addison's disease, Cushing's syndrome, hypothyroidism, and hyperthyroidism. Hormone administration constitutes a complicated stress, and the patient's response depends on a wide range of physiological and psychological factors and interactions modified by the stress.

In the course of therapy with adrenocortical steroids, psychoses may be grave and frequent. Treatment with cortisone and adrenocorticotrophic hormone (ACTH) commonly results in euphoria and joviality, which are consistent with continuation of these hormones. However, there are major mental disturbances that assume various forms, including hallucinations, paranoid delusions, and affective disturbances ranging from depression to hypomania. There may be apathy or panic with uncontrollable excitement. There may also be intellectual-affective dissociation, bewilderment, and depersonalization. Suicidal tendencies are common.

Some authors have not discerned any characteristics of premorbid personality that might enable one to anticipate the occurrence or predict the severity or duration of psychiatric complications. Others have drawn attention to the relationship between the patient's previous mental status and his response. It has been stated that serious reactions are more likely to be found in those patients who have a prior history of psychosis or other evidence of instability. It has been said that the psychosis with cortisone or ACTH may represent an intensification of personality disturbances that existed in the past. However, the fact that there is no history of a previous psychotic breakdown or of emotional maladjustment does not guarantee that during hormonal therapy

there will not be a psychosis. Moreover, successful tolerance of previous treatment with corticosteroids does not necessarily mean that there will be no psychotic disturbance during subsequent hormonal therapy.

There appears to be no correlation between the dose of cortisone or ACTH and the severity or duration of the psychosis. The onset of the psychosis is not regularly correlated with chemical changes occurring in the course of therapy.

The management of the psychoses associated with adrenal corticosteroids presents many problems. If the patient has an illness that threatens life, the hormone may have to be continued, even though there is a psychosis. However, the dosage should generally be reduced for several days, with continuous psychiatric observation. If the condition clears, the reduced dosage may be continued or adjustment of dosage made to the point where the patient remains psychiatrically stable and at the same time benefits from the medication. The hormone may have to be withdrawn if the patient's mental condition continues to deteriorate or does not clear. Transfer from ACTH to cortisone may sometimes correct the psychiatric problem. Hormone-induced psychosis may occur spontaneously but may endure several months. Patients with suicidal tendencies may benefit from electroshock therapy; electroshock has also terminated excited states and induced complete remission of symptoms.

In high dosage ACTH therapy for multiple sclerosis, mental changes of psychiatric or borderline psychotic proportions have been reported in approximately 16 per cent of cases. Striking reversal has been effected by changing the medication to hydrocortisone or a cortisone-equivalent drug (dexamethasone). Such reversal has been accomplished within 6 to 16 days. It has been found that patients taking ACTH without becoming mentally disturbed present a picture of sustained and gradually changing output of 17-ketosteroids and 17-hydroxycorticoids. The disturbed patients exhibit sharp and rapid fluctuations in 17-hydroxycorticoid excretion.

A case has been reported of a 56-year-old woman with advanced generalized rheumatoid arthritis who was given 4,600 mg. of ACTH intramuscularly in the course of 77 days (40 to 80 mg. per day). During the first 2 months of therapy, the patient did well, showing only a mild euphoria. She then became suspicious and agitated and within less than 2 weeks exhibited paranoid ideation. ACTH was discontinued 3 days later, at which time the patient was drowsy and depressed. She remained depressed, withdrawn, and defiant for 2 weeks, and paranoid delusions and hallucinations were present. By the end of 2 weeks, there was gradual improvement, with full recovery in the following 2 weeks. Coincident with the improvement of the mental state, there was relapse of her arthritis. She was placed on cortisone by mouth, with remission of the arthritic condition, and was discharged from the hospital on cortisone (150 mg. per day). She continued on cortisone with no recurrence of the psychiatric complications.

Disulfiram

There have been reports of acute psychotic crises in alcoholic patients using disulfiram as a deterrent measure to enforce abstinence from alcoholic beverages. This was particularly the case in the earlier years of the clinical use of disulfiram and has been ascribed to three principal causes. First, it has been held that the administration of disulfiram, with the ominous threat of a dangerous and terrifying disulfiram-alcohol reaction, built around the patient a high pharmacological fence within which he felt trapped. Second, the restrictions imposed by disulfiram, if severely reinforced by a highly restrictive therapeutic strategy and inadequate therapeutic attention to underlying psychological factors in the patient's drinking problem, have the effect of bringing these factors into prominence as overt mental disturbances. Third, one was dealing with a toxic problem associated with the unnecessarily high doses of disulfiram that were often administered.

Maintenance doses of 0.5 gm. or more per day have been given in the past, but there seems no reason to suppose that such high doses are any more effective than the safer dose of 0.25 gm. per day that seems to produce fewer symptoms. At the dose of 0.25 gm. per day, most patients show no toxic reactions whatever and may continue to take disulfiram for several years without any untoward effects. On the daily dose of 0.25 gm., there are occasionally feelings of lassitude and reduction in sexual interest and potency. These symptoms can usually be corrected quickly by reducing the daily dose to 0.125 gm. A daily maintained dose of either 0.25 or 0.125 gm. is sufficient to cause an unpleasant disulfiram-alcohol reaction. Hoff and McKeown found that, when disulfiram was introduced to the patient in the hospital by giving 4 gm. of the substance over a period of 4 days prior to the disulfiram-alcohol challenge, no acute psychotic effects were manifest in 1,020 patients. It thus appears that, if a toxic psychosis does supervene, this is referable to a long continued heavy dosage.

Apparently, disulfiram acts to alter the intermediary metabolism of alcohol, with a resulting increase in concentration of acetaldehyde in the body. This substance rapidly produces a spreading cutaneous vasodilatation, which appears to be primarily responsible for the signs and symptoms of the reaction. The disulfiram-alcohol reaction is of early onset (within 5 to 10 minutes) and is self-terminating in about an hour or two. Although exceedingly unpleasant, the reaction has never been complicated by psychotic manifestations in Hoff's experience.

Untoward complications of prolonged, daily disulfiram administration can be obviated, as stated, by keeping the daily dose within 0.25 gm. and also by encouraging the patient to monitor his own ad-

ministration of the drug so that he conceives of its use as a means of reinforcing his own motivation for sobriety and rehabilitation.

Antibiotics

Neuropsychiatric disturbances may complicate the administration of various sulfonamides. Since fevers and infections may be causative of toxic psychoses, it is not always certain whether the underlying infection or the sulfonamide or both are operating. After administration of sulfonamides, there may be drowsiness, confusion, depression, inability to sleep, terrifying dreams, acute psychotic reactions, unsteadiness of gait, ringing in the ears, and vertigo. There have been reports also of toxic psychoses following penicillin administration in a small number of cases. In patients with secondary syphilis treated with penicillin, the Jarsch-Herxheimer reaction—occurring a few hours after initial administration of penicillin and characterized by chills, fever, headaches, and muscle and joint pains—may also be accompanied by delirium and convulsions.

Gases and Vapors

Concern for the poisonous actions of gases and toxic vapors belongs primarily in the fields of industrial, aviation, submarine, diving, and space medicine. The nervous system is heavily involved in the stresses to which man may be exposed in enclosed environments above the earth, under the sea, and in special working conditions. Psychological disturbances from excessive stress in these environments are complicated and variable. Questions of tolerance and adaptation are highly important.

Oxygen

Oxygen lack. There is evidence of very strong sensitivity of the higher cerebral centers to oxygen lack. If one accepts the concept of a metabolic gradient in the central nervous system, it follows that not all parts of the brain are equally affected by hypoxia: those regions with the highest metabolic rates succumb first, and those with the lowest rates succumb last. During a slow, progressive hypoxia, precise contact with the environment is first lost. There then follows aimless motor restlessness, succeeded by muscle spasms, convulsive episodes, disturbance of heart action, and failing respiration. It has been found that lowering oxygen concentration of inspired air slows the rate of cortical potentials. The slowing is greater the lower the oxygen level. The greatest slowing occurs when both oxygen and carbon dioxide content are low.

The electroencephalograms of psychoneurotic patients tend to exhibit a greater degree of slowing than do those of normal adults, suggesting a more labile metabolic process in the brain cells of patients than in normal persons. Within a minute after breathing 6 or 7 per cent oxygen, the electroencephalo-

gram is characterized by small, rapid waves; 2 or 3 minutes later, there are slow, large δ waves appearing in groups. The mean amplitude increases rapidly, and the final stage after about 5 minutes contains almost all δ waves. Performance, as estimated by psychological tests, is progressively impaired. In comparing psychoneurotic patients with control subjects, researchers have found that the latter deteriorate more on reaction time tests, and the patients show a greater drop in the tapping speed and stylus tests. When the two groups are compared directly with each other in regard to the amount of change reproduced by hypoxia, there is no statistically significant difference between them. Regarding the appearance of physical signs of stress, both groups are much alike in type, frequency, and severity of symptoms, except that the controls seem to experience headache and giddiness more frequently, while the patients experience more difficulty in breathing and more tremor and unsteadiness.

Performance decrements due to oxygen want tend to appear quite suddenly. For example, it has been found that hypoxia does not disturb or impair simple, habitual responses until it has continued for at least an hour below 10.25 per cent without previous acclimatization. Ambient air contains 20 per cent oxygen. Kinesthesia and visual function are first affected; audition is affected later. Multiple choice reactions are impaired at oxygen levels of about 11.5 per cent, at which levels there is also deterioration of neuromuscular control, as demonstrated by loss of performance in handwriting tests. When oxygen falls as low as approximately 9 per cent, there is loss of memory and defective awareness of lapse of time.

The effects of low oxygen on higher mental processes depend to some extent on the emotional tendencies of the subject. Some individuals become lethargic or indifferent; others experience outbursts of anger. In one study of 17 medical students and 9 psychoneurotic patients exposed to 13 per cent oxygen for 3 hours, the students complained of frontal headaches, dizziness, yawning, oppressive pains in the joints and epigastrium, tingling in the fingers and toes, and vague anxiety. There was some inability to concentrate, and perception time was slower. In about half of the students, there was a period of elation, followed by dullness and drowsiness. In the rest, there was no elation, but there was irritability and impaired performance on the psychological tests. In the 9 patients, the somatic complaints were essentially the same as those in the students, but they were less pronounced and less frequent. Several of the patients showed excitement, loss of inhibition, overt sexual advances, and exaggerated self-esteem; others were dull and drowsy. The students made 45.4 per cent more errors in an attention and recall test after 13 per cent oxygen; the patients showed 19.2 per cent fewer errors as compared with their performance in normal air. The Rorschach test after low oxygen showed only superficial mood changes. Of the 17 students, 11 were elated, and 6 showed a tendency toward depression with a reduced ability to form new and original associations.

It appears that hypoxia exposes and exaggerates the preexisting tendencies to react according to fundamental inherent patterns. Inhalation of high oxygen atmospheres by patients with previously existing chronic hypoxia has also been found to produce a profound disturbance in mental functioning. Irritability, stupor, and delirium may supervene within 3 hours of exposure to 50 per cent oxygen.

However, when these patients become acclimatized to raised oxygen tension, the mental disturbance disappears and is frequently replaced by a cheerful and optimistic mental state.

Breathing progressively lower oxygen mixtures, human beings show evidence of performance deficits and central nervous system disturbances that are mild at first and are, for the most part, compensated. With mixtures simulating altitudes of 5,000 to 7,000 feet, there may be visual disturbances, for example, in the appreciation of color. At simulated conditions of approximately 10,000 feet, there is increasing deficit in performance, speech intelligibility, and concentration of attention. Subjects become bored, somnolent, and unreliable in their tasks. As is well known, however, acclimatization to much higher altitudes is possible, and the limits of acclimatization appear to be at oxygen levels simulating altitudes of around 18,000 feet. Some subjects will not break down until around 20,000 feet or higher. Victims of hypoxia become euphoric and unconcerned for their safety and may exhibit behavioral abnormalities resembling acute alcohol intoxication.

The pathological manifestations in the central nervous system following death from hypoxia are severe and definite. In the case of a man deprived of oxygen for a period of 5 to 10 minutes, there were severe degenerative changes in the cerebral cortex (particularly in the motor and visual areas), in the putamen, and in the cerebellum.

The neuropsychological effects of low oxygen tensions due to high altitudes are essentially similar to those caused by low oxygen mixtures at ambient pressures. There is progressive deterioration in performance of tasks requiring attention and striking loss of concern for the dangers of the situation. Hypoxic problems at high altitudes are correctly prevented by breathing mixtures of gases with progressively increasing percentages of oxygen up to 100 per cent (which permits support in altitudes of 40,000 to 45,000 feet) or, preferably, by pressurization of the cabin or capsule (now standard procedure).

Oxygen intoxication. Breathing oxygen at pressures greater than 2 atmospheres causes characteristic signs and symptoms of muscle twitching, irritability, vertigo, nausea, vomiting, changes in mood and behavior, and generalized convulsions with loss of consciousness.

Under some circumstances, rapid decompression to sea level from simulated high altitudes or administration of oxygen following a period of hypoxia results in untoward psychological, cardiovascular, and neuromotor signs and symptoms. There may be mental confusion, cardiovascular decompensation, muscular incoordination, and convulsions. These effects are spoken of as the *oxygen paradox*. Psychic changes were observed by Comroe et al. in 8 out of 65 patients. The mechanism for this response to oxygen may possibly involve carbon dioxide narcosis,

cerebral vasospasm, reflex depression, increased cerebrospinal fluid pressure, or direct depression of the cerebral cortex by high oxygen tensions. In one test by Latham, 60 exposures of 52 people to 20,000-foot simulated altitude were made. Thirteen of these showed paradoxical symptoms during oxygen administration. Writing test errors reached a peak 12 seconds after oxygen inhalation at simulated altitude. Cardiovascular responses followed approximately 40 seconds later, and these were accompanied by muscular incoordination and mental confusion. Later, there was threat of cardiovascular collapse, associated with a fall in blood pressure and an increase in peripheral flow.

Carbon dioxide. In the earlier literature, attention has been called to muscular spasms, cramps, and hallucinations in human subjects exposed to 6 or 7 per cent carbon dioxide. Breathing 6 or 7 per cent carbon dioxide causes a prolongation of the time required for addition and cancellation tests and also increases the number of mistakes. Concentrations of 3 or 4 per cent carbon dioxide can be borne for short periods with no mental disturbances, and, in some subjects, concentrations as high as 6 per cent can be tolerated briefly. A 5 per cent carbon dioxide mixture is extremely disagreeable, and probably no human subject will remain conscious for more than 15 minutes breathing a 10 per cent carbon dioxide mixture. Possibly 4 to 6 per cent carbon dioxide may be tolerable for a brief period, but at a concentration of 8 to 10 per cent the limits are nearly reached. At 10 to 12 per cent carbon dioxide, there is unconsciousness if exposure is prolonged for more than 10 minutes. Levels up to 15 per cent are tolerable for only 1 to 2 minutes, and concentrations of 15 to 25 per cent are irrespirable except for a few seconds. At such concentrations, human subjects suffer from laryngeal spasm, headache, dyspnea, gross mental confusion, and psychosis. At concentrations of 25 per cent and above, there is complete narcosis and convulsions either during or after exposure.

Up to 10 per cent, carbon dioxide appears to act as a respiratory and cardiovascular stimulant, but above this critical level the respiratory depressant effects of the gas begin to appear. Exposure to 5 or 6 per cent has been found to cause mental depression, ataxia, dizziness, and fatigue. In studies of 6-day exposures of human subjects to an atmosphere containing 3 per cent carbon dioxide, it has been found that, during the first 24 hours, there is an excitatory effect succeeded by depressive reactions.

Therapeutic administration of carbon dioxide to psychiatric patients has resulted in widespread alterations of activity of the central nervous system, ranging from sensory phenomena to complicated dreams, temporary states of confusion, and hallucinations.

Carbon monoxide. Since carbon monoxide acts to reduce the oxygen-carrying capacity of the blood,

the signs and symptoms of carbon monoxide intoxication are those characteristic of oxygen lack at the level of the tissues and particularly of the central nervous system. After acute carbon monoxide poisoning, there may be permanent brain damage; histopathological changes are found in the globus pallidus and the substantia nigra. Repeated and prolonged exposures to toxic concentrations of carbon monoxide in poorly ventilated closed spaces may also result in illness. Because of this potential danger of chronic exposure, the maximal allowable concentration of this gas has been set by the United States Department of Labor at 0.01 volume per cent (100 parts per million).

Nervous and mental sequelae in carbon monoxide poisoning tend to be relatively infrequent. In one study, out of 21,143 cases of carbon monoxide poisoning in New York City, only 43 had any after-effects, and, of these, only 9 showed chronic signs and symptoms referable to the nervous system. Although comparatively rare, the mental and neurological after-effects of carbon monoxide asphyxia are often very trying from the point of view of treatment and are characterized by severe disability or deterioration of the personality.

A woman victim of accidental carbon monoxide poisoning who survived for 15 years after the original accident exhibited gross disturbances of neurological and mental function. She developed partial amnesia, diminished self-control, and violent flare-ups of temper, and she became secretive and subject to irrational behavior. As time went on, she became sleepless and restless and developed tremors. There were parasthesias, which she described as a "creepy feeling all over." There was also numbness of the legs. It became more and more difficult for her to concentrate; she was confused and tended to repeat words and phrases. She exhibited rhythmic picking at her clothes, tremors of the left arm and leg, exaggerated reflexes, bilateral ankle clonus, and a thick, mumbling speech. There was also poverty of ideas, and she had a rigid, inexpressive face with staring eyes. At autopsy, large bilateral symmetric necrotic lesions of the globus pallidus were seen, and there were areas of softening and small glial scars throughout the cortex, with corresponding areas of demyelination, mild vascular changes, and neuronal destruction in the caudate nucleus and Ammon's horn.

A remarkable case with a favorable outcome was that of a patient of 59 who was asphyxiated by exhaust gas and who went steadily downhill for 2 years to a state of well-advanced parkinsonism. The patient became subject to generalized convulsions, and there was personality deterioration. Three years after the accident, improvement began; 3 years and 8 months after the accident, he was almost completely recovered and able to return to work.

Another case is that of a man who was revived after a suicidal attempt in which there was subsequent loss of ability to perform certain skilled acts. Agraphia was also present. Convulsive disorders subsequently developed. The patient was unable to learn through concrete examples, and a carefully planned retraining program was devised in which all instructions were completely verbalized. By this means, the function of writing was returned to the patient.

In another case, a 35-year-old lawyer was found unconscious in a car in his garage. His subsequent course was characterized by a psychosis in which there were symptoms of depression and amnesia. There was also peripheral neuritis. When last seen, 13 months after the carbon monoxide poisoning, there was general

improvement. It is to be noted that the poisoning may have been a suicidal attempt and that the patient was depressed and agitated before the presumed accident.

In another case of severe carbon monoxide poisoning, coma lasted for 12 days. At the end of 16 days, the patient could speak but was uncooperative and surly. He did not recognize his friends, and there was loss of memory. There were also signs of parkinsonism. These symptoms disappeared in about a month. He complained of severe pains in the legs and feet, and there was toe drop on the right side. The peripheral neuritis as well as other symptoms abated slowly, and in 1 year he was able to resume his professional activities. In 2 years, he was completely well.

In the case of a 34-year-old man who attempted suicide by carbon monoxide, there was unconsciousness for 72 hours. Previously, the patient had been an excellent student, a skilled pianist, and a business executive. Eighteen months after poisoning, he exhibited schizoid disturbances. Space perception was impaired, and typing, playing the piano, and matching colors were impossible. There were no hallucinations or delusions.

Carbon monoxide poisoning in 15 patients who were previously mentally ill has been discussed by Van Amberg. Four of these patients, who had had sufficient gas for acute symptoms but were not unconscious, developed no neurological or mental changes. Four patients who were unconscious up to 30 minutes developed no new clinical signs or symptoms. In two patients who were unconscious for about 1 hour, there were transient neurological defects. Five patients who were unconscious from 3 hours to 5 days showed great variability of recovery. Van Amberg has pointed out that a patient poisoned with carbon monoxide is not likely to have serious sequelae if he regains consciousness within 1 hour after removal from the toxic atmosphere. Beyond this point, there appears to be no correlation between the duration of unconsciousness and the severity and permanence of the clinical changes. There seem to be no important clinical differences between the toxicity of motor exhaust gas and that of illuminating gas. Other clinical observations indicate that the danger of psychotic reactions are greater if the coma persists longer than 36 hours.

Diagnosis. The diagnosis of carbon monoxide poisoning is aided by the history of exposure and by the cherry red color of the mucous membranes, skin, and finger nails; the final diagnosis is confirmed by the presence of carboxyhemoglobin. Subjective sensations are noted when the carboxyhemoglobin reaches 30 per cent, and a saturation of 50 per cent usually connotes mental involvement, with cerebral and cardiac lesions.

Treatment. The treatment of carbon monoxide poisoning has been reviewed extensively by Hoff and Greenbaum. The victim must be transferred from the toxic atmosphere and given oxygen by means of an appropriate respirator. Pending this, artificial respiration must be maintained manually or orally if there is respiratory paralysis. Although administration of oxygen with 5 or 7 per cent carbon dioxide has been recommended in the past, there appears to be no practical value of oxygen-carbon dioxide mixtures as

opposed to pure oxygen. Blood transfusion may be a helpful procedure. In cases where cardiac arrest has supervened, intracardiac administration of epinephrine and atropine has been considered worthy of trial as a last resort. Supportive measures, such as warmth, absolute quiet, and hypothermia, have been recommended. Administration of oxygen under a pressure of 2 atmospheres has been found to accelerate the elimination of carbon monoxide and to promote recovery. The intravenous injection of 100 cc. of 15 per cent saline solution has been used to relieve headache and mental confusion.

Gasoline. Inhaling gasoline may become a tempting, recurrent activity in children and adolescents, and habituation has been reported. Repeated use causes extensive salivation, drowsiness, weakness, light-headedness, nausea, amnesia, and a sense of physical lightness, spinning, and floating, with distorted space perception. There may also be hyperacusis and visual, auditory, and tactile hallucinations. It is to be noted that transient euphoric states somewhat similar to acute alcohol intoxication can be produced by inhalation of kerosene vapor.

Solvents. Intoxication with carbon tetrachloride is usually the result of inhalation of the vapor in industrial environments, but it may follow its ingestion accidentally or with suicidal intent. This substance resembles chloroform in its action on the central nervous system. Intoxication may be associated with motor disturbances, nausea, vomiting, anorexia, depression, apathy, and mental confusion. With continued exposure under chronic conditions, there are evidences of kidney and liver damage. Neurological and psychiatric symptoms may also be produced by methylbromide and methylchloride.

The fat solvent carbon disulfide can produce toxic effects on the nervous system and various psychotic states or, short of this, irritability, loss of memory, disturbed sleep, and terrifying dreams.

Attention should likewise be directed to the problem of deliberate inhalation of vapors of highly volatile solvents used in lacquers, enamels, paint removers, etc. This "glue sniffing" by children and adolescents may produce toxic effects, such as unsteadiness of gait, slurring of speech, double vision, and ringing in the ears, as well as excitement, euphoria, and exhilaration. Victims of the practice may become drowsy and stuporous or lose consciousness. Since glue sniffing may become habitual and since a person under the influence of these vapors may commit dangerous and irresponsible acts, the problem deserves serious therapeutic and preventive attention.

Metals

Mercury. Chronic mercurialism may result from exposure to small amounts of mercury over extended periods of time in industrial situations when mercury or its salts are used. Chronic mercury poisoning may be characterized by disturbances of the alimentary

tract, renal damage, anemia, high blood pressure, and peripheral neuritis. The central nervous system may be involved, with tremors varying in degree from a slight tremor of the hand, eyelid, or tongue to marked generalized tremors and shaking. There may be irascibility, depression, despondency, excessive embarrassment in the presence of strangers, timidity, desire for solitude, and sometimes hallucinations.

Lead. Chronic inorganic lead poisoning is an industrial hazard that in its more intense manifestations has been greatly reduced by preventive and protective measures. For example, in the United States Navy between 1922 and 1944 there was a reduction in the incidence of lead poisoning due to the change in 1931 from a paint containing 70 per cent red lead to one containing only 29.5 per cent and to the change over to zinc chromate paint in 1941. Probably improvements in hygienic control were of even greater importance. Shipbreaking during the 2 years immediately after World War II produced very few cases of plumbism, a condition common in this occupation after World War I.

The route by which lead enters the organism most rapidly is the respiratory tract, and lead absorbed by this route produces the most serious symptoms. Next in danger comes the continued ingestion of lead compounds by mouth. The least harmful of all the possible routes is a slow cutaneous absorption in persons with broken or irritated skin.

Lead compounds may reach the mouth by contaminated hands; or lead fumes may be inhaled during grinding or filing, during painting with lead paints, or during cutting, burning, or chipping of lead-painted surfaces. A number of other occupational sources of intoxication exist. The upper limit of safety for industrial lead exposure by inhalation has been given as 1.5 mg. per 10 cubic meters of air. The upper limit of safe urinary excretion of lead does not exceed 0.15 mg. per liter of urine. The safe level for ingestion of lead in food and drink is greater than 0.3 and less than 0.6 mg. per day. It is significant physiologically that 95 to 98 per cent of lead present in the body in lead poisoning is found in the red blood cells. Only a small quantity of the lead ingested is absorbed into the body. The absorbed portion is distributed to the tissues, including the liver, from which it is partially secreted back into the alimentary tract with the bile. This action of the liver in withdrawing lead from the body and secreting it into the alimentary tract is responsible for the fact that ingestion of lead is less dangerous than its inhalation.

The toxicity of lead depends on a number of factors: its solubility in body fluids; the length of time in contact with the body fluids; the quantity ingested, inhaled, or absorbed; and the quantity in circulation at any given time. The most consistently harmful effect of abnormal lead absorption is on the blood cells, and anemia is invariably present. Gastrointestinal symptoms and signs are numerous and tend

to result from very slowly developing intoxication over long periods of time. There is loss of appetite, constipation, and lead colic. The mechanism of this intestinal colic in lead poisoning is not clearly understood. Usually, other symptoms precede the colic. The gastrointestinal symptoms generally begin with loss of appetite, a disagreeable, sweetish taste in the mouth, dyspepsia, and obstinate constipation. There is also lassitude and malaise, with pain around the umbilicus and spasmodic contraction of the abdominal wall. The colic is typically decreased by pressure, and there is no tenderness. This colic has been ascribed by some authors to vagal irritation produced by the lead. There is basophilic stippling of the red blood cells and the "lead line" along the lower incisors at the gum margin.

More intense exposures to inorganic lead compounds result in neuromuscular and central nervous system effects. A characteristic phenomenon is wrist drop due to paralysis of the extensor muscles of the forearm. There may be considerable wasting of the muscles. Lead palsy is seen in diminishing frequency at the present time. A most serious condition occurring as a result of rapid absorption of lead is lead encephalopathy. This may begin with motor incoordination, ataxia, headache, sleeplessness, and irritability. As the condition develops, there may be increased intracranial pressure, convulsions, excitement, confusion, delirium, lethargy, and coma. There also may be disturbances of vision and projectile vomiting. In patients who die—and the condition is frequently fatal—there may be edema of the brain and signs of proliferative meningitis. Approximately 25 per cent of the patients succumb, and, in about 20 per cent of those who survive, there is a residual paralysis. The survivors may also be permanently impaired mentally.

Although the dangers from contact with leaded gasoline are now greatly reduced, tetraethyl lead and tetramethyl lead are potentially toxic. Chronic poisoning from inhaling tetraethyl lead may produce early symptoms of sleeplessness with terrifying dreams, followed by loss of appetite, nausea, vomiting, diarrhea, headache, weakness, and emotional lability. The victims are irritable, restless, and anxious. More serious manifestations include delirium and delusional states. Finally, there may be maniacal excitement with convulsions or coma.

Prevention. Prevention of lead poisoning can be accomplished by various measures to minimize and control exposure by inhalation, ingestion, and contact with the skin either to inorganic or organic lead compounds. Prevention of pediatric poisoning by protecting children from persistent ingestion of lead-containing substances is highly important.

Treatment. Formerly, treatment consisted of a high calcium diet and large amounts of vitamin D. Presently, dimercaprol (BAL) is used initially to increase urinary lead excretion, followed by calcium

disodium edetate. Colic may be relieved by antispasmodics, such as atropine, or by intravenous administration of calcium gluconate (2 gm.). Morphine may be necessary to relieve the pain. With calcium gluconate there may be an attendant danger of renal calculi. The oral use of penicillamine may be of value in treating lead poisoning. The alleviation of convulsions and psychotic symptoms may be accomplished by adequate doses of barbiturates.

The use of sodium citrate has been recommended as a prophylactic or therapeutic procedure. Sodium citrate, given in oral doses of 4 or 5 gm. in water once a day as a preventive measure to employees exposed to lead, has been advised. Evidence from a study of stippled cell counts and lymphocytes before and after commencing this prophylaxis suggests that sodium citrate is indeed useful in preventing ill effects of increased lead absorption. However, sodium citrate prophylaxis is not a substitute for improved working conditions. Sodium citrate has also been used intravenously in the relief of lead colic.

Manganese. Manganese poisoning is a hazard in the mining and the processing of manganese ores and in the use of manganese alloys in the steel and chemical industries. The principal source of manganese toxicity is exposure to manganese-containing dusts. The major route of entry into the body is the respiratory tract and is virtually the only route to be considered. The cutaneous route appears to be insignificant, and the amount of manganese absorbed by ingestion is minimal and presumably without danger. The fact that there is continuous elimination of manganese long after exposure suggests that there are deposits in the body, probably in the lungs, kidneys, liver, intestines, heart, bone, brain, and stomach. There is general agreement that most of the excretion is by the feces through the bile. Length of exposure before toxic manifestations appear depends upon the concentration of the substance in the air, individual sensitivity, and number of hours of exposure daily. The shortest exposure reported has been 49 days and the longest 480 days, with an average of 178 days.

The manifestations of onset are usually subjective, which often makes early diagnosis difficult. It is important, however, that the intoxication be recognized as early as possible to separate the individual from the exposure. The most frequent early symptoms are headache, weakness, increased sleepiness, spasms in the legs, joint pains, and irritability. Psychological disturbances usually appear before neurological manifestations and may be unaccompanied by the latter. There may be psychomotor irritability associated with impulsive acts, such as a deep desire to walk and to work. There may be euphoria, absent-mindedness, mental confusion, aggressiveness, and hallucinations. This toxic psychosis due to manganese may involve the victim in the commission of crimes and other uncontrolled behavior.

The chronic toxicity is characterized by neurological lesions involving the basal ganglia, the frontal cortex, and occasionally the pyramidal system. The headache is of variable intensity, location, and duration. The muscles are sensitive, and there may be back pains. The gait is impaired, and there are equilibratory disturbances. When walking, the patient experiences difficulty in stopping, especially when he is walking on an incline. When the patient walks backward, he finds it difficult to keep from falling down. There is a monotonous speech, often with inability to vocalize louder than a whisper. Speech may be unintelligible, and pauses between words disappear. There are frequently tremors, particularly in the tongue, arms, and legs. The tremors are present at rest and become increased during movement. They are most frequent during the night but may appear at any time. There is a characteristic immobility of facial expression, the "manganese mask." The patient may also have persistent, unmotivated laughter that is uncontrollable. Handwriting is irregular, and there is micrographia, with a tendency to run words together on the page. Brain changes include atrophy, and the most significant pathological processes are found in the basal ganglia, in which there is degeneration of nerve cells, satellitosis, and gliosis. The medulla, peripheral nerves, and muscles may also be involved in long-standing cases. The condition is usually not fatal.

The psychological disorders may not be diagnosed, since the patient may not report them until the transitory psychosis has cleared and the neurological disorders have become manifest. Upon removal from exposure, the psychological effects tend to clear relatively quickly. In some cases, the psychological disorders disappear within 3 or 4 months with no other disturbances or are followed by the neurological symptoms, which tend to be progressive with partial or total disability. Some cases reach a complete paralysis, and others are stationary for years. Partial neurological recovery appears in a few cases, but the lesions of the nervous system are considered to be irreversible.

There is no specific treatment for manganese poisoning, and the management of the psychotic manifestations are symptomatic and supportive. Dimercaprol has not proved effective in arresting the progressive manifestations. One case is reported of good recovery of the neurological condition by the use of calcium diethylenediaminetetraacetic acid. The mental symptoms also cleared.

Suggested Cross References

For toxic psychoses resulting from psychotomimetic substances such as LSD and mescaline, see Mandell and West's section on the hallucinogens (Section 5.4) in Area B, on the basic behavioral sciences. In that same area see the section on neurochemistry

(Section 2.2) for a discussion of metabolism and oxygen consumption in normal brain functioning.

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20.3 BRAIN SYNDROMES ASSOCIATED WITH INFECTION

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Introduction

Infectious diseases give rise to brain dysfunction, either by direct invasion of the brain or by effects that are often toxic, hypoxic, or allergic from infec-

tion elsewhere in the body. Mental and behavioral changes commonly occur in these cases, although these changes are nonspecific and have no relation to the specific organism involved.

Mild effects, such as irritability, insomnia, and restlessness, may appear early in the illness but subside completely if the infection is overcome rapidly. With progression of the infection, more severe changes develop, such as combativeness, visual hallucinations, impairment of memory and alterations in consciousness such as lethargy, drowsiness, stupor, and coma. Ordinarily, these manifestations clear up as the infection is brought under control, but changes of personality and intellect persist in a significant number of patients as sequelae of the infection. For example, viral encephalitis is often followed by subjective symptoms, such as nervousness, irritability, lassitude, and defects of memory. Meningitis and encephalitis are less commonly followed by more severe sequelae, such as mental retardation, dementia, and marked instability of emotions and personality.

Any infection may at some time present itself as intracranial, for the central nervous system offers less resistance to infection than any other tissue of the body. Intracranial infections are usually localized in the subarachnoid space (meningitis), spread diffusely within the brain (encephalitis), or confined to encapsulated regions within the brain or meninges (abscess). Actually, the involvement is seldom restricted in this fashion. Meningitis always affects the brain to some extent; encephalitis, early in its clinical course, usually is accompanied by meningitis. Brain abscess begins as a more diffuse encephalitis that only later in its clinical course becomes localized or encapsulated.

Bacterial Infections

Tuberculous meningitis. The incidence of meningeal infection with *Mycobacterium tuberculosis* has been decreased by antituberculous drugs, but it remains an important cause of death in patients who have tuberculosis, especially miliary tuberculosis. All patients with tuberculous meningitis have tuberculous infection elsewhere in the body, often in the form of miliary tuberculosis or an active primary focus, but some have no clinical evidence of active tuberculosis except the meningitis. It is most often seen in patients between the ages of 6 months and 20 years.

Pathology. Tuberculous meningitis probably develops as a result of spread into the subarachnoid and ventricular spaces from foci in the meninges or choroid plexus. These, in turn, have developed from spread of the infection from an active primary focus elsewhere or in association with miliary tuberculosis. Prior to the use of antituberculous drugs, surgical removal of a tuberculoma from the brain was very often followed by diffuse tuberculous meningitis.

Characteristically, the meninges are thickened and opaque, and small tubercles may be seen in sulci or

on the dura. A heavy, gelatinous exudate is present, especially in the basal cisterns and sylvian fissures and over the dorsal surface of the spinal cord. The exudate consists of lymphocytes, plasma cells, macrophages, occasional giant cells, and *M. tuberculosis*. If the disease continues long, the exudate may become very thick and obstruct the flow of cerebrospinal fluid. Meningeal vessels are inflamed and may become thrombosed, leading to infarction of the brain, especially in the hypothalamus or basal ganglia. The inflammatory process may extend into the superficial cortical layers of the brain, but widespread involvement of the brain substance does not usually occur.

Symptoms and signs. The disease develops over a period of several days to several weeks and is accompanied by fever, headache, vomiting, nuchal stiffness, and lethargy. Among young infants it may be evidenced by increasing irritability, a shrill cry, and bulging of the fontanelles. Stupor may develop and then coma. Papilledema, optic atrophy, convulsive seizures, cranial nerve palsies, and other focal neurological signs may appear as the disease progresses.

The changes in the cerebrospinal fluid are not specific for the disease, but together with the clinical pattern they should lead to the diagnosis in most instances. The fluid is under increased pressure; it is clear and tends to form a coagulum on standing. The cell count is moderately increased, and lymphocytes predominate, although a few leukocytes may also be present. The concentration of protein is moderately elevated, especially when the disease has been present for several weeks or more. The sugar and chlorides are significantly decreased. The Wassermann reaction is negative.

Very often the organism may be seen on smears of the spinal fluid stained by the acid-fast Ziehl-Neelsen method, but absolute identification depends on cultures and guinea pig inoculation. These require some weeks for positive results to appear, and treatment should never be delayed for this reason if the diagnosis is probable on the basis of information available. The tuberculin test, if its result is positive, may be of value in cases of infants or young children; but it is well to remember that this may be positive in many adults who do not have tuberculosis. It may also be negative in the face of overwhelming miliary tuberculosis.

To be considered in differential diagnosis are mycotic meningitis, viral meningoencephalitis, bacterial meningitis, syphilitic meningitis, and meningeal carcinomatosis. Usually the clinical pattern and the findings from the cerebrospinal fluid help one make an accurate diagnosis.

Prognosis. Without proper treatment by antituberculous drugs, this disease is fatal, usually within 3 to 4 weeks of its onset. Use of these drugs has reduced the mortality significantly and has produced cures. Rarely will relapses occur in adequately treated patients.

Approximately 25 per cent of the survivors have some neurological sequelae. Cranial nerve abnormalities such as deafness, blindness, and facial paresis may be noted, and seizures and hemiparesis are common. Intellectual impairment may occur. Occasionally, calcification within the base of the skull is identifiable on roentgenograms made several years later.

Treatment. When tuberculous meningitis is suspected and the clinical and spinal fluid evidence supports the suspicion, proper chemotherapy should be instituted promptly. Spinal fluid should have been obtained previously for positive diagnosis by culture and guinea pig inoculation, but therapy should not be delayed for these reports. The prognosis and development of neurological sequelae are related to quickness and adequacy of treatment. A combination of streptomycin, isoniazid, and *p*-aminosalicylic acid is preferable to any of the three alone, and administration of the latter two drugs should be continued for 12 to 18 months. Streptomycin is preferred over dihydrostreptomycin, and 2 to 3 weeks of intramuscular therapy is usual, since longer periods of administration bring a high risk of ototoxicity. Intrathecal administration of streptomycin is not currently advocated.

Meningitis from various bacteria. Inflammation due to bacterial infection of the leptomeninges covering the brain and spinal cord remains an important cause of illness and death, despite the advent of antibiotic therapy. The reported mortality varies from 17 to 30 per cent, and the incidence of major neurological sequelae is approximately 20 per cent.

Etiology. Infections with *Neisseria meningitidis*, *Diplococcus pneumoniae*, and *Haemophilus influenzae* are responsible for the majority of cases. Forty per cent of the 294 cases seen at the Mayo Clinic reported by Eigler et al. and 70 of the 207 cases seen at the Massachusetts General Hospital reported by Swartz and Dodge were due to these organisms. Meningococcal meningitis, the commonest of all, may occur sporadically in epidemics, especially where large groups of relatively nonimmune individuals are found, as in military barracks. Infants and children are frequently stricken; all cases of meningococcal meningitis in one series occurred among patients less than 20 years old. Pneumococcal meningitis occurs more readily in infants or in the elderly, and *H. influenzae* is the commonest cause of bacterial meningitis in infants and young children.

Infection by streptococci and staphylococci (principally *Staphylococcus aureus*), though less frequently encountered, produces the next most important group of cases. A wide variety of bacteria such as *Escherichia coli* (especially in the newborn), *Pseudomonas aeruginosa*, and *Listeria monocytogenes* are responsible for occasional cases. Occasionally, meningitis is the result of infection by more than one kind of bacteria.

Pathogenesis. The leptomeninges offer little resistance to infection, and pathogenic microorganisms

reaching them—whether by direct extension from a focus of infection, by the agency of head trauma or surgery, or by hematogenous spread from a distant source of infection, such as the lungs or urinary tract—spread easily throughout the subarachnoid space. Certain factors, such as advanced age, carcinomatosis, cerebrospinal fluid rhinorrhea, and the extensive antibiotic or steroid therapy, enhance the possibility of intracranial infection. Extension from a focus of purulent sinusitis or purulent otitis media, a frequent source of infection in previous years, has had less importance since the use of antibiotics has become common. Nevertheless, in 25 to 30 per cent of patients with meningitis due to pneumococci or *H. influenzae* or with purulent meningitis due to unknown organisms, otitis media may be associated. Lumbar puncture may be followed by bacterial meningitis, most often due to *P. aeruginosa* or *S. aureus*.

Meningococcal meningitis is a sequel to meningococcal bacteremia (meningococcemia), either acute or chronic, and is caused by seeding of bacteria into the ventricular cerebrospinal fluid from choroid plexuses infected with blood-borne organisms. The initial site of infection is the nasopharynx, where it may or may not be detectable clinically. On occasion, meningococcemia may be acute and overwhelming, producing acute adrenocortical failure with shock and widespread purpuric lesions and purulent meningitis. Such developments bring significant mortality in spite of all therapeutic efforts. In some patients, meningococcemia is a chronic indolent process lasting weeks or months and sometimes causing meningitis.

Pathology. In the acute phase of purulent meningitis, the meninges first become hyperemic and infiltrated with inflammatory cells, such as polymorphonuclear leukocytes, lymphocytes, and plasma cells. Exudation of these cells into the subarachnoid space follows, and soon a thick purulent exudate is present. In a few instances, particularly with meningitis due to *Bacillus anthracis*, the exudate is frankly hemorrhagic. At first it fills the basal cisterns and infiltrates around the cranial nerves; then it spreads over the cerebral hemispheres into the fissures and sulci. In addition, by a gravitational effect, the spinal subarachnoid space becomes involved, especially over the dorsal aspect of the cord. Sectioning of the brain may reveal scattered petechiae and the beginnings of small abscesses, evidenced as focal softenings. In the cerebral cortex small necrotic infarcts can be found; they may or may not be associated with thrombosis of nearby vessels or sinuses.

Microscopically, the exudate in the subarachnoid space consists of many inflammatory cells, necrotic material, and bacteria. If the infection persists, fibroblasts from the meninges and vessel walls gradually infiltrate the exudate, and collagen fibers appear, producing meningeal thickenings and adhesions. Loculation may result, and impaired flow of cerebrospinal fluid may produce hydrocephalus, or an intraspinal

mass of fibrous tissue may cause paraplegia. On the other hand, in a patient successfully treated, no abnormality of the central nervous system may be found on postmortem examination years later.

Clinical pattern. Bacterial meningitis is an acute illness in most instances. Nonspecific symptoms such as malaise, headache (often an initial symptom), fever, nausea, and vomiting, are common. Often photophobia is present. Lethargy or agitation and confusion with disorientation and hallucinations occur in numerous cases. Stupor or coma may supervene, especially if the illness has been present many hours or days. Seizures frequently occur, particularly in infants, and may suggest intracranial venous thrombosis or development of an intracerebral abscess.

On examination, nuchal rigidity is to be found in almost every case, and Kernig's and Brudzinski's signs of meningeal irritation are often associated with it. Focal cerebral signs, such as hemiparesis, visual field defect, and aphasia, may be demonstrated in some patients; cranial nerve abnormalities, especially of the oculomotor, abducens, and eighth nerves, are frequently encountered. Many of these subside with recovery from the illness. Babinski's sign may be present. Papilledema, a rare finding, may indicate a developing brain abscess, or it may presage venous sinus thrombosis.

A petechial skin rash is frequently seen during meningococcal meningitis. If it is severe, the lesions, which are sterile, may become purpuric. But fever, headache, and petechial rash may be encountered in other illnesses, too, such as Rocky Mountain spotted fever and ECHO 9 viral meningitis.

Examination of cerebrospinal fluid reveals definite elevation of fluid pressure in many patients. The fluid is characteristically turbid and may form a coagulum on standing. The leukocyte count is high—sometimes more than 10,000 per cubic millimeter—and polymorphonuclear cells usually predominate. Often the protein amounts to several hundred milligrams per cubic millimeter, and the concentration of sugar is significantly depressed. Hypoglycorrhachia is probably a reflection of the presence of large numbers of actively phagocytosing leukocytes. The value for chlorides may be low. Smear and culture of the fluid make identification of the responsible organism possible in most instances.

The importance of bacteremia in bacterial meningitis should be emphasized, for blood cultures may allow isolation of the causative organism. In one series, bacteremia was demonstrated in 52 per cent of all cases in which blood cultures were attempted.

Possibilities for differential diagnosis include viral meningoencephalitis, tuberculous meningitis, fungal meningitis, postvaccinal and postinfectious encephalomyelitis, subarachnoid hemorrhage, and, on rare occasions, meningeal carcinomatosis, Behçet's disease, and the aseptic meningeal reaction associated with myelography or an intracranial epidermoid tumor.

Differentiation can usually be made on the basis of clinical and spinal fluid findings.

In a significant number of cases of purulent meningitis (7 to 9 per cent in two series), the result of bacterial culture is negative. Most often, the patients have been treated with antibiotics. Sometimes organisms are recognized in smears of their spinal fluid.

Prognosis. Certain factors appear to predispose patients to increased mortality, such as coma, bacteremia, extremes of age (neonatal or advanced), underlying disease, and coexistent trauma. Heightened intracranial pressure is an important cause of death in acute bacterial meningitis. However, those cases with early diagnosis and adequate treatment do have a favorable prognosis. Sequelae occur, especially in infants, as convulsive disorders, deafness, mental retardation, hemiparesis, and hydrocephalus.

Treatment. Successful treatment rests on early diagnosis, isolation of the causative organism, and prompt, adequate antibiotic therapy adapted to the sensitivities of the organism (see Table I). Prior to identification of the organism, empiric therapy with a combination of penicillin, sulfadiazine, and chloramphenicol may be instituted after cerebrospinal fluid and blood have been drawn for cultures.

Meningococcal meningitis may be treated adequately with sulfadiazine alone or with penicillin alone. Often these two drugs are used in combination, although the need for this is uncertain. The organism remains sensitive to these two drugs. Pneumococcal meningitis is best treated with penicillin given parenterally in large dosage (12 to 20 million units daily), for the organism is characteristically sensitive to this drug. Chloramphenicol, alone or in combination with sulfadiazine, may be used effectively for meningitis due to *H. influenzae*, as can a combination of strepto-

mycin and tetracycline. Penicillin is effective against streptococcal meningitis; and the newer penicillin derivatives, such as methicillin, oxacillin, and nafcillin, may be employed for meningitis due to penicillin-resistant staphylococci.

Intrathecal therapy is usually not indicated, but in severe infections, polymixin B sulfate may be used against organisms such as *P. aeruginosa* and bacitracin against *S. aureus*.

Mycotic Meningitis

Infection of the meninges and central nervous system results from invasion of various pathogenic fungi, most frequently *Cryptococcus neoformans*, *Coccidioides immitis*, and *Histoplasma capsulatum*. Implicated less often are other fungi, such as *Candida albicans*, *Nocardia asteroides*, and *Blastomyces*, and, rarely, mucormycosis due to *Rhizopus* and aspergillar organisms. The fungi may gain entrance to the body through the respiratory tract. They may spread secondarily to the central nervous system or become pathogens in a patient who has an underlying malignant disease or who has had extensive treatment with antibacterial agents or steroids. Cryptococcal meningitis occurs in association with lymphoma and leukemia. The less commonly encountered fungi are often secondary invaders.

Symptoms and signs. The pathological changes are similar to those seen in subacute or chronic meningitis due to bacteria. Clinically, the patient presents signs and symptoms of meningitis developing over several weeks or months. In the cerebrospinal fluid the protein content is usually slightly more than normal, the cell count is high, and both lymphocytes and neutrophilic leukocytes are present. The spinal fluid sugar is characteristically decreased, and the alcohol content is increased. Repeated cultures of spinal fluid and blood and special culture techniques and staining procedures may be necessary to make the diagnosis.

Treatment. Formerly, mycotic meningitis was fatal in every instance, but treatment has been more satisfactory in recent years with the development and availability of amphotericin B. However, proper identification of the responsible organism is necessary, as not all fungi are best treated with this drug. For example, *N. asteroides* responds best to sulfonamides, and *Actinomyces bovis* responds better to penicillin. Cryptococcal, coccidioidal, and *Candida albicans* meningitis have been treated adequately with amphotericin B, and cures may result. Administration of this drug requires careful supervision, for toxic side effects, such as fever, elevation of blood urea, and pain and phlebitis at the site of injection, are common. The drug must be given by slow intravenous drip. Treatment usually has to be carried on for many weeks or months.

Viral Infections

Viral infections of the central nervous system may remain primarily in the leptomeninges (lymphocytic

TABLE I
Chemotherapy of Meningitis

Microorganism	Drugs of Choice
<i>Neisseria meningitidis</i>	Penicillin G, sulfadiazine, or both
<i>Diplococcus pneumoniae</i>	Penicillin G
<i>Haemophilus influenzae</i>	Chloramphenicol and sulfadiazine
<i>Staphylococcus aureus</i>	Methicillin or cephalothin first, then adjust according to sensitivities
<i>Streptococcus pyogenes</i>	Penicillin G
<i>Listeria monocytogenes</i>	Penicillin G
<i>Escherichia coli</i>	Streptomycin and tetracycline, or colistin
<i>Mycobacterium tuberculosis</i>	Isoniazid, streptomycin, and p-aminosalicylic acid
<i>Treponema pallidum</i>	Penicillin G
<i>Actinomyces bovis</i>	Penicillin G
<i>Nocardia asteroides</i>	Sulfadiazine
<i>Cryptococcus neoformans</i>	Amphotericin B
<i>Coccidioides immitis</i>	Amphotericin B
Unknown	Penicillin G, sulfadiazine, and chloramphenicol

choriomeningitis) or the spinal cord (poliomyelitis), but more commonly they involve the brain itself. The clinical syndrome of viral encephalitis is remarkably similar in all the viral illnesses. The identification of the responsible virus is often difficult and extensive study frequently fails.

Arthropod-borne encephalitides. One group of viral diseases is carried to man by arthropods from reservoirs, usually in other mammals. These illnesses are found throughout the world, and, although they have different vectors, the clinical syndromes are similar enough to warrant discussing them together. Diagnosis is usually made serologically by demonstrating a rise in the complement-fixation antibody for the specific virus in the affected individual from a time early in the illness to one several weeks later in the convalescent period. The virus itself is rarely identified.

The cerebral pathology consists of small hemorrhages and endarteritis with exudates of small mononuclear cells. Neuronal degeneration and necrosis are prominent.

Western equine encephalitis. This acute infectious disease is caused by a virus that produces specific antibodies. It is characterized by involvement of the central nervous system with encephalomyelitis and is often followed by residua indicative of damage to the central nervous system. It was recognized in epidemic form among horses for many years before Meyer in 1932 identified the virus and in 1933 suggested that it might cause infection in man. Hammon and others have presented proof that the mosquito *Culex tarsalis* has been a vector in certain instances and that fowl may be an important reservoir of the disease.

Diagnosis is confirmed in a suspected case by serum complement fixation tests or by isolation of the virus. Only in rare instances has Western equine virus been isolated from the blood and spinal fluid. Most frequently, the virus is isolated from the brain or spinal cord of patients who have died early in the course of their disease.

Clinical features. The clinical syndrome presented depends in part on the age of the patient. In infants the illness begins abruptly with high fever and convulsions. The convulsive movements are continuous, beginning in one extremity and spreading to the others. The convulsions are preceded and accompanied by an increased temperature, which persists for 3 to 7 days and ranges between 104 and 106° F. The fever and convulsions stop abruptly, and the patient becomes asymptomatic.

Children, on examination during the acute episode, appear acutely ill, with fever and neurological abnormalities. The deep reflexes are more active in the extremity from which the convulsive movements spread. Nuchal rigidity is a prominent finding, and in a few instances opisthotonos is noted. The abnormalities of the spinal fluid are the same in the infantile

form as in other forms of the illness and will be discussed later.

Among adults the severity of clinical symptoms varies considerably. However, a common pattern can be recognized. The illness begins in most instances with fever, chills, and malaise. These symptoms are followed by a headache which is described as prostrating and persistent. In mild cases headache is the only prominent finding; but more frequently it is accompanied by drowsiness, and sometimes by coma. The patient, if awakened, may still complain of headache but fall asleep while expressing his anguish.

This disturbance in the level of consciousness is a consistent finding in severely ill patients. It varies from a slight increase in drowsiness to coma that persists for weeks. Sometimes disturbance in awareness and perception is accompanied by considerable anxiety and delirium. Less severe symptoms include pain in the back, nausea, and vomiting. Back pain is prominent early in the course of the illness but is seldom mentioned by patients because of the severity of headache. Vomiting constitutes a serious threat to comatose patients, who frequently aspirate vomitus.

In milder cases, physical findings are scant and variable. Nuchal rigidity is found in all patients during the acute stage. In more severe cases, tremor, dysarthria, and paralysis or paresis may ensue. Tremor occurs most characteristically about the mouth and in the upper extremities. At times its presence in the upper extremities is associated with typical cogwheel rigidity. Dysarthria affects most of the severely ill patients and is frequently progressive. Speech becomes unintelligible in some cases through loss of volume and quality of the voice. Paralysis and weakness, when present, are not patchy and flaccid in character, as in poliomyelitis; they usually involve either one side of the body or both, but are seldom complete. Associated with them are increased muscle tone, hyperactive reflexes, and abnormal plantar responses. In some instances there is evidence of involvement of the central control of autonomic function, which may be demonstrated by a persistently low fever. Respiratory arrest may occur, necessitating use of a respirator. Eye symptoms, which are common in epidemic encephalitis, are infrequently noted. Convulsive episodes, when they do occur in the adult group, seem related to anoxia.

Laboratory data. During the first few days of illness, spinal tap reveals a mild increase in pressure; the fluid contains 25 to 600 leukocytes per cubic millimeter, the majority being polymorphonuclear cells, and increased concentrations of sugar and protein. The 2nd week brings pleocytosis, with lymphocytes becoming a majority, and increase of total protein. In a few cases, 5 to 10 per cent of the cells found in the spinal fluid are large mononuclears. During the acute infection, examinations of blood demonstrate mild leukocytosis. Other laboratory studies, except for the neutralization tests, are noncontributory.

Outcome of disease. Death occurs in approximately 5 to 10 per cent of cases, usually in the first 48 to 96 hours, from a fulminating type of infection.

Convalescence is prolonged in the adult group and, after severe illness, requires 3 to 4 months. Among infants, recovery, if it does occur, is completed in a few weeks. The sequelae observed in infants are hemiplegia and focal convulsions. In adults, the sequelae are spasticity, speech difficulty, loss of weight, and organic impairment of psychological functioning; their severity seems directly related to the duration of coma.

Treatment and prevention. Treatment for Western equine encephalitis remains symptomatic, as there is no specific therapy for this virus. Supportive therapy is of great value and in many instances is life-saving, especially among stuporous or comatose patients. In coma, maintenance of the airway is essential; the patient should be turned frequently, and the throat should be aspirated when necessary. During the acute phase of the illness, oxygen therapy may be indicated. Sometimes tracheostomy is required, and occasionally use of a respirator is indicated. In the acute period, an adequate intake of fluid must be maintained, parenterally if necessary. Once the acute symptoms have subsided, particularly after the period of vomiting has passed, a nasogastric tube may be used for giving the needed fluid and nourishment. At present, the physician is unable to help the patient appreciably during the acute phase of his illness. He can do a great deal, however, if the patient is able to survive the first 96 hours; even in the presence of prolonged coma, one may expect the patient to recover, although not without residua.

Preventive measures that have proved effective include the use of vaccine and mosquito control. Commercially prepared vaccines have been used on laboratory workers, but in most epidemics the morbidity has been moderate, and, consequently, mass immunization is not indicated. Communities in an endemic area should attempt mosquito control, and the individual should adopt all available methods to prevent mosquito bites.

Other arthropod-borne encephalitides. Eastern equine encephalitis is found on the Eastern seaboard of the United States and causes greater morbidity than does the Western type. Saint Louis encephalitis has been reported in epidemics in the Central United States. Japanese B encephalitis is a Pacific form of arthropod-borne encephalitis in which the human infection is often inapparent. Murray Valley encephalitis is an Australian disease.

Russian tick-borne encephalitis is a biphasic illness with severe residua. Of particular interest is its reported chronic form, which may give rise to a chronic progressive disease of the central nervous system with psychiatric symptoms.

Herpes simplex encephalitis. This is a rare encephalitis caused by the virus herpes simplex. The

most frequently noted effect is disorientation with change of the sensorium. Recurrent psychosis has been reported as a complication.

Mumps meningoencephalitis. Meningoencephalitis develops in 0.5 to 10 per cent of patients with mumps. The neurological complications usually occur from the 3rd to the 14th day after the onset of parotid swelling, although they may begin prior to the parotitis. The clinical pattern is one of changes in the sensorium, with focal neurological findings, such as hemiplegia. The cerebrospinal fluid shows some pleocytosis. Recovery is usually complete.

Other viral infections of the nervous system that characteristically involve the central nervous system include rabies, herpes zoster, poliomyelitis, lymphocytic choriomeningitis, and the various Coxsackie viral diseases. And still other viruses occasionally involve the central nervous system and produce mental symptoms.

Spirochetal Infection: Syphilis

Syphilis is a chronic, systemic, infectious disease caused by the *Treponema pallidum*, which is usually transmitted by sexual contact. In the majority of cases it invades the central nervous system; hence it is included among the primary cerebral infections, although only a small number of patients (10 to 15 per cent) develop late manifestations of central nervous system syphilis.

This disease at one time accounted for 10 to 20 per cent of admissions to state hospitals for the insane and has always been considered in the differential diagnosis of any case with mental symptoms. With the advent of effective therapy, syphilis of the nervous system is becoming a medical curiosity.

The causative organism, *Treponema pallidum*, is a slender, corkscrew-like spirochete with regular, evenly spaced spirals. Under the dark field microscope, it shows a characteristic motility, rotating on its long axis and moving slowly backward and forward. For clinical diagnosis it can be demonstrated by dark field microscopy of material from primary or secondary lesions.

Syphilis is transmitted by the direct contact of moist infectious lesions with mucous membrane. The disease is spread during the first and second stages, primarily by sexual contact, although occasionally by kissing or biting.

Once the spirochete has entered the body, it spreads with great rapidity. It may be found in the lymph nodes before the chancre is visible, and soon it appears in the bloodstream as well. In about a third of the cases, its entrance into the central nervous system is reflected first by an increase in the number of cells in the spinal fluid and then by increase in protein, alteration of the colloidal solution, and positivity of the Wassermann reaction. The reaction in the spinal fluid becomes positive in a third of patients within the 1st year. It has been said that, if the reaction remains

negative during the first 3 or 5 years, it will continue to do so, and that this in turn indicates that neurosyphilis is not present and will not occur. Also, it has been learned that the more severe the reaction and the longer its duration, the worse is the prognosis. Thus far, these changes in the spinal fluid need not be accompanied by symptoms, a situation classified as asymptomatic neurosyphilis. In about one patient of three, however, symptoms do develop; these cases are called symptomatic neurosyphilis.

Meningovascular syphilis. Early in meningovascular syphilis, the invasion of the nervous system is marked by edema, cellular infiltration (particularly lymphocytic), increase of connective tissue, and formation of granulomas or gummas. These changes follow the various fissures of the central nervous system. They may invade the brain, cord, and nerves and cause symptoms and signs in profusion that come and go. None of the nerves arising from the brain or cord is safe from involvement. Fever is rare, and sometimes the signs are those of acute meningitis, though more often the course is chronic. Headache, of course, is very common. There may be choking of the disks, but, even so, a spinal puncture must be ventured to decide the issue.

Involvement of the ependyma may close the sylvian aqueduct and lead to hydrocephalus. The dura mater may become enormously thickened and then may constrict both nerves and cord, most commonly in the cervical region. Such a hypertrophic pachymeningitis results in pain, sensorimotor paralysis of the upper extremities, and spastic paraplegia of the lower extremities. Spinal puncture usually reveals obstruction of the subarachnoid pathways. Gummas, though rare, may form at any place and produce effects simulating those of a tumor of the cord or brain.

A disease exhibiting such vagaries may appear to be almost any organic disorder of the nervous system. Perhaps the most serious mistake that can be made—and that very easily—is to overlook the fact that meningovascular syphilis may simulate a psychoneurosis.

As the disease progresses, large and small vessels (particularly the arteries of the brain) may undergo paravascular cuffing, intimal changes, and closure, with results dependent on the part of the brain served by the affected vessel. The onset is usually strokelike; and there may be hemiplegia, aphasia, hemianopsia, bulbar symptoms, stupor, and convulsions. The spinal cord, too, may become infarcted, with resultant paraplegia and incontinence. Closure of the veins may occur and lead to myelomalacia. Therapy is as described for paresis.

Paresis (general paralysis of the insane or dementia paralytica). A psychosis caused by extensive spirochetal invasion of the brain, paresis alone at one time accounted for more than 10 per cent of all admissions to mental hospitals. On examining the brain, one finds that the meninges are thickened, opaque, and

adherent to the brain. The convolutions are usually atrophic, the ventricles dilated, and the ependyma granular in appearance. Microscopic examination shows the meninges to be infiltrated with lymphocytes, plasma cells, and fibroblasts. The vessels are usually cuffed with small round cells, and the architecture of the cortex has a windblown appearance. A very characteristic finding is that of metallic iron in vessel walls and microglial cells. The ganglion cells are severely involved and the glia is increased, especially the microglia that forms rod cells. The spirochetes are scattered throughout the tissue.

Paresis occurs in about 5 per cent of neurosyphilitics and usually becomes evident in patients between the ages of 30 and 50 years—some 5 to 15 years after the initial infection. It appears earlier in men than in women and affects them at least twice as often. The onset is insidious, evidenced by slight defects of memory and deterioration of personal appearance and conduct, with increasing irritability and fits of temper. There is a blunting of regard for social and moral conventions. The first overt impropriety may be the pouring of champagne into a lady's pocketbook or urinating on the street. The patient may become gay and extravagantly generous, he may become depressed and hypochondriacal, or he may sink gradually into an apathetic dementia. He may become paranoid, delirious, or merely somnolent. While these changes are in progress, there may be interspersed convulsions and strokes of various kinds. The illness may have an acute or chronic course, but without treatment it ordinarily lasts about 3 years. The final scene is one of intellectual dilapidation, immobility, and filth.

Although it is customary to describe five types of psychosis and paresis, different clinical manifestations usually develop at different times during the illness. The classic parietic psychosis is manifested by euphoria, overactivity, ideas of grandeur, and megalomania. Delusions of wealth, physical prowess, and the like are common in this form. Most often the psychosis is intermixed with paranoid ideation, depression, simple dementia, and neurasthenia characterized by a variety of vague complaints. Rarely, there may be convulsions and signs of localized brain involvement (Lissauer's general paralysis).

On neurological examination, the slurred, slovenly words issuing from the sagging and tremulous lips of a parietic at once attract attention. The pupils may be irregular and small or unequal, and they often show the Argyll-Robertson response. The tendon reflexes are usually increased; there may be cranial nerve palsy and signs of focal damage to the brain.

The findings in blood and spinal fluid are more persistently positive than in any other form of neurosyphilis. The Wassermann reaction in blood and spinal fluid is almost invariably positive. Lymphocytes and occasionally neutrophils are present; protein is increased, and Lange's curve is usually strongest in zone 1. The diagnosis is based on clinical signs; but

the blood and spinal fluid findings just described, even without other clinical evidence, justify anticipation of paresis, and the situation is often referred to as *paresis sine paresi*.

The differential diagnosis includes consideration of all of the usual causes of early dementia, brain tumor, Alzheimer's disease, and others.

Treatment with penicillin has become so effective that the previously favored arsenic, mercury, and fever are rarely used. Indeed, most patients receive sufficient penicillin or other antibiotics during their lifetime to protect them adequately against paresis. When used, penicillin is given in divided doses totaling 15 to 25 million units in one course.

Response to therapy depends on the amount of brain damage at the time of treatment. Unfortunately, in some cases the brain damage antedating treatment is so severe that hospitalization must be continued, even though the spirochetal infection is cured.

Tabes dorsalis. A disorder resulting from spinal cord changes caused by syphilis, tabes dorsalis was once among the most common diseases of the central nervous system, but now it is rare.

Pathological examination reveals profound degeneration of the posterior columns of the spinal cord and posterior roots, varying in amount and location.

Tabes develops in fewer than 10 per cent of neurosyphilitics. It affects men more often than women, and the symptoms and signs usually delay their appearance until 5 to 15 years after the initial infection. One of the earlier symptoms is lightning pains. Although not quite pathognomonic of tabes, it is so suggestive that its behavior merits consideration. Lightning pains may appear anywhere in the body, but they are much more common in the lower extremities and more characteristic if they occur at some distance from the joints. They tend to come in "showers," often on some dollar-sized spot that becomes sensitive to the slightest touch but not to heavy pressure. They may feel as though the area had been touched by a lighted cigarette, but they do not exceed seconds in duration. They may be linear streaks of pain that explode terminally, like a rocket. One physician who had tabes compared these to the flight of lightning bugs. Lightning pains may occur in diabetic neuritis, multiple sclerosis, and syringomyelia, sometimes without demonstrable cause.

Also common in tabes is girdle pain, which feels as though a belt had been drawn too tightly around the waistline or chest. Still another type of pain common to tabes is the gastric crisis. A midline epigastric or abdominal pain, it may be mild or gruesome in intensity. It begins abruptly, continues for hours, days, or weeks, and, if there are no additional complications such as gastric or duodenal ulcer, ends abruptly. The recovery seems instantaneous: immediately after the pain, the patient may be found sitting up ready to eat a banquet meal. During the crisis, the patient does not tolerate the lightest touch of a sheet on the abdo-

men but raises no objection to a fist sunk deeply into it. The gastric crisis may be attended or entirely replaced by nausea, and the patient then presents a most pathetic sight as he lies over the edge of the bed with a stream of saliva running out of his mouth from morning to night.

For years, either lightning pains or crises may constitute the whole symptomatology of the disease. Typical crises may occur in other bodily regions and are then called laryngeal, testicular, or rectal crises of neurosyphilis.

Blindness, caused by simple optic atrophy, may appear early or late in both tabes and paresis.

A common symptom is ataxia. The gait begins to be insecure, and the patient tends to improve it by making a greater effort. As he does not feel his tread to be firm, he puts down his heels with greater force. He keeps his eyes on his feet to prevent movement from becoming still more unsteady. If he is ordered to close his eyes while in the erect position, he at once commences to totter and to swing from side to side (Romberg's sign). The insecurity of his gait is often greater in the dark.

Frequently the joints are affected by painless swelling, hypermobility, and disintegration, producing the Charcot joint. Sensory impairment and trauma are conditions attending these developments, but there is doubt that such insults alone suffice to explain the arthropathy.

Trophic ulcers occur frequently in tabes, usually on the ball of the foot. Examination also reveals Argyll-Robertson pupils and an absence of tendon reflexes, most often in the lower extremities.

Disease of the posterior roots probably accounts for the involved pattern of sensory disturbance, one of the cardinal findings by which one may recognize tabes dorsalis. Appreciation of touch, pain, and temperature may be impaired, lost, or perverted individually or in various combinations. The distribution of these changes is segmental, the parts most commonly affected being the lower extremities, then the thorax and medial aspects of the upper extremities, and finally the face. A pin applied to a toe or to the dorsum of the foot may bring forth prompt acknowledgment of contact but only seconds later an appreciation of pain—not a bright pain but one that may be described as a lingering and sometimes repetitive burning sensation that may be referred to some entirely different location such as the opposite extremity. A series of sensations provoked by a few pin pricks may be so kaleidoscopic that the examination has to be interrupted until they subside. It is important that the chest be examined with care, since sensory changes here are particularly helpful in diagnosis but are often overlooked. The sensory loss may be so profound that a corsage inadvertently pinned directly to the breast may be worn throughout an evening of entertainment.

A patient having tabes is often exquisitely sensitive to changes in temperature, and the application of a

cold test object to the abdomen or to the back may all but send him to the floor. Appreciation of movements of the joints, especially the toes, may be difficult. In tabes this loss is often greater than the loss of appreciation of vibration. Sensitivity of deep structures is frequently impaired more profoundly than is sensitivity of the overlying skin. This dissociation is one of the most characteristic features of tabes and almost at once distinguishes it from polyneuritis, in which superficial sensation also may be impaired. Eyeballs, testes, and large nerves may be squeezed vigorously without eliciting discomfort, but care should be exercised in making these tests. A gastric ulcer may perforate or the appendix may rupture without any warning to the attending physician that a catastrophe is under way. The sphincters are often relaxed, and the finding of a cord bladder is common and diagnostic.

The diagnosis is dependent on the characteristic clinical pattern and the serological findings. Posterolateral sclerosis may mimic some of the clinical features, and lightning pains may occur in diabetic neuropathy; but neither of these possibilities represents a serious problem in diagnosis.

Treatment is the same as for paresis. Unfortunately, there is usually no reversal of the objective findings; patients often remain ataxic, with lightning pains that may be difficult if not impossible to control.

Taboparesis. Paresis and tabes are sometimes concurrent, a situation that has been called taboparesis. The findings and symptoms are as one might expect in a combination of these two conditions.

Congenital neurosyphilis. Tabes and paresis, singly or in conjunction, may follow congenitally acquired syphilis but differ little from their expression in adults. The juvenile variants usually appear between the ages of 9 and 16 years. As would be expected, the juvenile paretic is likely to present a simpler deteriorating deficiency than in either tabes or paresis. The stigmata of congenital lues, such as keratitis and Hutchinson's teeth, accentuate the picture of misery. Treatment is the same as that described for paresis.

Rickettsial Infection

Rocky Mountain spotted fever. Encountered throughout the United States and Canada, Rocky Mountain spotted fever is an acute febrile disease caused by infection with *Rickettsia rickettsii*, which is transmitted to man by various ticks.

Pathological changes are found in the skin, heart, lungs, and central nervous system. The brain is edematous, and petechial hemorrhages appear on it. The characteristic microscopic lesions are small, round nodules composed of elongated microglia, lymphocytes, and endothelial cells. In addition, minute areas of focal necrosis are common as the result of thrombosis of small arteries.

Neurological symptoms occur early and include delirium, coma, convulsions, opisthotonos, and mental

confusion. Diagnosis is based on the characteristic development of a rash on the extremities first and on other symptoms 4 to 6 days after exposure to ticks. Clinical distinction from typhus fever may be impossible. Final diagnosis is dependent on neutralization and complement fixation tests.

The mortality of the disease without specific antirickettsial therapy varies from 20 per cent to as high as a reported 80 per cent in some areas of the Rocky Mountains. Even in those patients who recover, residual damage to the central nervous system may be apparent for some months. Chlortetracycline (Aureomycin), chloramphenicol, and oxytetracycline (Terramycin) are effective against rickettsial infections. Sulfonamides enhance the growth of rickettsiae and are contraindicated.

Protozoal Infections

Toxoplasmosis. Infection with the protozoan *Toxoplasma gondii* causes toxoplasmosis. The infection occurs most commonly in utero and has a predilection for the brain and the eye.

The organisms invade the blood vessels in the nervous system and produce an inflammatory reaction. Miliary granulomas are found throughout the nervous system.

Symptoms in the newborn are inanition, convulsions, spasticity, and chorioretinitis. The presence of chorioretinitis with encephalitis and roentgenological evidence of calcification is usually sufficient for the diagnosis, which can be established by complement fixation and skin tests.

Most patients die in the first weeks after birth. Mental and neurological deficits persist in those who survive.

Trypanosomiasis. The African form of trypanosomiasis, African sleeping sickness, which is endemic in Africa, is an encephalitis due to infection by *Trypanosoma gambiense* or *Trypanosoma rhodesiense*, transmitted by the tsetse fly. A similar disease is present in South America (Chagas' disease).

The pathology is that of chronic meningoencephalitis. The incubation period is variable. The first stage of the disease is characterized by remitting fever, chronic adenitis, exanthemata, and asthenia. In the second stage, involvement of the central nervous system is manifested by tremor, incoordination, convulsions, paralysis, mental disturbance, somnolence, and usually death within a year, if treatment is not given.

The diagnosis is established by the demonstration of the organism in the blood, cerebrospinal fluid, or material obtained from a lymph node.

Pentavalent arsenical drugs are the therapeutic agents of choice.

Systemic Infections

Brain function is frequently impaired in overwhelming systemic infection, even though the infection does not primarily invade the brain itself. Such

an effect may arise from the toxins liberated by the infection, from the metabolic impairment caused by the infection or inanition secondary to it, from anoxia secondary to impairment of respiratory or cardiovascular function, or from allergic responses that may present as encephalitis, even though the primary infection is elsewhere in the body.

In the past, such complications developed frequently, and in the form called delirium they appeared as a state of extreme mental and motor excitement, often with confusion, illusions, and even hallucinations. This syndrome, which occurred commonly with pneumonia, typhoid, and other infectious diseases, has become much less common with the widespread use of specific antibiotic therapy.

Acute viral hepatitis. A closely related group of diseases caused by viruses and characterized by parenchymal disorders of the liver are known collectively as acute viral hepatitis.

Mental symptoms are frequent in these diseases. They result rarely from direct invasion of the brain by the virus, more commonly by secondary toxic or metabolic changes in the brain. These are frequently characterized by delirium, a flapping tremor, and, if the disease progresses, coma.

Diagnosis is based on the characteristic signs of acute liver disease and sometimes a characteristic electroencephalographic pattern.

Treatment is symptomatic.

Malaria. Involvement of the nervous system occurs in a few patients with malaria, most often with the malignant tertiary form caused by *Plasmodium falciparum*.

The cerebral symptoms arise from occlusion of capillaries by pigment-laden cells and parasites, with resultant petechial hemorrhages. Usually, these symptoms appear in the 2nd or 3rd week of the illness, but they may be the initial manifestation and frequently are cataclysmic in onset. The symptoms include headache, photophobia, convulsions, delirium, and coma. As one might expect in a serious, debilitating illness with cerebral involvement, psychic symptoms are also common. Examination may reveal nuchal rigidity, paralysis, and cranial nerve palsy.

The diagnosis of cerebral malaria is made from the appearance of cerebral symptoms and the identification of *Plasmodium falciparum* in the blood.

Intravenous administration of specific drugs for malaria is effective if begun at the onset of mental symptoms.

Acute disseminated encephalomyelitis. Cerebral changes occur as sequelae to many of the exanthematous diseases and to vaccination for some of these diseases.

The changes have been thought due to the specific virus that causes the diseases in question or to secondary infection by a nonspecific virus. In recent years, a third theory—that the brain changes are an

allergic encephalomyelitis caused by the infectious agent—has gained wide acceptance.

Acute disseminated encephalomyelitis occurs more commonly following measles (0.5 per cent of cases) than other diseases. When German measles occurs early in pregnancy, severe cerebral defects in the fetus may occur. Sometimes it is associated also with chickenpox, scarlet fever, smallpox, measles, and whooping cough and with vaccination against tetanus, rabies, and smallpox.

Grossly, the brain exhibits irregularly outlined, yellowish red, soft, opaque spots. Microscopically, the lesion consists of a thin-walled vessel surrounded by an almost circular zone of rarefied brain tissue. Axis cylinders are well preserved.

The signs and symptoms come on within a week of the rash. The patient, who typically has been improving, becomes drowsy and stuporous and may have convulsions. The meningeal involvement may be severe, with nuchal rigidity. The spinal fluid reveals pleocytosis, mainly lymphocytic, with increased amounts of protein and sugar. Approximately 10 per cent of the patients die; and of those who recover, 50 per cent or more have residua, including ataxia, mental deficit, and epilepsy.

The treatment is symptomatic.

Infectious Diseases of Undetermined Etiology

Epidemic encephalitis (encephalitis lethargica, Economo's disease). The entity known as epidemic encephalitis was pandemic throughout the world from 1915 to 1926. Hence it is of historical interest, though not clinically significant now. Perhaps its chief interest to psychiatry lies in the many bizarre clinical syndromes that followed the disorder and that, in retrospect, resemble closely the phenothiazine intoxications.

Although the etiological agent was never identified, it has been assumed that it was a virus. Gross examination of brains from acute cases revealed congestion with engorgement of the vessels. Microscopic examination showed widely disseminated focal areas of inflammation, with a predilection for the basal ganglia, midbrain, and hypothalamus. The most characteristic lesion consisted of a perivascular infiltrate made up of lymphocytes and plasma cells. The ganglion cells evidenced widespread changes.

In chronic cases the results of gross examination of the brain were often negative. Microscopic examination frequently disclosed atrophy and loss of pigmentation of the substantia nigra and diffuse and focal areas of gliosis.

During the acute stage of the illness, patients had fever. Most frequently they were somnolent, less frequently hyperkinetic. Ocular palsies were common symptoms. Recovery followed an acute stage, which persisted for several days to months; there then ensued an interval of days to years in which numerous

patients, though appearing well, had many complaints—the so-called pseudopsychoneurotic stage.

The third stage developed gradually in adults and was usually characterized by Parkinson's syndrome. In adolescents the syndrome was most frequently one of hyperkinesia with behavioral abnormalities, and in young children the defect was one of mental impairment. Although these were common sequelae, frequently other and more bizarre syndromes, often initially believed psychogenic in origin, were also present or were present alone initially. There were sometimes disorders in respiratory rhythm; oculogyric crises were observed, in which the eyes involuntarily turned upward, rendering vision impossible. Other involuntary motor syndromes were noted, particularly about the mouth, with involuntary tongue protrusion being especially distressing to the patient. Vegetative disorders, such as increased somnolence, obesity, and disorders of sweating, were also common.

The clinical course of the syndrome, once the third stage was reached, was progressive; death usually occurred in 3 to 5 years. Milder cases, however, produced no sequelae, and the patients remained well.

Treatment of the acute epidemic was supportive. Treatment of the sequelae was symptomatic, the usual medications for parkinsonism being employed with only moderate benefit.

Acute chorea (Sydenham's chorea). "This disorder is a kind of convulsion, which chiefly attacks children of both sexes, from 10 to 14 years of age." There has been little change in the description since Thomas Sydenham's report in 1685. Its cause and pathogenesis remain uncertain, but the patients frequently have, or have had, manifestations of acute rheumatic fever, and a common basis is assumed. No infective agent has ever been implicated as a primary cause.

Few pathological examinations have been made, since the mortality is low, and no specific pathological changes have been reported from such examinations. But nonspecific, often diffuse, changes have been noted, such as edema and congestion of the cerebral hemispheres, scattered cellular infiltration, and loss of neurons in the cortex, basal ganglia, and cerebellum. The majority of patients are between the ages of 5 and 15 years, and more females than males are affected. The most common initial manifestation is the gradual development of involuntary movements, so that at first the child appears restless and fidgety. The most important symptoms of the disorder are brief, involuntary motions resembling fragments of purposive movements. They become more prominent, especially in the upper limbs, but muscles of the trunk and lower limbs may be involved also, as well as muscles of the face, tongue, and jaw, the latter producing severe dysarthria and difficulty in swallowing. The movements are more severe with muscular

activity and with excitement. They improve with rest and quiet; they disappear during sleep.

Mental symptoms are common, although not always pronounced. Irritability, fretfulness, and mild insomnia are often seen. Less frequent are severe symptoms such as marked agitation, excitement, insomnia, confusion, and hallucinations. Manic psychosis may be simulated, but it can be ruled out by the presence of the choreic movements. There are no abnormalities of the cranial nerves of sensation or of the reflexes. The cerebrospinal fluid usually appears normal, although mild pleocytosis may be encountered. Mild, diffuse, nonspecific abnormalities may be observed in the electroencephalogram.

The patients usually recover completely in 6 weeks to 3 months, and mortality is low (2 per cent). Recurrence may develop in approximately a third of the cases, especially during pregnancy. No sequelae are seen.

There is no specific treatment. In view of the self-limited nature of this disorder, supportive therapy suffices. The patient should be kept quiet and isolated from environmental stresses. Sedatives such as phenobarbital, paraldehyde, and phenothiazines may be very helpful in more severe cases, where the movements threaten to become exhausting or where agitation and confusion are prominent.

General Symptomatic Management of Brain Syndromes with Infection.

The management of brain syndromes accompanying infection is for the most part the management of the specific infection. The symptomatic treatment is not unlike that for other acute and chronic brain syndromes.

The preservation of a familiar and simple environment for the patient is important, as it is in all cases of brain impairment. This may be particularly difficult for the patient acutely ill with an infectious disease that necessitates isolation and the use of complicated and sometimes frightening medical equipment. It is therefore important to use as few persons as practical in providing adequate medical care. The patient should not be left alone, and the persons with him should maintain a reassuring and informative attitude. When possible, a few close members of the family should remain in close contact with him to assist in preserving contact with reality.

The physician should remember that the patient, because of his illness, is often unable to report frightening or anxiety-provoking symptoms. Patients with meningitis frequently have severe headache, and this may be relieved partially by 600 mg. (10 grains) of aspirin or Empirin compound (150 mg. of phenacetin, 210 mg. of aspirin, and 30 mg. of caffeine) with 30 mg. of codeine not more often than every 4 hours. Morphine and other similar analgesics must be avoided because of their depressant effect on cerebral function.

In other cases, as in bulbar polio, unrecognized anoxia may cause anxiety. Until the patient is placed in a respirator, it is impossible to control his anxiety and restlessness adequately.

If these measures are not sufficient to control restlessness and delirium, the physician may prescribe sedatives. This must be only a last resort, however; sedation often adds to the patient's disorientation and further depresses his respiration. If sedation is necessary, paraldehyde is the drug of choice, for it can be given orally, parenterally, or rectally and is seldom continued when not necessary. The dose varies from 5 to 10 ml. in adults and may be repeated. Similarly, amobarbital may be given intravenously in doses of 100 to 300 mg. But use of all such drugs should be avoided as much as possible in cases of acute infection.

For the chronic brain syndromes that are secondary to infections, symptomatic treatment is not very dissimilar to that for other chronic brain syndromes. Five to 20 mg. of methylphenidate (Ritalin) three times daily may be used in some cases of brain injury, particularly those marked by drowsiness or postencephalitic syndrome. Anticonvulsants such as diphenylhydantoin (Dilantin), phenobarbital, and primidone (Mysoline) are indicated in convulsive disorders. If the patient has postencephalitic parkinsonism, he should be treated with the usual specific drugs and in rare instances with surgery. Finally, the anxious and disturbed patient may be treated with one of the phenothiazine drugs, such as chlorpromazine, in doses of from 10 to 50 mg. three times daily; or other sedative drugs may be used.

Suggested Cross References

The reader is referred to Chapter 10 on neurology for further discussion of the neurological examination and neuropathology of some of the infectious brain syndromes covered in this section. See also Sections 18.2 and 18.3 in this area on acute and chronic brain syndromes and on delirium, respectively.

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20.4 BRAIN SYNDROMES ASSOCIATED WITH INTRACRANIAL NEOPLASM

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Brain Tumor

In general, the term "brain tumor" is used to designate any intracranial new growth. It includes tumors involving the brain substance, the meninges, the ventricular system (including the choroid plexus), the pineal gland, and the pituitary gland. It also includes metastatic lesions within the intracranial cavity arising from malignancy elsewhere in the body.

The clinical manifestations of such neoplasms depend on a number of factors: the type and rapidity of growth, the location of the tumor, and its tendency to increase intracranial pressure. Thus, for example, a slowly growing tumor involving the frontal area is likely to produce much less increase in intracranial pressure and less apparent clinical manifestations than a much smaller neoplasm that obstructs the flow of cerebral spinal fluid from the ventricular system. Slowly growing tumors involving the silent areas of the brain, such as the frontal lobes, may be present for long periods of time without diagnostic symptomatology. On the other hand, if the neoplasm involves areas such as the motor cortex, focal manifestations may appear early in the course of the disease. For some reason not clearly understood, most intracranial neoplasms in adults arise above the tentorium, while most tumors in children arise below the tentorium. (See Table I.)

Types. Many different types of tumor are found in the cranial cavity. On occasion, the symptoms of such lesions may be primarily mental. It is important to keep this possibility in mind in all psychiatric patients, particularly if the history or findings presented by the patient are at all suggestive of such a lesion. It is common for such a diagnosis to be overlooked until the lesion is not susceptible to operative treatment. There are many different kinds of brain tumor, both malignant and benign, but a benign tumor in an inaccessible area may have as poor a prognosis as a malignant neoplasm. (See Figure 1.)

Gliomas. Gliomas represent the most frequent type

of tumor, with an incidence of approximately one third of all brain tumors. They are generally infiltrated. Some gliomas, such as the glioblastoma multiforme, spongioblastoma polare, and the medulloblastoma, are rapidly growing and have in general a very poor prognosis. On the other hand, the astrocytomas tend to be less rapidly growing and less malignant.

Metastatic carcinomas. The second group of infiltrating neoplasms are the metastatic carcinomas, which account for approximately 20 per cent of cerebral neoplasms. The prognosis in such cases is poor.

Meningiomas. A third group of neoplasms, the meningiomas, also represent about 20 per cent of all cerebral neoplasms. As a group, they can be considered the least malignant of all brain tumors. Since they may occur in almost any area of the brain, they are frequently overlooked as a source of psychiatric symptoms. Although the various types of gliomas and the metastatic carcinomas are primarily infiltrating, the meningiomas are not. The name of this neoplasm indicates its origin, although they may be found deep in the cerebral substance without apparent attachment to the meninges.

Manifestations. The manifestations of most acute and chronic brain syndromes are so positively colored by the premorbid personality of the individual that it is an impossible task to formulate a clear cut diagnostic categorization for most such syndromes. There are manifestations of brain tumor and other diseases involving the brain that are commonly and properly interpreted as being evidence of an organic brain syndrome. Inevitably, some of these changes are present, and in many instances they all appear. When the changes are the result of brain damage from which the patient cannot recover, the conditions are described as chronic.

Early signs. One of the earliest manifestations of organic brain syndrome is loss of memory, particularly recent memory loss. This is also characteristic of beginning senile changes. Next in order of usual appearance is disturbance in degree and quality of the patient's affective reaction. In the chronic syndrome particularly, this may develop gradually and not be readily recognized. It is associated with increased irritability and an increase in affective lability, and in brain tumor it is frequently associated with depression. Progressive loss of judgment, intellectual deterioration, and disorientation may be the next manifestations. Such changes are common in most organic brain syndromes and are not specifically diagnostic of the cause or type of difficulty.

In infants and very young children, increase in head size may be one of the first manifestations of brain tumor. In childhood, headache, disturbances in vision, clumsiness, and episodes of vomiting may signal the presence of such a lesion. In adult life, headaches, disturbance of vision, and the development of focal phenomena—such as irritative manifestations, Jacksonian attacks, generalized convulsions, and sensory

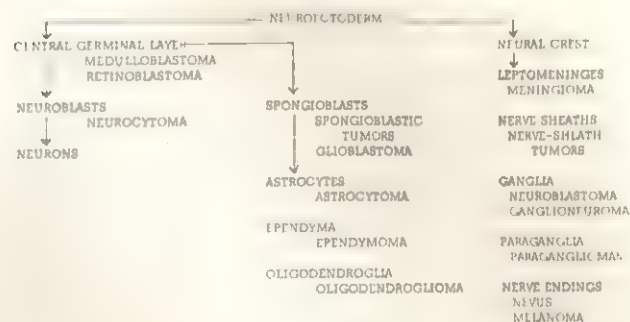


FIGURE 1. Simplified schema of the derivation of nervous system tissues and tumors. (Courtesy of S. P. Hicks, M.D.)

and motor changes—may be the earliest evidence of the development of an intracranial neoplasm.

Psychiatric symptoms. In association with the characteristic organic findings, there is usually a change in personality response that, in effect, is an exaggeration of the premorbid personality pattern. In brain tumor, the onset of such symptoms may be abrupt or gradual. Furthermore, wide variations in the psychiatric symptoms may be manifest. The following case is an example of this.

A 54-year-old white female appeared well until she had an abrupt episode of delirium, which lasted for only about 24 hours. After this episode there were progressive and more marked personality changes that were associated with a persistent depression and evidence of marked dependency. During a period of about 10 months these symptoms steadily increased, but the patient complained of no headache. The depression became quite severe. She was then admitted to a hospital for a complete evaluation. The physical and neurological examinations were reported as being within normal limits. However, a routine pre-electroshock electroencephalogram (EEG) revealed a right-sided focus, which was substantiated by a second localizing EEG. (See Figure 2.)

The EEG findings suggested an infiltrating neoplasm involving the temporo-frontal area, with the possibility of parasagittal or a deep extension. The focal slow waves were frequent and of a 1½ to 2 per second or a 3 to 5 per second type. They were seen in the right temporal region almost continuously, with a variable spread to the right frontal and parietal areas. Repeated neurological studies were reported negative, and the diagnosis of a convulsive disorder was suggested. A radioactive iodine uptake study was also reported as negative, the ophthalmological examination showed normal fundi, and, although the visual fields showed some contraction, they were interpreted as being evidence of an emotional disorder. Kahn test was negative, spinal fluid pressure was 150 mm., with a total protein of 150 mg. colloidal gold 00122200000, and a mastic of 123 321, but there was 4 plus globulin; x-ray of the skull was reported as negative. Because of the marked depression, which it was felt might lead to suicide, and because of negative evidence of a neurological lesion with the exception of the EEG finding, it was decided to treat the patient by electroshock therapy. Following the third treatment, the patient developed a left facial paresis, with weakness of the left arm and leg and increased confusion. An arteriogram revealed evidence of a right temporo-parietal lesion. On operation, a large degenerating glioblastoma multiforme was found infiltrating the frontal, temporal, and parietal region.

This patient gave a characteristic picture of a combined functional and organic brain syndrome, and with repeated negative neurological examinations and

TABLE I
Various Brain Tumors and Some of Their Characteristics

Tumor Type	Average Percentage of All Brain Tumors	Usual Age	Relative Prognosis	Usual Area Involved	Usual Presenting Symptoms	Onset and Type of Growth	Symptoms	Neurological Findings	Tendency to Recur
Gliomas									
Astrocytoma	14.0	Adults but may occur at any age	Fair	Adults in cerebrum, children in cerebellum	Focal brain symptoms	Slow, insidious	Headache, weakness, sensory disturbance	Motor and sensory changes dependent on location of neoplasm. Papilledema and visual field change may occur	Usual
Glioblastoma multiforme	12.0	Young adults, may occur at any age	Poor	Cerebrum	Headache	Rapid	May resemble symptoms of vascular accident	Papilledema. Motor and sensory changes dependent on location of lesion. Hemiparesis may occur suddenly from hemorrhage in neoplasm	Usual
Medulloblastoma	4.0	Usually children; may occur in adults	Poor	Cerebellum	Headache	Early rapid	Headache, visual disturbances, vomiting	Incoordination, clonus, staggering gait, dysmetria and dyssynergia. Tendon reflexes decreased. Pyramidal signs not likely to be present	Usual
Ependymoma	2.0	Adults	Poor to fair	Cerebrum and cerebellum	Neck pain or headache	Slow	Depends on location of neoplasm	Depends on location of neoplasm	Quite often
Astroblastoma	1.5	Children and adults	Poor to fair	Usually cerebrum, sometimes cerebellum	Varied	Slow but may be quite fast	Varied, especially with relation to location	Varied, especially with relation to location	Frequent
Oligodendroglioma	1.4	Adults	Poor to fair	Usually cerebral lumen	Convulsive attacks	Slow	Convulsive attacks, headaches	Depends on location	
Other gliomas	1.5								
Meningioma	19.0	Usually in adults	Good	Cerebrum	Dependent on location	Slow	Headache, confusion, depression	Depends on location	Rare
Metastatic carcinoma	17.0	Usually in adults	Poor	Cerebrum and cerebellum	Dependent on location	Fairly fast	Dependent on location	Depends on location	Usual
Pituitary adenomas	10.0	More commonly adults; may occur in children	Fair	Pituitary fossa	Visual difficulty	Slow	Headache, vomiting	Visual defects	Quite often
Others	17.6								

essentially negative ophthalmological studies, particularly without papilledema, it is not difficult to understand why the diagnosis of an intracranial neoplasm was overlooked.

The type of symptomatology depends to some extent on the location of the lesion, the kind of lesion, and the rapidity of its development. When the lesion is a slowly growing, compressing neoplasm such as meningioma in a relatively silent area of the brain, it may attain considerable size before evidence of increased intracranial pressure and other manifestations of a cerebral neoplasm are apparent. On the other hand, such a lesion may result in a clear cut affective reaction, as is exemplified by the following case.

A 52-year-old housewife was admitted with a history of recurrent episodes of depression of sufficient severity to require hospitalization. The original onset was characterized by a period of several weeks of severe frontal headache, for which no cause could be found and which disappeared with the onset of the first depressive episode. The depressive episodes varied in length from a few weeks to 2 months. With the fourth episode in 5 years, the patient began to demonstrate evidence of increased intracranial pressure. A neurological examination suggested the presence of right frontal neoplasm. A large right frontoparietal meningioma was found. After removal of the neoplasm, the mental symptoms disappeared and did not recur. Thus, the mental symptoms appear to have been definitely correlated with the presence of cerebral neoplasm.

A careful statistical study of 326 cases of supratentorial neoplasm, excluding metastatic lesions, was carried out at the University of Michigan. The study was designed to reveal the interrelationships among the following variables: mental changes, seizures, increased intracranial pressure, and the type and location of the neoplasm. Postmortem studies were available in 62 cases. The study revealed that mental changes were present in more than 58 per cent of the entire series. The mental changes did not appear to be influenced by the presence or absence of increased intracranial pressure. Similarly, such changes did not seem to be clearly related to the location of the tumor, although there appeared to be a trend toward more mental changes in those with frontal, temporal, and deep-seated neoplasms than in those with tumors involving the parietal or occipital lobe. Mental changes appeared to occur more frequently in cases of glioblastoma multiforme.

Seizures occurred in 48 per cent of the total series and were seen more often in the slowly growing and less malignant tumors than in the more malignant. Disorientation occurred in 39 of these patients, confusion in 59, psychotic behavior in 10, cognitive impairment in 77, affective lability in 15, lethargy in 41, personality changes in 46, depression in 12, euphoria in 5, decrease of attention span in 4, but an organic brain syndrome was diagnosed in only 11 patients. The changes as described were insidious and covered a period varying from a few weeks to many months. The personality changes tended to be an accentuation of the premorbid personality characteristics of the pa-

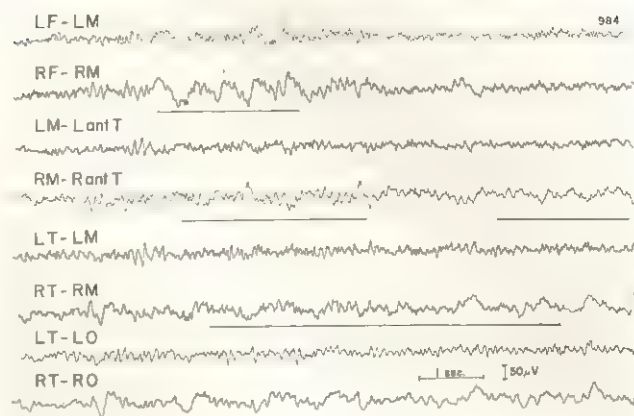


FIGURE 2. EEG findings in a 54-year-old woman. It shows frequent focal δ wave bursts (1.5 to 3 per second) in the right temporo-frontal sector (underlined strips), indicating the presence of a focal lesion. A malignant neoplasm was considered likely. Corresponding areas in left hemisphere (strips not underlined) do not show such focal waves. EEG first directed attention to this focal condition. By history and examination no neoplasm was suspected in this patient, whose only symptom was personality change, particularly profound depression. (Courtesy of R. W. Waggoner, M.D.)

tient. Such a finding is frequent in both chronic acute organic brain syndromes.

Of the glioblastoma group of patients, 71 per cent showed some kind of mental change; in the astrocytoma and oligodendroglioma group, only 53 per cent showed mental change; in the meningioma and pituitary neoplasm group, approximately 52 per cent showed mental changes; and in the cranial pharyngioma group, only 30 per cent showed mental changes. This study significantly emphasized the need for constant awareness that a neoplasm may be camouflaged by the presence of psychiatric manifestations. Interestingly enough, this study showed a relatively small percentage of a clear cut organic brain syndrome type of reaction, fewer than one would anticipate.

Selecki reported on a study of 10 mental patients with mental hospitalization and with symptoms of from 1 month to 5 years duration, and an age range of from 38 to 68 years. The 10 patients were divided into three groups. In the first group were those with frontocallosoal and anterior parietal neoplasms and those who showed such symptoms as alcoholism, progressive loss of recent memory, loss of insight and interest, depression, vagabond type of behavior, self-neglect, loss of planning ability, irresponsibility, and various other manifestations. Early diagnosis in these cases varied from chronic alcoholism and presenile dementia to psychopathic personality, epilepsy, and cerebral vascular disease. There were also symptoms such as dementia, perseveration, incontinence, drowsiness, disorientation, confusion, hallucinations and delusions, stupor, and mutism. Three of the 5 patients had glioblastoma, 1 had an astrocytoma, and 1 had an oligodendroglioma.

The second group had lesions involving the midportion of the corpus callosum, the bilateral posterior frontal area, and basal ganglia. The 2 patients had severe convulsive seizures, memory loss, loss of insight, and depression. They had only nondiagnostic neurological changes, with some vascular involvement. One neoplasm was an oligodendroglioma, the other an astrocytoma. These 2 patients were originally misdiagnosed as hysteria.

In the third group—with tumors involving the splenium, the posterior third ventricle, and the thalamic area bilaterally—the chief complaint was of attacks of rage and violence, failing memory, personality change, confusion, disorientation, dementia, and headache. Of these 3 patients, 1 was misdiagnosed as having Alzheimer's disease and another as having cerebral vascular disease. In this group, the neoplasms were glioblastoma multiforme, astrocytoma, and secondary lymphosarcoma.

Sinsh stated that psychiatric symptoms may be one of the more common modes of presentation of intracranial tumors and emphasized that this fact is often overlooked until the relationship becomes only too obvious. He suggested that the reactions in the early stages are primarily determined by the personality of the patient; in the later stages, manifestations are increasingly organic in nature. The clinical features in his opinion are dependent on the type and rapidity of growth of the neoplasm and on the degree of intracranial hypertension. Three of the patients in his series were given electroshock therapy. One of the three seemed to be improved, and the other two were made worse by such treatment.

Bilikiewicz and Grofska concluded that mental symptoms as manifested by temporal lobe tumors are not diagnostic but that such patients are more likely to manifest convulsive disorders of some sort. In 18 patients with temporal lobe tumor, only 3 manifested what they considered to be significant and typical symptoms.

It appears that mental symptoms of such specific order rarely occur, and their use as a diagnostic aid is not warranted. Confusion, disorientation, and hallucinatory manifestations can and frequently do occur in association with neoplasms involving the corpus callosum. Personality changes, particularly the kind of silly euphoria described as *Witzelsucht*, are frequently seen in tumors of the frontal lobe.

Karlyn et al. report that patients with space-occupying lesions involving the nondominant hemisphere have less intellectual deficit than patients who have lesions in the dominant hemisphere. The reason for this is obvious, and such results are to be expected. However, more evidence for such a conclusion is required before a definitive statement of this sort can be made.

Louis and Hirschenfang, in a study of supratentorial glioblastomas and meningiomas, pointed out that mental changes occur with tumors in all regions but are most common as initial symptoms of tumors of the

prefrontal region with or without involvement of the corpus callosum. Headache, however, is the most frequent presenting symptom. Mental changes were also considered more likely to be found in infiltrating tumors than in extrinsic compressive lesions, such as meningiomas.

Mental and psychiatric symptoms appear to occur with tumors involving any part of the brain, including the infratentorial area. These symptoms tend to be of the organic brain syndrome type, with reduction in intellectual capacity, loss of memory, confusion, delusions, hallucinations, etc. The mental symptoms resulting from a neoplasm in any given area, however, do not produce characteristic psychiatric symptoms, nor is it possible to consider such symptoms significant in making a differential diagnosis of the tumor type, although infiltrating neoplasms seem to produce more mental symptoms than noninfiltrating lesions.

Diagnosis. The diagnosis of brain tumor is often difficult but rarely more perplexing than when the presenting symptoms are primarily psychiatric in nature. The occasional brain tumor found in autopsy in a patient who has been hospitalized for years in a state mental hospital should serve as a warning that brain tumors may occur even when the only manifestation is that of psychopathology. Early in the development of a cerebral neoplasm, such a diagnosis can be overlooked by the most astute observer. That such conditions may occur as a coincidental manifestation but with a neoplasm as the source of psychiatric symptomatology should always be kept in mind. Every patient should have a careful neurological evaluation and such other studies as may be indicated to make sure that a neoplasm is not being overlooked. Statistical studies in various state hospital populations indicate that cerebral neoplasms may occur as much as three times more frequently than in the average population. However, other studies have shown no greater incidence than in nonpsychiatric hospital groups.

When the history and neurological findings indicate the presence of a possible intracranial neoplasm, various diagnostic studies should be undertaken. Of primary importance is a series of x-rays of the skull, which may demonstrate evidence of intracranial pressure and indicate the position of the lesion. A careful study of the eye grounds and of the visual fields should be made. If evidence of increased intracranial pressure, as demonstrated by papilledema, is present, a lumbar puncture should not usually be done. The electroencephalogram, brain scan, and arteriography are indicated in such instances. As a final preoperative diagnostic procedure, the neurosurgeon may want to do a ventriculogram, although this may not be of help in the early phase of a brain tumor.

In the final analysis, neurological findings and special diagnostic procedures such as the brain scan, arteriogram, and the electroencephalogram must be used in order to make an accurate diagnosis. It is possible to have mental symptoms as the presenting feature of

the organic brain syndrome associated with brain tumor, and such symptoms may persist over a period of months or even years with little evidence of increased intracranial pressure or other characteristic or localizing signs of cerebral neoplasm.

In the differential diagnosis of cerebral neoplasm, one should consider the possibility of brain abscess, subdural hematoma, focal meningeal cyst (particularly an arachnoiditis), cerebral arteriosclerosis, vascular malformations, subarachnoid hemorrhage, meningitis, and encephalitis.

Prognosis. The prognosis of brain tumor depends primarily on two factors: the malignancy of the neoplasm itself and its location. The more malignant the neoplasm, such as the glioblastoma or medulloblastoma, the poorer the prognosis, irrespective of the location of the tumor. On the other hand, slowly growing tumors, such as a meningioma, have a relatively good prognosis, while an astrocytoma has a fair prognosis, unless it is inaccessible to surgery.

Treatment. The treatment of brain tumor depends almost entirely on the possibility of neurosurgical intervention. The earlier the diagnosis and the more accessible the lesion, the better the results of treatment. Error in diagnosis may lead to treatment procedures, such as electroshock therapy, that may be harmful to the patient. Control of psychiatric symptoms after diagnosis, both pre- and postoperatively, should be through the use of the phenothiazine compounds with which the therapist is most familiar. Care should be exercised to avoid overdosage, and the patient should be constantly observed for possible side effects, such as symptoms resembling paralysis agitans.

Subdural Hematoma

Etiology. In almost every instance, the cause of subdural hematoma is trauma, although in a surprisingly large number of cases it is not possible to obtain such a history. Other conditions may also result in this syndrome. Various types of blood disease and infectious disease have been considered as a causative factor.

Possible causes of psychiatric symptoms. A study by Rubert and Remington emphasized the need for constant awareness of the possibility of brain tumor as the cause of thinking disturbances. They pointed out that the origin of psychological symptoms of tumor patients is not well understood but suggested four alternate explanations: (1) A tumor may exist coincidentally with a psychosis. They reported that surveys have indicated that patients in psychiatric hospitals have about the same incidence of brain tumors as the general population. (2) The symptoms of a psychiatric syndrome may be caused directly by the tumor itself, and it may be of an organic or functional nature. It is reasonable to assume, and evidence seems to indicate, they concluded, that an expanding lesion can cause nonspecific manifestations

of brain damage, similar to those of other organic brain changes. Organic brain symptoms as manifested by loss of cognitive capacity and associated memory loss with impairment of abstract thinking and lowered attention are relatively common. Some authors have insisted that the syndrome of a functional nature could not be simulated by neoplasm. This does not appear to be an acceptable hypothesis, since the psychiatric manifestations in some cases disappear and remain absent after neoplasm removal. (3) A depression may occur secondary to the patient's awareness of his intellectual loss as a result of neoplasm. Since the neurological manifestations may be intermittent, the mental symptoms may also be intermittent under such circumstances. (4) Patients with brain tumors may develop psychiatric symptoms because of the way they are treated by other people when their organic deficit becomes apparent. The authors pointed out that the senile patient becomes emotionally disturbed if too much is demanded of him. Similarly, the patient whose brain is damaged by a neoplasm may become upset emotionally if his intellectual limitations are not understood by those with whom he associates.

Manifestations. In the acute form, blood collects beneath the surface of the dura, and there may be an associated subarachnoid or extradural hemorrhage. The subacute form represents a transition phase to the chronic form, in which there is a collection of fluid in a cystlike formation or organized clot, with the development of a membrane that encloses the fluid or clot. This collection of fluid or clot causes pressure on the brain and produces evidence of increased intracranial pressure, with signs and symptoms dependent on the area involved. After trauma there may be a short period of headache and perhaps dizziness and confusion, followed by a symptom-free period of days to months before the manifestations of the chronic state occur. The first manifestations are usually mild and subjective, such as headache and dizziness. These symptoms may then be followed by the more severe signs, such as those commonly found in the organic brain syndrome. Evidence of increased intracranial pressure is usually present, manifested by papilledema and cerebrospinal fluid hypertension. However, the mental symptoms may be the only significant clue to the pathologic process.

There are numerous reports in the literature of mental symptoms associated with subdural hematoma. Mateos and Daly, in an analysis of 123 cases, with 85 per cent of the patients in the 20 to 60 age group, stated that frequently the first indication of a subdural hematoma is the change in personality as observed by the patient's associates. These changes are essentially those of an organic brain syndrome—confusion, impaired memory, and bizarre behavior. The possibility of a subdural hematoma should not be overlooked in the presence of such symptoms. Most reports in the literature indicate that a high percent-

age of patients with subdural hematoma show some kind of mental abnormality, which may vary from mild personality changes to frank psychosis.

As in many other types of brain lesions that produce an organic brain syndrome, the chronic subdural hematoma may produce a host of different kinds of psychiatric symptoms. Such symptoms as hyperactivity, depression in intellectual function, memory deficit, temporal and spatial disorientation, and indifference to moral attributes have been described. Some authors have even reported that all patients with subdural hematoma show some mental changes ranging from a mild disturbance in abstract thinking in some cases to significant disorientation in others. It is particularly important to consider subdural hematoma in the differential diagnosis in patients who may be brought to the hospital in a coma where there is evidence of alcohol consumption. Johnson and Sinkler emphasized that too often both professional and nonprofessional people attribute coma, a clouded sensorium, or mental confusion to alcohol alone and that subsequent studies prove the existence of a subdural hematoma. Johnson and Sinkler pointed out that the chronic subdural hematoma may present a picture of psychosis, of degenerative neurological disease, or the symptoms of a brain tumor. Such manifestations may develop gradually over a considerable period of time, with the early symptoms being those of irritability, somnolence, lethargy, and personality change.

Since both acute and chronic subdural hematoma may result from a relatively mild injury that may not be recalled either by the patient or by his family and since in a large number of patients there is a complaint of headache, the possible presence of a subdural hematoma should be kept in mind. Symptoms of a subdural hematoma may fluctuate considerably and thus may render the diagnosis that much more uncertain. This is particularly true in the older patient, who may be particularly susceptible to the development of a subdural hematoma and in whom the organic brain syndrome associated with senile changes are to be expected, thus tending to camouflage the existence of the hematoma. Many patients with a subdural hematoma are first seen by a psychiatrist because of the severe mental changes that may lead to a diagnosis of senile dementia or of various other psychiatric syndromes. Often there is wide variation in symptoms, which may be inconstant and sometimes contradictory.

Gomez, in a study of 100 cases of subdural hematoma over a period of 25 years at one hospital, could find a history of trauma in only 71 of these cases. Headache was the most frequent symptom in the subacute and chronic cases, with 93.9 per cent of the patients having this complaint. The author states that mental confusion, drowsiness, and a fluctuating level of consciousness was found in almost every case. Thus, mental confusion, particularly with increasing drowsiness either intermittent or continuous, ap-

pears to be a most important diagnostic symptom of the chronic subdural hematoma.

Differential diagnosis. Some authors have classified subdural hematoma into three groups: (1) the acute, which occurs up to 2 days after the onset of symptoms, (2) the subacute, with a period of from 2 days to 2 weeks, and (3) the chronic, if there is a history of more than 2 weeks subsequent to the onset of symptoms or to the head injury.

In acute subdural hematoma, there is invariably a history of injury immediately preceding the development of symptoms. In such cases, there is usually a marked degree of loss of consciousness, increased intracranial pressure, dilation of the pupil on the side of the lesion, and partial or complete paralysis on the side opposite the lesion. It is often difficult to differentiate the acute subdural hematoma from that of subarachnoid hemorrhage.

In the subacute form, which some authors classify with the acute form, the diagnosis is perhaps less difficult, although there may be considerable variation in symptomatology, since the patient may experience varying levels of consciousness with confusion and somnolence over a period of 2 or 3 weeks. In the early acute cases, almost invariably there is blood in the spinal fluid, but in the subacute cases, the spinal fluid may be xanthochromic. In some instances, in the acute and subacute form, evidence of acute alcoholism may cloud the differential diagnosis.

In chronic subdural hematoma, in addition to the psychiatric symptoms described above, there are frequently episodes of headache and dizziness, which may be associated with episodes of unconsciousness. There may be signs of progressively increasing intracranial pressure. Since the symptoms may depend to a large extent the location of the hemorrhage, it is often difficult to differentiate the chronic subdural hemorrhage from brain tumor. The primary diagnostic differentiation from brain tumor is the history, if obtainable, of a previous trauma to the head.

Prognosis and treatment. Properly treated, the prognosis of subdural hematoma is quite good. The treatment of this condition is always surgical, but there is still considerable discussion of which surgical method will give the best results. Furthermore, the treatment must necessarily vary in accordance with the maturity of the lesions, which are either acute, subacute, or chronic.

Brain Abscess

Although the incidence of brain abscess is much less now than it was before the development of antibiotic and anti-infective chemotherapy, it still represents a condition that must be considered in the differential diagnosis of the various conditions presenting an organic brain syndrome. Since brain abscess is most commonly secondary to infection about the head and neck or elsewhere in the body, such infection gives a clue to the presence of brain abscess when the

symptoms indicate cerebral involvement. In a few instances, however, no primary source of infection may be found.

Manifestations. Abscess of the brain is a focal infection involving intracranial structures. It may occur either above or below the tentorium. The abscess usually begins as a localized encephalitis and, in most cases, becomes encapsulated within 10 days to 2 weeks. Evidence of meningeal irritation is often present, particularly in the early stages of the condition. In a large proportion of cases of brain abscess, it is the result of extension of the infection about the head. In only a small percentage of cases is it associated with trauma or does it occur as a result of the metastasis of infection from other areas of the body. With the onset of such cerebral symptoms in known infections of various paranasal sinuses or the mastoid process, the diagnosis is not particularly difficult. On the other hand, in patients with pulmonary infection, probably the most common cause of metastatic cerebral abscess, the diagnosis may be much more difficult.

In such cases and in those cases with a hidden infection, the first manifestation of brain involvement may be the development of somnolence, intellectual dulling, and confusion. This should suggest to the astute observer the possibility of brain abscess. The manifestation of abscess of the brain, secondary to infection elsewhere, may develop in a few hours or days, or the symptoms of an encapsulated abscess may become manifest many years after the original infection. The infection involves the brain most commonly by direct extension from sinus disease or by venous extension. It may also occur by more direct vascular transmission as, for example, secondary to pulmonary infection.

Although brain abscess may occur in almost any part of the brain, the frontal and temporal lobes and the cerebellum are the areas most commonly involved, since intracranial extension of an extracranial infection is most direct in these locations. Brain abscesses may be single, as in the case of direct extension of infection, or multiple, as is frequently seen in the metastasis of infection. With the exception of the evidence of infection, which is almost invariably present, and the somewhat peculiar mental state that so often occurs, the symptoms of brain abscess are like those of brain tumor. The symptoms depend to a considerable extent on the location and the degree of increase of intracranial pressure.

Relatively little comment about mental symptoms in patients with brain abscess can be found in the literature. It is certainly clear that brain abscess can produce mental symptoms like those of brain tumor. There are usually, however, other manifestations, such as increase of temperature, increase in white blood count, and evidence of preexisting infection, which gives a clue to the kind of cerebral lesion with which one is dealing.

Julien et al. reported an interesting case of a pa-

tient with an abscess of the right temporal lobe and with early signs of a pseudoencephalitis and with psychic symptoms. The symptoms manifested themselves paroxysmally, and there was a sensation of *déjà vu*, dreamy state, micropsia, and macropsia. There were also auditory and olfactory hallucinations and disturbance in attention.

Irsiglar reported that in brain abscess, particularly in cases secondary to sinus infection, "striking changes in behavior or personality may be the first and, in fact, the only sign of a unilateral frontal abscess." In infections involving a paranasal sinus, he pointed out that personality changes may be diagnostic of unilateral extension into the anterior cranial cavity and that such mental changes may persist or even become worse after successful surgical intervention. It should be noted, however, that such personality disturbances, particularly of the acute organic brain type, may occur without direct brain involvement in association with systemic infection, thus increasing the diagnostic dilemma.

Loeser and Scheinberg, in a review of 99 cases of brain abscess, made no comment about the presence of any mental symptoms. Smith described the case of a boy of 12 who is said to have been normal and well behaved until he developed a fever and frontal headaches, which lasted for 2 days. Three months later, he began have difficulty in school because of his behavior, both toward his peers and toward his teachers. Subsequently, he developed larcenous habits. For a period of 2 or 3 months, the diagnosis of brain involvement was not made until he was admitted to a hospital, where it was found that he was mentally confused, emotionally wild, and unstable. There was marked fluctuation in his moods, from "surly stupor to maniacal viciousness." A diagnosis of frontal abscess was made. With treatment, he improved promptly. Within a few days, he was again a friendly, likable boy. The authors reported this as clear cut evidence that the mental symptomatology was secondary to the frontal lobe abscess.

The following case report illustrates the kind of symptoms and the difficulty in differential diagnosis that may be seen in brain abscess. As is so frequently the situation early in the development of brain abscess, the symptoms are by no means characteristic either of the location of the abscess or of the symptomatology of brain abscess in general.

A 57-year-old male was admitted to the hospital because of confusion, headache, and a possibility that he had had a stroke. There was a history of preexisting pansinusitis over a period of several weeks, inadequately treated by small doses of an antibiotic. Shortly after admission, there were two episodes of convulsive attacks. There was significant evidence of meningeal irritation and varying neurological findings of unilateral increased muscle tone of the spastic type, increase of tendon reflexes, and a Babinski's sign on the left. There was a left facial palsy and a spiking temperature to 103° F. Shortly after admission, the patient became unconscious. There was an increase in spinal fluid pressure as measured by lumbar puncture, with 100 white cells

per centimeter in the spinal fluid. Pneumococci were cultured from the spinal fluid. No focal abscess could be demonstrated by arteriogram or by brain scan. He was placed on large doses of antibiotics, and most symptoms disappeared in a few days, but there was some evidence of continuing organic brain syndrome, as manifested by mild confusion and memory loss for several weeks. It was considered likely that this patient had a diffuse brain abscess or a unilateral and focal pneumococcal encephalitis that responded to treatment before the abscess became encapsulated.

Differential diagnosis. In the differential diagnosis of brain abscess, one must consider brain tumor, meningitis, encephalitis, and lateral sinus thrombosis. In brain tumor there is rarely evidence of infection, but infection is invariably present in brain abscess before it has become encapsulated and relatively quiescent. The organic brain syndrome of either may be essentially the same, although in brain abscess there is apt to be more confusion and somnolence and more evidence of meningeal irritation than in tumor. In association with the mastoid infection, the differentiation from lateral sinus thrombosis may be very difficult. However, the spinal fluid in a case of sinus thrombosis is usually normal, and tenderness in the jugular vein area is present.

Prognosis and treatment. The prognosis in brain abscess is relatively good in most cases, particularly when the abscess is well encapsulated. The treatment before encapsulation is medical, with adequate amounts of antibiotics of the type to which the organism is susceptible when this can be determined. The treatment of the encapsulated abscess should be a combination of medical and surgical therapy.

Suggested Cross References

Further information regarding the neurological examination may be found in Chapter 10, on neurology. In that same chapter, brain tumors, subdural hematoma, and brain abscess are also discussed from a neurological perspective.

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Chapter 21

Brain Disorders. IV: Associated with Convulsions (Epilepsy)

21.1 • • •

FRANK R. ERVIN, M.D.

Introduction and History

The air was filled with a big noise and I thought that it had engulfed me. I have really touched God. He came into me myself, yes God exists, I cried, and I don't remember anything else. You all, healthy people, he said, can't imagine the happiness which we epileptics feel during the second before our fit. Mahomet, in his Koran, said he had seen Paradise and had gone into it. All these stupid clever men are quite sure that he was a liar and a charlatan. But no, he did not lie, he really had been in Paradise during an attack of epilepsy; he was a victim of this disease like I was. I don't know if this felicity lasts for seconds, hours or months, but believe me, for all the joys that life may bring, I would not exchange this one.

Such descriptions by Dostoyevsky and by countless other writers, as much as the often cited tonic-clonic convulsion, cyanosis, stertorous breathing, salivation, and trance-like mumblings of postictal confusion, must have helped name epilepsy the "sacred disease." Certainly, from Hippocrates to the present, epilepsies have attracted attention and investigation far exceeding their numerical importance. This has been encouraged by the rewards resulting from meticulous observation of the neurological phenomena preceding and following the fit, analyses that have provided some of the clearest insights into human brain organization. In no other syndrome does nature duplicate so clearly the exploring electrode of the experimental neurophysiologist. In fact, there are few observations from experimental brain stimulation that have not, at least qualitatively, been previously delineated by an epileptic seizure.

In recent years, the experimental neurophysiologist has added to his interest in the mechanism of motor and sensory control those problems of complex behavior falling under rubrics like learning, motivation, and perception. Clinically, it is the psychiatrist who copes with disturbances in these areas. It seems likely

that thorough reexamination of the rich psychopathology of those patients with known structural or functional disturbances of cerebral organization, particularly of episodic occurrence, will help clinical psychiatry most effectively support, guide, and incorporate current advances in the laboratory. For instance, the intriguing phenomenon of self-stimulation of brain centers in the experimental animal and the questions it raises about motivation may well be illuminated by careful clinical investigation of those children and some few adults who self-stimulate their flicker-induced seizure state.

This section leaves untapped much of the neurological richness of the epileptic phenomena to concentrate on those behavioral aspects most pertinent to the psychiatric audience. For both neurology and psychiatry, epilepsy presents not only a challenging problem involving many millions of the world's people but a natural entree into the borderland between structure and function of the brain. Careful attention to its varied aspects should lead a step closer to resolution of the ancient dichotomy of mind and brain, which has impeded so much thinking and practice.

At the turn of the century, when Freud was elucidating the psychopathology of everyday life and suggesting the study of normal dreams as "the royal road to the unconscious," Hughlings Jackson was making his classic observations on the phenomena of epilepsy. Jackson was particularly attentive to the neurological insights to be gained, but he suggested that the "understanding of the dreamy states [of temporal lobe epilepsy] would be the key to the understanding of insanity."

Whether or not there is such a straightforward key, it is certainly true that there are few psychopathological phenomena that have not appeared as epileptic episodes. Disorders of affect, such as depression, anxiety, terror, and rage; disturbances of thought, such as forced thinking, obsessive rumination, fragmentation, and neologism; perceptual changes, such as hallucinations, depersonalization, *déjà vu*; and dis-

turbances of behavior, such as recurrent dreams, transvestitism, and ritual behavior—all have been described, particularly in relationship to temporal lobe epilepsy. More dramatically, the states of manic elation, delusional paranoias, and catatonic stupor or excitement have also been tied to seizure disorders.

These conditions pose some interesting diagnostic challenges. However, once the usual pragmatic dichotomy of organic versus functional has been made for purposes of instituting therapy and guessing at prognosis, it should be fruitful to erase that dichotomy and investigate the phenomena further. It may well be that the unique organization of neural systems necessary to produce depersonalization, for instance, is the same whether it is activated by a synchronous neural discharge from the hippocampus, by an overwhelming current life stress, or by some commonplace event to which the schizophrenic patient is uniquely sensitized. The clarification of such issues should be of inestimable value in arriving at optimal therapeutic procedures and in extending the understanding of psychopathology from the level of organization of psychological events to the level of neural events.

Unfortunately, most American psychiatrists have relinquished the clinical responsibility for the epileptic and thereby the opportunity to learn from him. At the same time, many neurologists have felt a concern only for achieving that level of medication necessary to subdue the abnormal electrical activity of a presumably static cerebral lesion; they have failed to take advantage of the plasticity of the nervous system in planning the management of the total individual with epilepsy or even of his specific symptoms. A dramatic insight into the possibilities in this direction is provided by an elegant study by Efron, who demonstrated that a conditioned reflex could be established by association to block the appearance of uncinate seizures in a young woman. A similar phenomenon was observed by Gowers some 80 years ago and apparently by Boettius in some cases of Jacksonian epilepsy as early as the 17th century. Though some experimental work has been attempted in recent years, there has been too little pursuit of either the theoretical or pragmatic aspects of this observation.

Definition

Strauss correctly observed that "a truly satisfactory definition of 'epilepsy' on the basis of clinical characteristics is nonexistent." No doubt there exist as many definitions of epilepsy as there are neurologists and as many types of epilepsy as there are patients. To encompass the diversity of the epilepsies, one can say little more than this: (epilepsy is that state of impaired brain function characterized by a recurrent, periodic, paroxysmal disturbance in mental function, with concomitant alterations in behavior or thought processes.) This generalization covers many disturbances not today believed to be epileptic and is thereby subject to criticism, but perhaps the sin

of overgeneralization will be pardoned more readily by future investigations than its antipode will be.

(Diagnosis)

In spite of the prevalence of epilepsy, and an abundance of literature discussing its diagnosis and treatment, it is shockingly handled by most physicians.

[A seizure of any kind is a symptom, not a disease. It is a symptom of brain dysfunction, either localized or general, and should be investigated as only one, even if the most dramatic, of a potential complex of signs and symptoms. That there is, on occasion, dysfunction of the brain is not surprising. The complexity of its interconnections, from the most simple-minded cybernetic point of view, ensures that uncontrolled oscillation will be one of the ways in which it can become disorganized. The marvel, as Walter once commented, is that seizures are not more common. The occurrence of a fit signals that the complex of neural, humoral, metabolic, and vascular regulatory systems of the brain are in imbalance.]

† **Non-neural pathophysiology.** The first diagnostic question to be asked is whether there exists treatable nonneural pathophysiology. Hypoglycemia, pyridoxine deficiency, eclampsia, uremia, anoxia, hyponatremia, water intoxication, and fever are all states that may lead to convulsions. In the same class should be mentioned seizures following withdrawal—usually abrupt—of a wide class of pharmacological agents, especially alcohol, barbiturates, meprobamate, diazepam, and anticonvulsants. Apparently, withdrawal seizures can follow any neuroactive drug on occasion.

Intracranial pathology. The above generalized metabolic disorders are mentioned first, since they are frequently accompanied by behavioral disturbance, perceptual or thought disorders, or frank psychosis and thus come to the attention of the psychiatrist. Etiologically more common are seizures following cerebrovascular hemorrhage or thrombosis. Indeed, they may be the symptom of onset in these conditions. Cerebral vascular disease is particularly to be suspected with seizures occurring for the first time in adults, particularly those past midlife. In these patients, structural intracranial pathology should be routinely suspected and vigorously excluded by adequate diagnostic procedures. Whether the pathology be neoplasm, vascular disease, vascular malformation, abscess, acute or chronic infection (such as syphilis, tuberculosis, and cysticercosis), or degenerative disease (such as Pick's and Alzheimer's), fits may be an early symptom and often important in localization.

Trauma. A more easily recognized but much abused cause is trauma. Post-traumatic epilepsy is an important and well studied problem.

The problem is that, in assiduous history taking, a large number of patients and families remember all

too clearly some recent or remote head injury, to which is attributed all subsequent misfunctions of the individual. To avoid this trap, the physician must sort out the relatively infrequent seizures following closed head injury and differentiate them from surgically treatable syndromes, especially chronic subdural hematoma.

Diagnostic work-up. The above outline of differential diagnostic problems, in which the focus of diagnosis and treatment is not on the seizure but on the etiological process, presumes the confirmed existence of a convulsion. Unfortunately, this presumption is not always justified; the physician may never see an episode in the patient who has only one or a few spells. One must, therefore, be wary and sure that the patient's loss of consciousness, abnormal motor movements, etc., are not due to other central nervous system malfunction. Syncope, Adams-Stokes syndrome, hypoglycemia, tetany, narcolepsy, catalepsy, breath holding, hysteria, and malingering are but a few of the varied syndromes that get misdiagnosed as epilepsy.

The above account suggests that before one settles down to classify and treat an epileptic, a careful diagnostic work-up is necessary. Minimally, a set of skull x-rays, lumbar puncture, blood serology, fasting blood sugar, brain scan, and electroencephalogram (EEG) should be added to a meticulous physical, neurological, and routine clinical laboratory examination and careful history, paying particular attention to recent drug intake. Any suggestive abnormalities should of course be pursued in depth with suitable procedures.

Hysterical and simulated seizures. Of particular interest in arriving at a differential diagnosis is the problem of hysterical or frankly simulated seizures. These may pose considerable difficulties, particularly when one suspects temporal lobe epilepsy with its frequently ambiguous EEG findings and unusual variety of seizure patterns.

The standard shibboleths for seizure diagnosis seem to include unconsciousness, tonic and clonic movement, loss of sphincter control, amnesia, and self-injury, such as bitten tongue and head injury from falling. This set of phenomena describes many grand mal seizures but is not a *sine qua non* for all epilepsies. Focal seizures, such as Jacksonian seizures, may not be accompanied by loss of consciousness unless the motor symptoms become bilateral. Some psychomotor patients may retain a hazy or distorted memory of the seizure period and may not appear unconscious to an observer. To further becloud the issue, a number of patients with a real seizure problem have also learned to use the seizure for secondary gain. They may learn ways of precipitating a fit—by hyperventilation, for instance—or they may simulate a fit. Recognition of the simulation by a professional observer may prejudice him against diagnosis of the

patient's coexisting epilepsy. In one such patient, his true seizures were due to a temporal tumor.

The least convincing pseudoseizures are those of the relatively unsophisticated hysteric. Here there is usually a clear life crisis precipitating the seizure, much exaggerated thrashing about without a clear pattern of motor involvement, and usually the possibility of interruption of the state by a patient examiner. There are no neurological signs—pupillary changes, Babinski responses, EEG abnormality, etc. (It has been suggested that a fair diagnosis of hysteria can be made by counting the number of people accompanying the patient to the emergency room.)

The deliberate malingerer may be more difficult to detect, as he may with practice become quite skillful in simulation. Here, the suspicion aroused by clear secondary gain and a thorough neurological examination with EEG at the time of seizure may be the only data on which to base a confrontation with the patient. The problem is psychiatrically no different from diagnosing and dealing with other malingerers.

Procedure. An individual reported to have abrupt, self-limited, recurrent alterations of sensation, behavior, or consciousness, especially with motor manifestations, should be suspected of having epilepsy. First, attention is directed to confirming the existence of a seizure. Second, one attempts to recognize pathological conditions to which the seizure is a secondary phenomenon, although, as a dangerous symptom, it may merit active anticonvulsant therapy in conjunction with specific therapy for the primary condition. Having excluded these conditions, one is left with an epileptic patient to be further categorized.

Classification

A traditional first division of the epilepsies is between the idiopathic or cryptogenic and the symptomatic or secondary seizures. With increasing emphasis on physiological mechanisms and electroclinical correlations, a more common current division is between the generalized or centrencephalic fits and focal seizures; focal seizures involving the temporal lobe are often separated out for special consideration (see Table I).

(The anatomical delineation of temporal lobe seizures is often used interchangeably with the more clinical description "psychomotor," although they are not identical.) Since the classic psychomotor seizures may have an anatomic and indeed an electrical focus in regions of the brain other than the temporal lobe, it seems quite likely that the temporal lobe structures are involved in these cases by secondary spread, but that is a physiological hypothesis that does not justify the confusion of terms. Unfortunately, the literature is, in general, so unclear on this distinction that the confusion will probably be perpetuated by this section when an attempt is made to compare clinical syndromes.

The categorization of an epileptic patient depends

TABLE I
Classification of Epilepsies

All types equal 0.3 per cent of population.

Type	Common EEG Abnormality	Interseizure EEG Abnormality ^a	Relative Incidence of Pure Forms ^a	Peak Age(s) of Onset ^a	Common Signs and Symptoms	Comment
I. Centrencephalic						
Grand mal	Bilaterally synchronous discharge High voltage fast activity	20% awake, 40% asleep	50%	1-15	Fifty per cent have brief aura, unconsciousness, followed by tonic-clonic seizure	Should be brought readily under drug control
Petit mal Classic absence Myoclonic Salaam Akinetic (atonic)	Three per second spike and wave; often 4 per second at beginning of seizure, 2 per second at end; easily provoked by hyperventilation	85% awake, 90% asleep	3%	5	No aura; 2 to 15 seconds of unconsciousness; may show 3 per second blinking; lightning twitches, loss of muscle tone and unconsciousness	Do not confuse minor lapses of adults, usually focal; distinguish psychomotor variant. May be quite frequent, from several to several hundred daily. Often occurs in combination with grand mal, rare in adults
II. Focal						
Jacksonian, focus around central sulcus	Focal slow activity, fast activity, or spiking	30% awake, 60% asleep	5%		Onset most common in thumb or face; motor or sensory march of symptoms	Often post-traumatic
Psychomotor (temporal lobe)	Anterior temporal lobe spike or slow wave; may be bilateral	20% awake, 80% asleep	5% alone, 15% with grand mal	20	May end with grand mal; may have independent grand mal seizures	Phenothiazines useful adjunct to therapy; surgery should be considered
Other focal	Focal spikes spreading with phase reversal to other areas	20% awake, 80% asleep				
Frontal			2.5%	3	Aura common; related to localization; onset with adverse eye movements in grand mal; and focal fits	May indicate structural lesion requiring surgery
Midtemporal				6	Facial movements at onset	Commonest focal site other than "anterior temporal." Tendency for both EEG abnormality and seizures to disappear in adulthood
Occipital			(rare)	1	Visual (unformed) aura; grand mal seizure; strabismus common	
III. Other						
Petit mal variant	Two per second wave and spike	85% awake	3%	1	Fifty per cent mentally defective; massive myoclonic jerks common; grand mal seizures	An EEG diagnostic entity with poor prognosis
Fourteen and 6 per second positive spiking (hypothalamic)	Fourteen and/or 6 per second positive spikes; usually unilateral but may appear on either side from time to time	8% show 14 and 6 awake; others show it asleep only	6%	15	Behavior disorders, especially rage attacks prominent; may have no seizures or show grand mal or visceral fits; emotional, sensory and vegetative auras	An EEG, not a clinical, diagnostic entity; atypical seizures are common

^a Data from Gibbs, F., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.

primarily on two data. A careful description of the seizure, ideally with observation, is primary. Attention should be paid to precipitating circumstances if any, periodicity (e.g., nocturnal, premenstrual, etc.), frequency, any warnings that the patient has, and particularly the very first signs of the ictus. The duration and form of termination of the seizure and subsequent state of the patient should be documented. These factors are essential in suggesting diagnosis and guiding further work-up.

In general, the major seizure phenomena should present no difficulty in differential diagnosis. Even the elaborate psychic seizures can usually be identified, partly by the patient's own conviction that they are alien events that are not an integral part of his personality. In spite of this conviction, some of the feelings are so intense and so real that the patient may doubt his sanity and interpret them as signs of disaster, which may, in fact, be his motive for seeing the physician. Occasional hysterical seizures or outright malingering present some difficulty in diagnosis until observed by an experienced clinician. Generally, these are more rarely diagnosed as epilepsy than are slightly unusual variants of focal seizures, particularly those in the temporal lobe, misdiagnosed as being hysterical.

The second datum is the electroencephalogram. The advent of the EEG 30 years ago was a major factor in bringing order into the field. It remains extremely valuable in competent hands, but, like other laboratory tools, it must be an adjunct to careful clinical evaluation. The EEG is of considerable assistance in a differential diagnosis, but, especially in the focal epilepsies, it may be difficult to obtain an abnormal record, particularly during an overt seizure of the psychic kind. For example, it is more common to find disappearance of a focal abnormality, such as a spike or localized delta focus, with apparent normalization of the record, than to find an exacerbation of the abnormality during a "psychic" seizure of temporal lobe origin. In other forms of seizure, there is usually intensification of the local abnormality at the time of the overt spell.

Two points should be emphasized. First, a single normal EEG is of no significance in an epileptic. Nearly half of all epileptics have grand mal seizures alone, and of these only about 20 per cent show waking interseizure abnormalities of the EEG. Recording during sleep increases the incidence to 80 per cent. Second, like other biological measures, the brain waves are more likely to betray abnormality under pressure, that is, during states in which cerebral integration is undergoing changes in organization. Fortunately, a number of physiological maneuvers are quite effective in this regard. Ideal, of course, is the occurrence of a seizure during recording. Every effort should be made to accomplish this naturally. (Drug activation is excluded from this urging.) Sleep recordings double the number of interseizure abnormali-

ties recorded. Only petit mal can be expected to be found regularly without sleep. Hyperventilation, by altering blood CO₂ levels, activates some abnormalities and should be carried out routinely. It nearly always activates the petit mal patient. Flickering light, with its tendency to synchronize brain rhythms, is often effective in activation. Any known seizure precipitant unique to the patient should be tried—odors, sounds, reading, tactile stimulation, etc. (One patient is activated by a xylophone rendering of "Over the Waves.")

Careful use of repeated examinations and activation should produce evidence of abnormality in about 80 per cent of all epileptic patients. There are occasions when drug activation—with pentylenetetrazol (Metrazol), for instance—is indicated. This is a special procedure that should be left to the discretion of the skilled electroencephalographer.

One word of warning. More than half of focal seizures occur in association with grand mal. Therefore, the dramatic presence of grand mal fits should not preclude the careful investigation of any focal signs or symptoms.

One extremely common error is to lump all brief lapses of consciousness into the diagnosis of petit mal and to treat them as such, often ineffectively. Petit mal is extremely rare in adults, and the occurrence of minor seizures with lapse of consciousness is much more often due to the psychomotor or other focal seizures than to true petit mal. Since the drugs of choice are rather different in the two cases, this is an extremely important distinction to make.

Centrencephalic seizures. These imply bilateral synchronous EEG abnormality at the time of the seizure and on interictal examination and clinical unconsciousness at the onset of the seizure. They include grand mal and petit mal seizures.

Grand mal seizures. They may have a brief aura and are often initiated by a cry, presumably due to forced expiration of air. (Both Gowers and Wilson object to Reynolds's classic comparison of this cry to that of a peacock in distress, but the present author has never heard a peacock in distress.) (The cry is followed by or is simultaneous with the loss of consciousness, which is followed by falling to the floor, often with physical injury, and the advent of extreme tonic spasm, the extensor muscles dominating the flexors. This is usually followed by a clonic phase, in which there is alternating flexion and extension of the body musculature, which may lead to biting of the tongue or mouth or further injury to the head. Cyanosis is often marked until the seizure terminates with deep noisy breathing and often with profuse sweating and salivation.) There may be relaxation of the sphincters, with loss of urine or feces during the seizure, and the ejaculation of semen, usually with erection, may occur in the male. (The EEG during this period is dominated by high voltage, fast activity in all leads and often terminates with an isoelec-

trict period, during which little or no spontaneous electrical activity is visible (see Figure 1). The patient may waken into a confused state described as the postictal automatism or postictal twilight state; he may become perfectly alert and oriented, though somewhat slowed down and dull, or he may lapse into apparently normal sleep for some minutes or an hour or two. On recovery, he usually complains of muscular aches (reasonably enough) and often of a severe headache. Of particular interest is a marked bulimia that may occur on recovery, especially in the twilight state, leading the patient to ingest copious volumes of food or liquid, sometimes with hazardous indiscrimination. With complete and prompt recovery, there may well be the feeling of depression and despair later mentioned by Dostoyevsky, but this is most often in reaction to concern and apprehension about the reality aspects of the seizure, social embarrassment, etc.

Petit mal seizures. The classic triad of petit mal seizures includes the *absence*, myoclonic seizures or lightning jerks (including salaam seizures), and atonic seizures. The attack is accompanied by a bilaterally synchronous EEG wave and spike formations at about three per second and is often easily brought on by hyperventilation. A characteristic attack is quite brief—10 to 30 seconds—and may pass unnoticed by the patient or by an unskilled observer. It is accompanied by total unconsciousness but of such a brief duration as to make only a transient lapse in conversation and with so little retrograde amnesia that it can easily be concealed (see Figure 2). Such seizures can be a problem if there are large numbers of them in sequence or during the course of the day. (One woman had as many as 300 recorded seizures a day.)

The myoclonic seizures are badly termed, since

myoclonus has very specific meaning in current neurological use. These attacks may or may not include unconsciousness. They are characterized by a very short jerky movement of the body, either a sudden flexion movement of the trunk muscles with raising of the arms, giving rise to the name "salaam," or, particularly in older patients, an abrupt extension movement, notably of the shoulders, arms, and hands. These patients may fall to the ground, but if they remain mentally clear, it may be difficult to distinguish these attacks from a habit spasm without EEG assistance.

Atonic seizures are literally momentary losses of muscle tone, usually with unconsciousness, causing the patient to slump to the ground but with prompt recovery.

Petit mal variants. In the EEG diagnosis of petit mal variant, the EEG record is dominated by wave and spike complexes of two per second—slower than true petit mal. These may be focal abnormalities, and there may be admixtures of slow or other abnormal activity. The clinical picture is one of grand mal or focal seizures. The onset is in infancy or childhood, and more than half of these patients have mental deficiency. The prognosis is quite poor with this diagnosis. These patients, more than any other group, are likely to die in status epilepticus. They are a small fraction of the total epileptic population and clearly should not be confused with petit mal patients.

Focal seizures. As implied by the term, these seizures have clinical or EEG evidence of a specific, usually cortical, site of origin. These are more likely to be due to identifiable pathology—a scar, vascular lesion, tumor, brain atrophy, etc.—than are the generalized seizures described above. However, the ma-

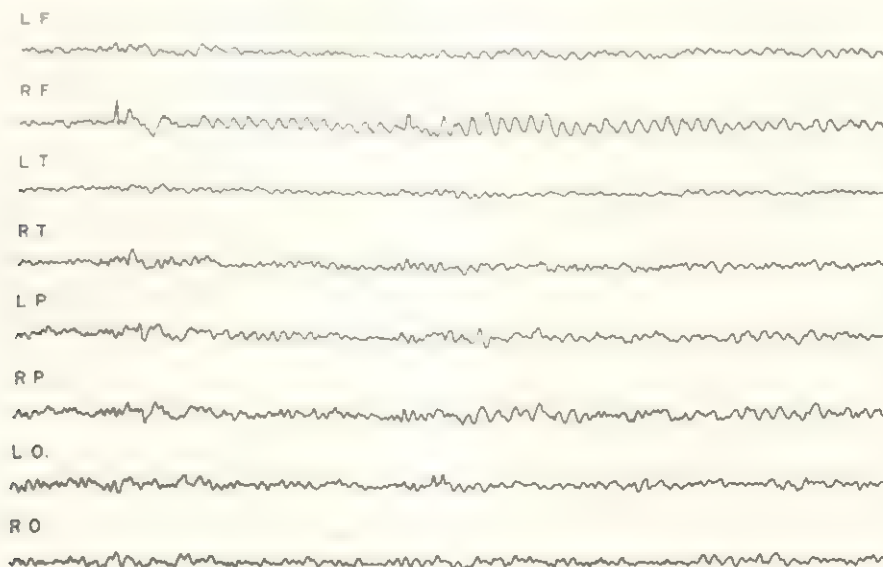


FIGURE 1. Grand mal epilepsy in drowsy male adolescent. EEG low voltage activity with random slow waves in all leads, spike seizure discharge, and run of 5 to 6 per second waves in the right frontal region. Voltage calibration: 7 mm. deflection for 50 microvolts. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II, Addison-Wesley, Cambridge, Mass., 1951.)

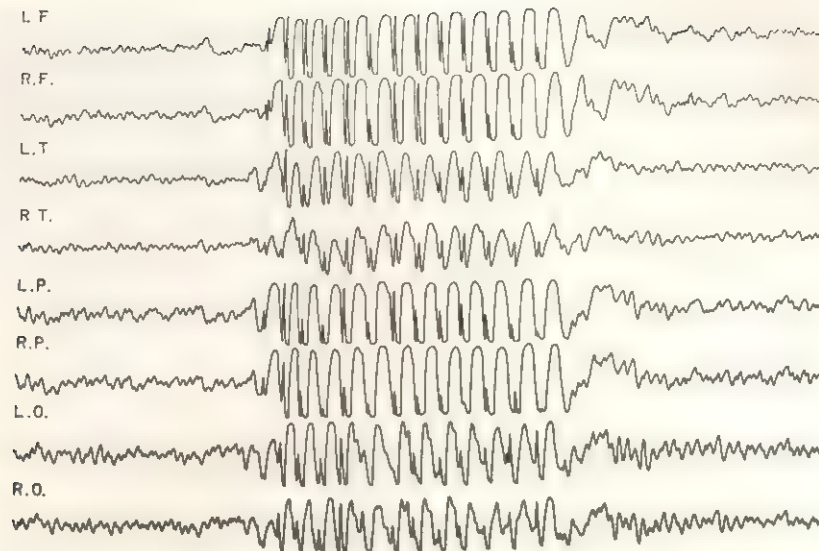


FIGURE 2. Petit mal epilepsy in female adolescent. Onset of petit mal seizures came at age of 8 years occurring with a frequency of 4 to 10 per day. There was no history of major convulsions, and no severe illness or injury. Family history was negative for epilepsy. EEG shows 9 to 12 per second activity in all areas, with seizure discharges of the petit mal type, in this case consisting of well formed 3 per second spike and wave formations, synchronous in all areas. Voltage calibration: 7-mm. deflection for 50 microvolts. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.)

jority of patients with focal seizures also show, either in the final stages or independently, quite characteristic grand mal seizures fitting a classic description. For this reason, work-up should be carefully directed to recognizing the localized nature of pathology that may be surgically treatable. Of particular importance in diagnosing and localizing the focal seizure are the events just preceding or initiating the attack. From these earliest symptoms, one can often make a very precise delineation of the neural structures involved.

Jacksonian seizures. These seizures, first described by Hughlings Jackson, have a focus around the central sulcus and so are introduced by contralateral focal motor or sensory phenomena. Characteristically, the thumb or corner of the mouth is first involved; the involvement then spreads by contiguity, with the characteristic march, as the seizure activity involves more and more of the adjacent cerebral cortex. If primarily motor, the manifestation is muscle twitching; if primarily sensory, the description is usually one of numbness, paresthesia, and tingling. As the march progresses over a period of several seconds, patients sometimes find that they can abort the seizure by applying vigorous sensory input to the area just above the line of march. The ancients' presumption that the occluding tourniquet effectively blocked the seizure by occluding the flow toward the brain was erroneous, but the effective sensory stimulation produced by the tourniquet was indeed useful. As long as the symptoms remain unilateral, the patient does not lose consciousness, but, as the march progresses, the motor phenomena may become bilateral, consciousness may be lost, and the patient

may show a characteristic generalized seizure. Jacksonian seizures are often post-traumatic in origin, though other pathology should be suspected. Figure 3 shows the EEG from such a case with a focus in the left parietal region.

Anterior temporal focus. An anterior temporal lobe abnormality is the commonest of the focal phenomena by EEG finding. Examples of two different patterns are shown in Figures 4 and 5. Most characteristic is the spike or a train of spikes, although slow waves may also be seen in this region. The anterior temporal lobe abnormality is accompanied most commonly by psychomotor seizures, which are particularly pertinent to the interests of psychiatrists, but it may manifest, in addition or in isolation, grand mal seizures. The clinical picture is very often characterized by lapses of consciousness, which are sometimes confused by the unwary with petit mal attacks and often begin with head turning, orienting movements of the eyes, lip smacking, swallowing, and salivation. This initial pattern may well be followed by one of the complex automatisms, stereotyped behavior, or disturbances of thought or affect, or more simply by a grand mal seizure.

Other focal seizures. Foci in the frontal, midtemporal, and occipital regions of the brain are quite rare. The EEG is usually characterized by focal spikes that may spread to involve other brain regions; for example, Figure 6 shows an occipital focus. Frontal seizures are often initiated with adverse eye movements or occasionally head movements and may involve phenomena of forced thought. Midtemporal foci are more common than the others and show an unusual propensity for the disappearance of both

the EEG abnormality and the seizures in late adolescence or adulthood. The clinical phenomena usually include grand mal seizures, and there may be focal facial movements at the onset. Occipital seizures are probably the most rare of the group, usually manifesting themselves primarily with the grand mal seizure, although there may be an initial visual aura of flashing lights, diplopia, etc. Strabismus is rather common in these cases.

Patients who show 14 and 6 per second positive

spikes are an interesting though small group. They include the "thalamic and hypothalamic" epilepsy of Gibbs. The EEG abnormality may appear in one or more leads, is usually unilateral, but is often inconstant from recording to recording (see Figure 7). Most of the subjects are preadult, and the clinical syndrome is dominated by behavior disorders, particularly destructive rage. There may or may not be motor seizures. If present, they may include grand mal, but often there are episodes of unusual visceral

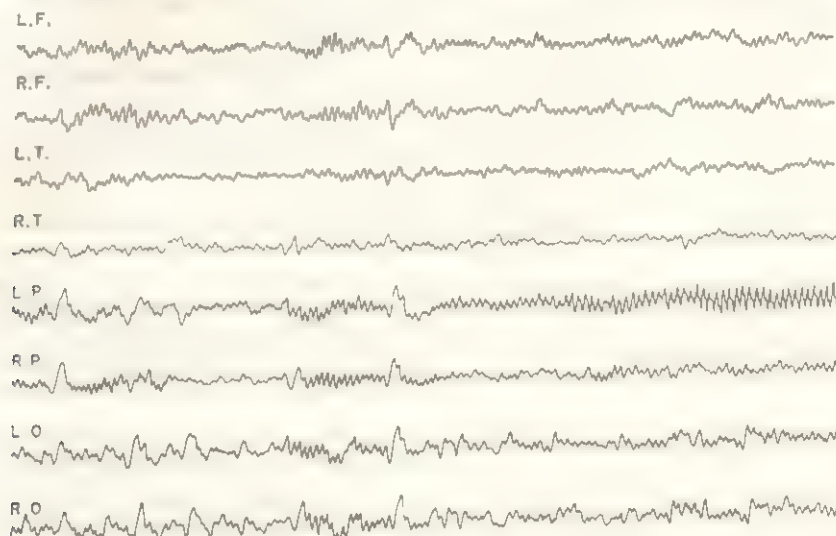


FIGURE 3. Jacksonian epilepsy in sleeping male adult. EEG shows normal 14 per second sleep spindles in homologous areas. There is no asymmetry. At onset of 12 per second activity in the left parietal area, EEG increased in amplitude and became spike-like in appearance. There were no clinical manifestations. Voltage calibration: 7 mm. deflection for 50 microvolts. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.)

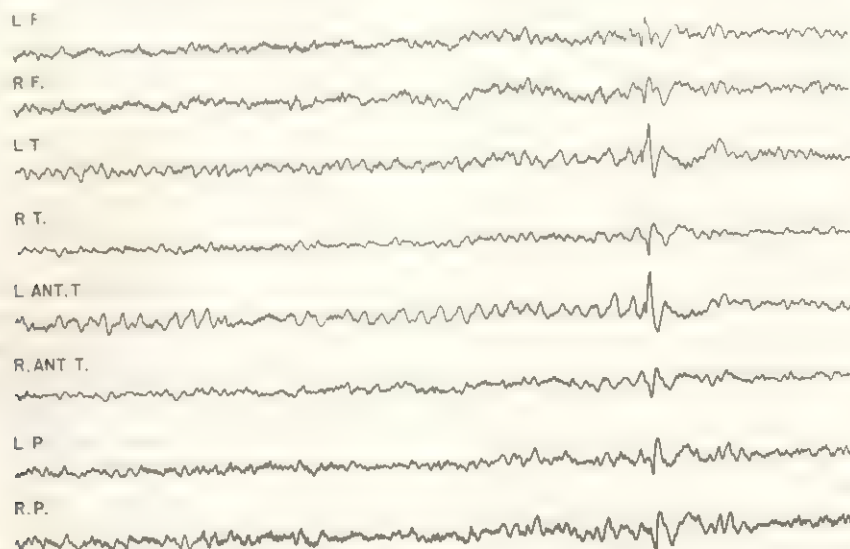


FIGURE 4. Anterior temporal focus epilepsy in male adult. He had a severe head injury with prolonged unconsciousness at the age of 8 years, onset of rare grand mal at the age of 10 years, onset of frequent psychomotor seizures at the age of 17 years, and aura of micropsia. Psychomotor seizure consists of groping, confused searching, and mumbling. Patient is irritable, nervous, and cries easily. Average intelligence. EEG shows low voltage 20 to 30 per second activity (F-1) in all areas with focus of 5 to 6 per second slow activity and high voltage spikes in the left anterior and midtemporal areas. Apparent phase reversal of spike discharge in all other areas is due to an active reference electrode on the left ear. Voltage calibration: 7-mm. deflection for 50 microvolts. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.)

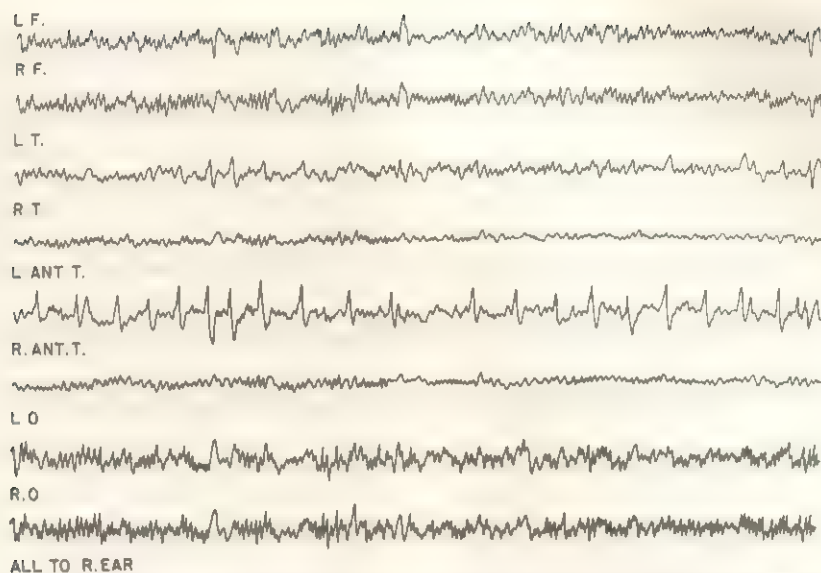


FIGURE 5. Anterior temporal focus in male adult. He had onset of grand mal and psychomotor seizures at the age of 7 years, with no severe illness or injury. Family history was negative for epilepsy. Psychomotor attacks consist of 2- to 3-minute periods of confusion and continuous spitting. EEG shows high voltage 18 to 24 per second activity (F 2) in all leads with almost continuous spike seizure discharge in the left anterior temporal, spreading slightly to the left midtemporal area. Voltage calibration: 7-mm. deflection for 50 microvolts. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.)

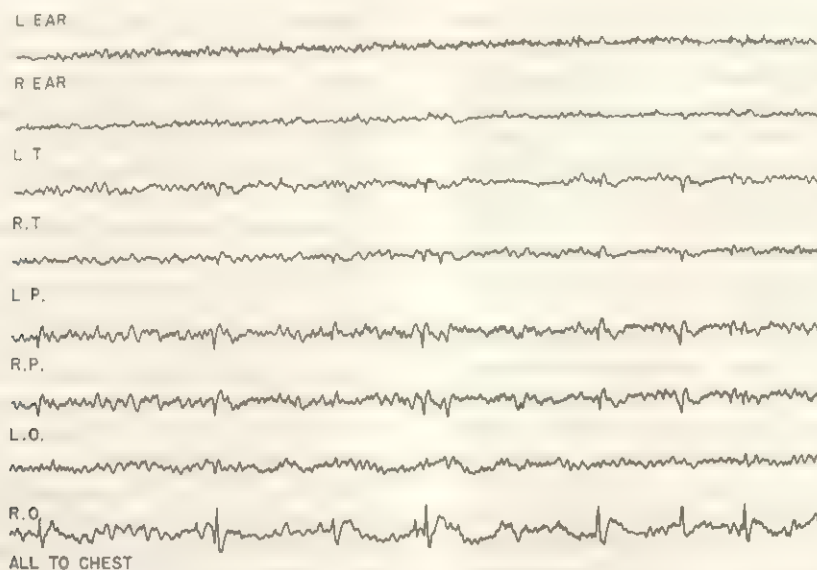


FIGURE 6. Occipital focus in a male adult. There was a head injury with short period of unconsciousness at the age of 6 years. Strabismus of the left eye was first noted at the age of 7 years. Onset of rare grand mal seizures was at the age of 16 years. There were no severe childhood diseases. Family history was negative for epilepsy. EEG shows low voltage irregular 11 to 14 per second activity in all areas and spike seizure focus in the right occipital area, spreading with reversed polarity to both temporal and parietal areas. All recording was done with a noncephalic reference, showing that the recordings from the lead to the ears do not pick up the negative or the positive spike potentials and showing that they serve as quiet references. Voltage calibration: 7-mm. deflection for 50 microvolts. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.)

or autonomic disturbance that may be difficult to diagnose with certainty, although they often respond well to medication. These abnormalities may have some tendency to disappear after adolescence and young adulthood, but the behavioral disturbance in

some patients is really quite severe because of the destructive aspects.

In Gibbs's *Atlas of Electroencephalography*, the phenomena seen in this group are broken down in the following way: destructive rage episodes, 15 per cent;

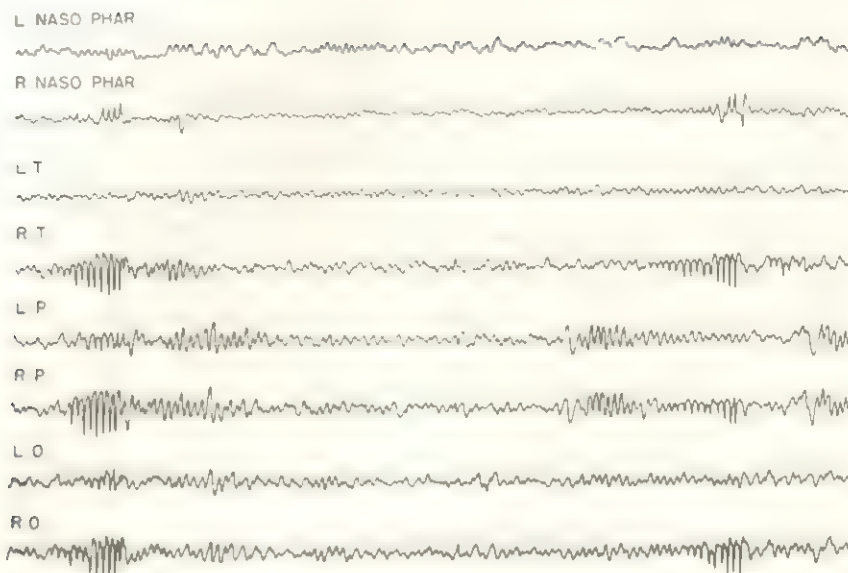


FIGURE 7 Thalamic or hypothalamic epilepsy in a sleeping female adolescent. Onset of grand mal seizures was at the age of 15 years. She has rage attacks with aura of *dejà vu*, and delinquent and severe behavior problems. EEG shows 11 per second positive spikes of high amplitude, much worse on the right and showing to some extent with reversed polarity in the nasopharyngeal leads, maximal on the right. The 12 per second sleep spindles are easily distinguished from the 11 per second positive spikes. Voltage calibration: 7 mm deflection for 50 microvolts. In two cases reversal of polarity of 11 and 6 per second positive spikes has been observed in recordings from the nasopharynx, but in four cases no spike activity could be obtained with nasopharyngeal leads. (From Gibbs, F. A., and Gibbs, E. L. *Atlas of Electroencephalography*, vol. II. Addison-Wesley, Cambridge, Mass., 1951.)

localized pain, 19 per cent, plus pain as an aura to one of the other phenomena, 8 per cent; paresthesias, 16 per cent as an episodic symptom plus 3 per cent as a continuous phenomenon; episodes of syncope and dizziness, 30 per cent; grand mal or focal seizures, 67 per cent; sleep disorders, including hypersomnia, 5 per cent; emotional expressions as an episodic phenomena: weeping, 4 per cent, and laughing, 1 per cent; and vegetative symptoms, including episodic gastrointestinal hypermotility, peripheral vascular constriction, etc., and obesity, 1.5 per cent.

It is obvious that many of these symptoms would be difficult to detect as epileptic in nature, but, when characteristic, they tend to be episodic, self-limited, and unrelated to other stimuli; they often respond well to anticonvulsant medicine. It has been suggested that a number of undiagnosable episodic gastrointestinal pains of children might fall into this category, though it is likely that only a few in fact do.

Psychic seizures. In addition to an anatomical breakdown of focal seizures, one might look at focal phenomena from the point of view of the seizure content itself. Many symptoms that manifest themselves in behavioral abnormalities are related to temporal lobe dysfunction, although the primary anatomical focus may be in some other region, presumably involving the critical limbic lobe structures by spread. The lack of a one-to-one relationship between the EEG diagnosis and the clinical manifestations of the seizure reinforces the point that both must be recorded carefully and utilized in planning adequate treatment of the patient.

Psychic seizures seem to be primarily of temporal lobe origin and may either precede a generalized convulsion or, more commonly, occur without loss of consciousness. The changes may be arbitrarily divided into six categories, although any given patient may have one or more of these phenomena at various times.

Perceptual changes. The most common of these are changes in visual perception described as changes in the size of an object, as if it were receding or approaching. Everything may look very small and distant or quite large. Whenever one adolescent boy with temporal lobe seizures looked at a rose, he felt that it was approaching closer and closer, until he could see only the center of the rose, at which time he would lose consciousness and a generalized seizure would occur. The same quality may apply to auditory phenomena, so that the voices in a room become very distant or very loud and confused, as if everyone were shouting. Occasionally distortions occur, as with one patient, who described the floor and walls as becoming wavy, so that it was difficult to know where to step.

Changes in self-awareness. Striking among these are feelings of depersonalization and derealization that, as in the ambulatory schizophrenic, can be quite anxiety-producing. Such descriptions as "It seems suddenly as if all the world is on a television screen, and I'm watching a play" or "All the people on the street seem to be robots except me" or "I seem to be a disembodied spirit floating along above the crowd watching my body walk" are common. The

sensation may last for a matter of seconds or a few minutes and then abruptly disappear or be followed by some further elaboration of the seizure sequence.

Related to these feelings perhaps are the sudden feelings of intense familiarity, the phenomena of *déjà vu* or, as Strauss felicitously suggested, phenomena of *déjà vécu*—that is, the subject has the feeling that he has lived once before through exactly the same situation in which he is now, including all he sees, hears, etc. This leads to the strong feeling that he can predict exactly what is going to happen next. The reciprocal experience of *jamais vu* is also seen, in which the subject, although in a familiar situation, feels that it is entirely new to him and indeed strange. In both these situations, there is usually an awareness that the feeling is not reasonable. Such feelings are similar to those that, to some degree, are universally experienced, though more frequent and perhaps more intense.

Changes in thought. Particularly striking is the phenomenon of forced thought, in which a thought, a word, or a sentence may obtrude itself on consciousness and seem to occupy the whole center of awareness. On occasion, this may be an obscenity, but it may equally well be an apparent nonsense phrase, a tune, or a melody. Again, this state is similar to one that may occur in the normal individual on occasion but with apparently greater intensity in the epileptic. Occasionally, the thought may be a whole complex memory or sequence of memories that presents itself in a stereotyped way to the subject. It may be clearly remembered after the attack or may be only dimly remembered or forgotten, although there is a clear conviction that it has occurred before and is identical with the experience in previous attacks. This forgetfulness may occur in spite of a firm determination to remember the content, even though no further dramatic seizure phenomena follow the experience. This phenomenon, like those mentioned before, can be reproduced by direct electrical stimulation of the temporal lobe. There, too, it often has the quality of not being reported at the time or remembered later, in spite of clear instructions and willingness to do so. Disorganization of thought may be another such phenomenon, with the patient complaining that there is a brief period during which he seems to know what he wants to think about but cannot put the ideas together.

Changes in mood and affect. Paroxysmal attacks of fear ranging from anxiety to terror are frequent accompaniments of this kind of psychic seizure. These attacks are described as different from the apprehension many epileptics feel at the onset of the seizure. They are often described as isolated, free-floating anxiety far out of proportion to any external events. In a seizure in which this is a prominent feature, the whole behavior of the patient—his facial expression and perhaps muttered phrases—conveys the

feeling of intense fear. There are often expressions like, "Take it away! Take it away!" and "Don't!"

There are similar occurrences of acute feelings of despair and depression, including the feeling that life is so empty that suicide is called for. Again, these acute feelings of despair, while quite real to the patient, seldom have a specific content and usually last for a few minutes at most. Feelings of pleasure and elation seem to be somewhat more rare. Patients often report the feeling, as Dostoyevsky did, as one of serenity or cosmic understanding rather than one of pleasure. Many patients are embarrassed by such a feeling and unwilling to report it because of its somewhat mystical overtones. One wonders if it might be an element in determining that quality of religiosity commonly described in the chronic psychotic epileptic. There have also been reports of laughing as part of an attack that implicates neural structures associated with a pleasurable state.

Complex hallucinatory experiences. Although these experiences are apparently rare and may include quite complex auditory, visual, and tactile phenomena, they are probably most often auditory hallucinations with simple but well structured phenomena, such as hearing one's name called or a piece of music played. One patient always heard a poker game in the next room, with the shuffling of cards, the unmistakable click of stacked poker chips, and a mumble of voices. The patient usually has a clear insight into the hallucinatory nature of the phenomenon and feels it as alien to himself, but, unless he is unusually sophisticated, he may be quite anxious as to its reflections on his sanity. Again, such experiences are usually not reported with ease by the patient until after direct questioning and some reassurance about them.

Simple olfactory hallucinations are considered the classic aura at the onset of a fit and are often mistakenly considered a *sine qua non* for the diagnosis of a temporal lobe seizure. In fact, however, they occur in only about 5 per cent of such cases; they are more frequent in association with episodic depressive states. These are not really complex hallucinations except in association. The hallucinated odor is, almost without exception, unpleasant—usually described as burning feathers, rotting manure, like sulfur, etc. One patient described it as "the smell of death and of bodies molding in graves which pervades the environment." Obviously, this unpleasant olfactory sensation leaves ample room for secondary elaboration.

Complex stereotyped automatisms. It may be that these phenomena should not be included here, since automatisms are, in general, accompanied by loss of consciousness and amnesia and thus are more related to the twilight states to be discussed later. In contradistinction to twilight states, however, automatisms are usually short in duration, and the very

complexity of the behavior exhibited and its ties to the psychic life of the involved individual justify its presentation here.

Under this heading are included complex acts that appear to be purposeful but that are inappropriate to the situation and in general are stereotyped, that is, repeated almost identically in the same form on each occasion. A given patient may have two or three such stereotyped automatisms that seem to appear under predictable circumstances. One such patient, after brief orienting reaction and lip smacking, would, without fail, go through the motions of making up a hospital bed, complete with making square corners on the sheets and fluffing the pillow. This performance was done in pantomime and could be carried out without props, for example, on the subway or on occasion in the examining room, where he would use the examining table as the ostensible bed to be made up. Another such patient would search through whatever container was handy, throwing the contents one by one on the floor. A favorite such item was her mother's purse, but on occasion it might be the mother's dresser drawer or the doctor's medical bag. A third patient invariably undressed herself carefully, hanging her clothes in order, and then usually attempted to wander with apparent purposefulness down the street. A favorite site for this particular automatism was in the front yard of an elderly bachelor neighbor in whom she had conscious erotic interests.

On exploration, many of these acts seem to be motivated or at least to be parsimoniously interpretable in the context of the patient's interictal psychodynamics. In a few patients, a seizure could be precipitated by asking them consciously to begin carrying out their characteristic automatism under the physician's direction. In others, carrying out the act under hypnosis would give rise to a rich associative flow, further reinforcing the impression that the act had symbolic significance for the patient in the same way that a normal dream might, in spite of its stereotyped fixity of performance when elicited by a spontaneous seizure or laboratory activation of the seizure.

Twilight states. The twilight states of epilepsy are particularly important from a psychiatric point of view. They form the bridge to our understanding of the chronic disorders associated with the seizure states. Further, they are of considerable forensic importance because they provide perhaps the best possible excuse for temporary insanity under the widely applied McNaghten rule. In general, three conditions are involved: (1) the condition that may follow one or several grand mal seizures, the postictal automatism; (2) an ictal automatism, often called a psychomotor seizure and principally, although not exclusively, associated with temporal lobe pathology; (3) petit mal status, which is also an ictal rather than a postictal phenomenon.

Postictal twilight state. As defined, this state

usually follows one or several seizures and poses problems of recognition if the seizure was not observed or occurred during sleep or some similar condition. At the close of the grand mal seizure or perhaps following a period of sleep, the patient may arouse and be apparently awake but in a confused state. In this state he may mumble incoherently and fumble with his clothing or other objects. Initially, the patient is clearly disoriented to testing and, although he may be quiet during this time, periods of excitement sometimes appear, lasting for minutes to (rarely) several days. This excitement may include extreme agitation, paranoid ideation, hallucinations, and delusions that may lead to aggressive outbursts. Such a person may attack others, wander aimlessly through the community, and generally behave in a way dangerous to himself or to other people. Throughout the period, there is markedly disturbed consciousness, during which the patient seems to move around without either motor or speech impairment. There is usually complete amnesia for these periods, but occasionally dim fragments of memory of a particular event during the period may be recalled. Such states usually clear completely and often with surprising abruptness. Throughout this period of confusion, the EEG shows diffuse symmetrical slow activity, not the paroxysmal activity of the seizure state.

Ictal twilight state. In contrast to the postictal states, in which one gets the impression that there is a diffuse impairment of those central mechanisms underlying discriminative consciousness following the massive seizure discharge, are those states in which the seizure discharge itself seems to preclude organized behavior. Such ictal twilight states may begin primarily with the disturbance of consciousness and no other warning, or, more often, they may be preceded by symptoms of focal disturbance, usually of the temporal lobe, with one or more of the psychic states described earlier. Probably the single most common set of early symptoms is composed of searching movements of the head and eyes, lip smacking, masticatory movements, and swallowing, perhaps with increased salivation. During the state itself, the patient becomes disoriented and is only partially aware of his surroundings. He may wander around aimlessly, fumble with his clothing, mumble unintelligibly, or say phrases of intelligible words that are inappropriate in context. He may respond to external stimuli but does so inappropriately. One such patient fumbled opening a pack of cigarettes, one of which he put in his mouth. An observer handed him a box of matches, which he accepted but stared at uncomprehendingly, trying at various angles to read the label on the box. He did not use them for lighting the cigarette but finally laid them down on a table. During states like this one sometimes sees the complex automatisms described earlier, but vague purposelessness is more characteristic. The period may last for

5 or 10 minutes and clears either fairly abruptly or more slowly after several minutes, during which there remains some confusion and difficulty in thinking. If the state is prolonged, there may be more overt agitation, expressions of fear, anxiety, incoherent talk, and aggressive acts, particularly if attempts are made to restrain the patient.

Of rather more interest than this grossly disturbed behavior are those patients who present apparently purposeful and well coordinated behavior with no recall or only dim memories of the period, which may last hours to days. Such patients have come to suddenly with their last memory being that of approaching a platform to give a speech and every subsequent report confirming that it was given without a blemish, with no evidence of any abnormality on the part of the speaker, although he was apparently in a seizure state throughout the time. Even piano concerts have been completed under similar circumstances.

What may be more interesting than what would seem to be the carrying out of well programmed though sophisticated sequences of activities are those subjects who find that they have digressed from a planned course of action, perhaps negotiated a difficult transportation system with business transactions and landed in a city some miles distant, in a hotel room with plane tickets in their pocket and no recollection of the intervening events. These fugue states may last from several minutes to a few days and obviously can be a source of concern to the patient and those close to him. Although it seems possible that some accident may be caused or a crime committed during this period, such events must be relatively rare and more a source of fantasy guilt for the patient than a major social hazard. One patient had episodic kleptomania, apparently on the basis of a temporal lobe focus, which was controlled with medication but recurred on occasions when medication was interfered with.

These fuguelike states are potentially very difficult to differentiate from hysterical episodes or from out and out malingering. The EEG may be of little help because a striking electroclinical correlate of these seizures is often the forced normalization of the EEG, with disappearance of whatever abnormality may be evident interictally or, perhaps more commonly, an unchanged pattern of the EEG from that seen at ordinary times. On rare occasions there may be some exacerbation of local pathology, but that is the exception rather than the rule. Depth electrography, when otherwise indicated, may help clarify the diagnosis of these cases.

Petit mal status. The twilight states associated with petit mal status are relatively uncommon but have been emphasized by Landolt. The EEG in these cases is characterized by continuous or nearly continuous bilaterally synchronous spike and wave patterns, and the clinical picture is apparently dominated by confusion but frequently with fairly complex con-

fused behavior, as described for the postictal twilight state. An attenuated form of this same phenomenon may appear in patients who complain of mental dullness, which may last for several days, characterized by difficulty in concentration and general slowing of the thought processes without the confusional picture just described. In these patients, too, the EEG may reveal almost continuous runs of spike and wave activity dominating the electrocortical rhythms. These protracted periods of mental slowing may terminate abruptly or be terminated with adequate treatment. They clearly represent a form of petit mal status that somehow is not so intense as to dominate consciousness and orientation.

Mechanism

(Our knowledge of the chemical and structural pathology of the epileptic focus has grown rapidly in recent years, but a comprehensive discussion relating these factors to the psychiatric aspects of epilepsy is, unfortunately, still impossible.) The mechanism by which certain scars, tumors, ischemia, and inflammations produce a hypersynchronous neuronal discharge is far from obvious, as are the reasons for the varying seizure thresholds throughout the brain. The latter phenomenon complicates the problems of the neurologist because it is compounded by the essential complexity of the interconnections of various areas of the brain. Indeed, these features underlie the occasional finding after a temporal lobectomy that no anatomical lesion exists in the extirpated tissue. The EEG may have limited value in localization, as illustrated by the cases of Falconer et al. in which the EEG showed an anterior temporal focus but x-rays revealed calcified lesions near the parietal-temporal junction, and by cases in which histological lesions were contralateral to temporal EEG abnormalities.

Temporal lobe pathology has received the most attention in the last decade because epilepsy in this area is most recalcitrant to any therapy and most likely to be submitted for surgical treatment. Also, this area, with its underlying rhinencephalic structures, has been implicated in the fascinating functions of memory and emotions. Falconer et al. found that the most frequent lesion associated with unilateral temporal malfunction in epileptic patients undergoing temporal lobectomy is medial temporal sclerosis (Ammon's horn sclerosis or incisural sclerosis), which has an incidence of 47 per cent (versus 24 per cent for small tumors, 13 per cent for scars or infarcts, and 22 per cent with no obvious pathology). These figures agree with those of other investigators, most of whom arrive at the same conclusion—that the ability to find and extirpate an identifiable lesion increases the chances for cure or control of the seizures and concomitant psychiatric disorders. Ammon's horn sclerosis seems to be asso-

ciated with an early age of onset (before the age of 9 years in most cases) and with favorable prognosis.

Further correlations, the site of lesions with psychopathology, for instance, are incomplete and inconclusive but certainly demand investigation. One pertinent relation between epilepsy and pathology was found by Morrell, who has shown that mirror foci with concomitant histological changes can be produced by experimental epileptogenic foci. This observation argues strongly for early diagnosis and vigorous therapy, for little is known about the potential damage to other brain areas that can ensue from an active focus.

Studies of the biochemical changes in epileptic foci recently invaded the literature on epilepsy, taking their cue from work on schizophrenia and stimulated by the finding that pyridoxine deficiency can both lower the levels of brain γ -aminobutyric acid and cause convulsions in humans. This finding led to the examination of the changes in other cerebral amino acids and their derivatives with the hope of finding more specific and potent therapeutic agents. So far, the results are interesting but contribute more questions than answers. Various congenital metabolic disorders, such as phenylketonuria, produce convulsions and probably provide the best tactical approach to the biochemistry of epilepsy—the cryptogenic variety, at least.

Of particular importance is the recent study by Hagberg et al. of amino acid excretion in 43 children with cryptogenic epilepsy and normal plasma pyridoxal phosphate levels. Over 60 per cent of these children had abnormal tryptophan-loading tests (its degradation requires pyridoxal phosphate). Giving 160 mg. of pyridoxine by mouth improved about 40 per cent of those with abnormal tryptophan metabolism, some dramatically. This suggests that a state of pyridoxine dependency may exist and that tryptophan loading should be routinely tested in epileptics.

Incidence and Epidemiology

As is customary in the United States, it is very difficult to arrive at reasonable statistical estimates of the incidence, prevalence, or distribution of a non-reportable disease, which, of course, epilepsy is. In general, perhaps half of the cases in this country are preventable in the sense that they are the sequelae of trauma, infections, birth injury, etc., with clear damage to the brain, and seizures appear as a secondary symptom of the underlying brain damage—perhaps the least dramatic of the symptoms when cerebral palsy or mental deficiency dominates the picture. These secondary cases are clearly increased when there is poor prenatal and perinatal care and in regions that pay the usual price of poverty and overcrowding in malnutrition, neglect, and violence.

From a world health point of view, epilepsy is a very common and disabling condition, particularly in regions where there is a high incidence of low

virulence central nervous system infections causing secondary cases and where traumas, particularly the subdural hematomas of infancy and early childhood, are neglected. However, in our relatively fortunate country, the incidence is about 0.3 to 0.4 per cent or roughly one tenth the incidence of mental deficiency and perhaps one half the incidence of schizophrenia.

To assess this problem, Kurland utilized the Mayo Clinic statistics on the population of Rochester, Minnesota, a small Midwestern town in a relatively rural setting and probably of above average economic status and certainly of above average access to medical facilities. Extensive records have been kept over a period of time by the Mayo Clinic, and it was possible from these for Kurland to make some reasonable estimates concerning statistical distribution of the epilepsies. He noted that the average annual incidence rate is 29.8 per 100,000 population per year, the rate being slightly higher for males than for females for all types of seizures combined. The extrapolation suggests that the numbers of new cases in the United States each year by his categories are approximately as follows.

Grand mal, primary.....	15,000
Grand mal, secondary.....	14,000
Petit mal.....	6,000
Psychomotor.....	5,000
Focal motor and sensory.....	11,000
Miscellaneous or unclassified.....	2,000

Kurland rightly noted that these figures are based on a relatively small population and must be interpreted with caution, but there are probably no better ones to go by at the moment. It is interesting to note the age distribution for the initial episode. The rate is highest for ages 0 to 4 years, reaches a low level after adolescence, and peaks again after 70 as the result of late cerebral disease.

As to prevalence, Kurland noted that the age-adjusted rate (adjusted to the United States population for 1950) for all types is 376 per 100,000 population. Applying this figure to the total United States population, he estimated that about 640,000 individuals are subject to recurrent convulsive disorders. The numbers in each type are approximately as follows:

Grand mal, primary.....	292,000
Grand mal, secondary.....	116,000
Petit mal.....	39,000
Psychomotor.....	105,000
Focal motor and sensory.....	73,000
Miscellaneous and unclassified.....	14,000

It is perhaps worth noting that approximately 15 per cent of these cases are psychomotor epileptics. Other authors have estimated that approximately 20 per cent of the epileptic population have psychomotor or temporal lobe seizures.

Psychiatric Aspects)

It is difficult to say what psychiatric difficulties characterize the epileptic population and what psychiatric difficulties are caused by the presence of seizures. Most psychiatric difficulties, except for the major psychoses, are quite widespread throughout the population and can be expected to involve the epileptic population by chance. It is thus necessary to indicate a greatly increased incidence of abnormality, suggesting a special proneness in the seizure patient, or else to delineate a unique syndrome of a personality disorder that can be identified with and perhaps limited to the epileptic group, if one wants to incorporate the epileptic state into a total diagnosis, as would seem to be reasonable. Is there then anything systematic we can describe about the epileptic who is not having a seizure and is not in a postictal state, which is, after all, most of the time?

Personality of the epileptic)

Social problems. Kurland's figures suggest that some 60 per cent of all epileptics and nearly two thirds of the centrencephalic or idiopathic group have the onset of their seizures in the 1st decade of life, which means that these individuals have grown up with a rather dramatic handicap. In spite of some recent publicity, still a great miasma of social taboos and misapprehensions about the epileptic seizure beclouds the individual's adjustment. Many schools will not allow the epileptic in class, and a fair number of classroom teachers are both frightened of the child who has a seizure and willing to ridicule him. Parents may be ashamed and apprehensive, guilty and overprotective, or they may feel frightened and impotent with their child's seizures.

In later life, employers and employees discriminate against hiring the epileptic, as much because of the frightening experience of witnessing a seizure as because of real concerns about job injuries. The ever present possibility of a major seizure in public, with the attendant helplessness and the inevitable social embarrassment, hang heavily over the epileptic, even though he may have rare seizures. If he understands his condition, it is clear to him that he has a problem with which he must live for the rest of his life, that it is incurable, and that he may have to take medication and guard against precipitating influences as long as he lives. Under these conditions, it is not surprising that he has difficulty in establishing that sense of personal security and clear ego identity hoped for as a foundation for mental health in later life.

It is in this area that the understanding physician can do a great deal for his patient. If he is willing to add to his vigorous attempts at medication control of seizures, he can give some personal counsel, intervene in parental misapprehensions, and do occasional battle with the school system, the scout troop, and other social establishments. In the face of the problems to be handled, middle class patients who

have been under reasonably competent medical care do a quite commendable job in making a productive, stable life adjustment. This is not true, however, in that sizable part of our population currently described as "disadvantaged." For them the problems of the epileptic are magnified because they fall just below the marginal utility of their group. This leads to rapid ostracism, neglect, and a downward spiral of social alienation and physiological abuse.

Physiological problems. A second class of problems besetting the epileptic are a little harder to evaluate in terms of long range effect. These are the problems attendant on the presence of a recurrent abnormality of brain function that occurs unpredictably and with much greater frequency (as revealed by the EEG) than is manifest by the overt seizure. In the case of petit mal epilepsy, these effects are very clearly demonstrated in clinical experience. Children who have few overt seizures but many bursts of EEG abnormality are found to have difficulty in school and in making peer adjustments. This might be expected from a child whose brain is turned off 20 to 30 per cent of the time without his being aware of it. The fact that such a child can survive a school situation at all and make any sense of a teacher's discourse or of reading material is rather impressive. In fact, however, many children cannot do this, and they present themselves as learning problems or behavior problems as they react against the confusing situation in which they find themselves. Adequate medication often dramatically and gratifyingly corrects this situation.

It is less obvious but seems likely that other paroxysmal discharges, such as the grand mal or the temporal lobe discharge, may have similar cumulative effects on the individual's ability to integrate life experience. The seizure discharges in the temporal lobe—shown in depth electrography to be often widespread and profound in subcortical, particularly rhinencephalic structures, although not evident on scalp recordings or as a clinical seizure—must be disruptive of normal functioning of these important integrating systems. Far too little is known of the role of these deep structures in total behavior, but it seems apparent from experimental work that they are quite important in the integration and expression of emotion and in learning and memory. If they are regularly disrupted or deranged by seizure activity, it seems unlikely that the patient is able to utilize optimal cerebral resources for the difficult job of making an adequate life adjustment.

The problem of paroxysmal cerebral dysrhythmia, the complications of poor medical control—leading to frequent falling and self-injury, usually involving the head, with possible attendant secondary brain damage—and the potential problems of chronic drug intake add up to a heavy set of physiological hazards facing the epileptic individual. These problems can be reduced by good medical management, particularly

with scrupulous attention to medication schedules that leave the patient seizure-free, with few or no interseizure paroxysmal discharges and without beclouding by drugs. This state can be achieved in many patients with petit or grand mal epilepsy. It is much more difficult in the patient with temporal lobe seizures.

Adjustment to seizures. Having epilepsy and having seizures become integral parts of the epileptic's life, and it is not surprising to find them intricately interwoven into his life adjustment, as are many disabilities. In particular, there is the problem of the patient who utilizes his seizures for secondary gain, either to attract attention or to avoid uncomfortable situations. Some epileptics learn to do this consciously if their seizures can be precipitated by hyperventilation or similar physiological maneuver. In others, one has the feeling that the link is not deliberate but becomes a kind of conditioned reflex response to certain kinds of psychological stress. In a small group of patients, particularly children, seizures are self-precipitated, apparently for some physiological reward. Dramatic among these are those subjects whose seizures can be precipitated by flickering light; they will stare at the sun and wave their hands in front of their eyes to produce a flicker effect. Some other children, particularly those with petit mal, can achieve the same thing by hyperventilation and will do so whenever they are bored or in an unpleasant situation. It is not at all clear what the gratification is or whether it is different from what seems to be man's diffuse impulse to enjoy consciousness-clouding chemicals or activities. It seems likely that the mechanism is related to the dramatic self-stimulation of the brain shown by animals with electrodes in appropriate regions of the neuraxis. Careful study of this phenomenon in man may elucidate some of the paradoxes of self-stimulation in animals.

Quite independent of self-induced seizures, emotional factors play an important role in the production of some individuals' seizures and perhaps in the over-all frequency of seizures. It has been suggested that stressful interview is a much more effective activator of EEG abnormalities in the temporal lobe epileptic than are the traditional methods of hyperventilation, flicker, or even drug induction. In the day-to-day follow-up of the patient, a fair number of seizures seem to be related to emotional stress rather than to more obvious physical-chemical phenomena, such as fatigue, fever, alcohol, hypoglycemia, and other known provocative states. One of the common denominators of those psychological situations that provoke seizures is the active control of a strong emotion or motivation, anger particularly. In the experimental animal, trained inhibition of a response, particularly under strong motivation, is often accompanied by widespread slow waves through the EEG, suggesting a hypersynchrony of

the underlying neural aggregates. This physiological state provides a common ground for the development of seizure activity and may be the intervening mechanism in such patients.

At quite another level, there are patients who have real seizures but who, on occasion, malingering seizures for their own purposes. These, of course, become very hard to identify outside of a hospital setting. Indeed, a patient with somewhat bizarre temporal lobe seizures and a hysterical personality can push one's diagnostic and therapeutic skills to near desperation.

Aura. The very earliest symptoms in a seizure, particularly the aura, have an important localizing value in cases of focal epilepsy. The aura is perhaps of equal importance to the epileptic himself, for it warns him of the onset of a seizure and allows him a little time to find a safe place to lie down, park his car, etc. The aura is often present, even in the primary grand mal epileptic (though not in the petit mal), and has various qualities. The acute phenomenon is frequently described as diffusely visceral, "the feeling of butterflies in the stomach," "a feeling of fullness in the head," "a general feeling of apprehension, as if something were about to happen," etc. This feeling may last for only a few seconds or several minutes before the overt seizure.

Equally frequent, though sometimes more evident to astute observers than to the patient himself, is a period of several hours or days of increasing irritability, restlessness, and mild depressive symptoms that precede a major seizure. These symptoms usually disappear abruptly after the seizure itself.

In patients who are under good medical control so that overt seizures are infrequent or absent, two phenomena may occur. One, there may be paroxysmal occurrences of the characteristic aura that pass abruptly, as if a paroxysmal discharge had occurred but had not spread into a generalized full blown seizure. Indeed, on the electroencephalographic examining table, this seems to be the case. The second phenomenon is of more interest. Some patients under good control develop protracted states of irritability, nervousness, or depression, as outlined above, with gradually mounting tension. Many of them recognize the phenomenon and will deliberately skip medication for a day or two in order to precipitate a seizure and clear the air. On careful questioning in a cooperative clinic, a large percentage of otherwise well controlled patients will confess to this, although they are reluctant to volunteer it, having been badgered by their physician for some years to maintain a strict medication intake.

A phenomenon that is of particular interest has come to be called "continuous aura." The term, first used by Masland and Scott, seems to imply a low level constant dysrhythmia that is not, in general, demonstrable on the EEG, unlike the case of the paroxysmal, more discrete auras. It reflects some unique organization that is altered by the major seizure, and

it raises interesting questions about the reciprocal relationship between the seizure and the patient's mental state. Strauss noted that a number of these individuals with protracted preictal auras or a continuous aura phenomenon turn to alcohol in an attempt to relieve their symptoms, and they are a definite subset of periodic drinkers.

The "epileptic personality." Does there exist a characteristic "epileptic personality," as insisted upon by Kraepelin and promoted periodically since by other writers? Those who insist on a set of common personality traits identify the following: slowness of reactions, perseveration on a subject with circumstantiality (sometimes called adhesiveness), rigid emotional attitudes, unresponsiveness to external factors, self-centeredness, hypochondriasis, and fixed opinions, particularly concerning religious issues. Most authors, however, agree that, in noninstitutionalized epileptics as a group, these are not characteristic features and that personality types and abnormalities show the general broad range noted in the rest of the population. It may well be that many of the traits described are not issues of personality but reflect the underlying cerebral dysfunction, which may persist in the absence of overt seizures. From time to time, one sees patients who fit the description outlined above who are remarkably improved by adjustments of medication or by surgical intervention, suggesting that they are not fixed traits but symptoms of impaired brain function.

The same question had been raised in a different way about patients with temporal lobe epilepsy. Gibbs was perhaps the first to emphasize what he felt was the very high incidence of psychiatric abnormality in patients with temporal lobe epilepsy. Although the psychiatric symptomatology covered the entire spectrum of possibilities, a similar point has been made about patients with temporal lobe disease in general, independent of the presence of epilepsy, by Mulder and Daly, among others. Many clinicians have repeated the feeling that patients with temporal lobe disease are an unusually disturbed sample of the population. Ervin et al. emphasized that in those patients with temporal lobe EEG abnormalities, with or without the presence of seizures, there were common behavioral difficulties. These were particularly the mobility of mood, the sudden alterations in states of consciousness, the frequency of hallucinatory experiences, and, in particular, a wide assortment of episodic symptoms, often short-lived, that were not ordinarily thought of as ictal. Another striking difficulty was in the area of impulse control, which seemed to be particularly poor in these patients. There were also disturbances of thought and peculiarities of affect.

It was emphasized at the time that these difficulties were like those that have come to be associated with the schizophrenic process. But there is no gain in lumping these cases in the wastebasket of schizo-

phrenia, which is already overcrowded. However, of those cases showing symptoms often diagnosed as schizophrenic, there is a subgroup of patients who can be characterized as having temporal lobe EEG abnormalities and often temporal lobe seizures. They should be isolated and subjected to further etiological and therapeutic investigation. Informal estimates have been made that as many as 10 per cent of the acute schizophrenic episodes in a receiving hospital may represent this group of patients.

A strong exception to this position has been taken by Dr. Janice Stevens, an able and experienced contributor to studies in epilepsy. She has cited evidence that temporal lobe epileptics do not differ from other epileptics in the incidence or severity of psychiatric disorders. In deference to her considered criticisms of the evidence accumulated to date, this must remain a debated issue until a common set of descriptive terms can be applied quantitatively to geographically remote populations for comparison.

Acute psychotic states related to epilepsy. Kleist first described a group of episodic psychoses he felt were related to but not identical with epilepsy. Since that time, a number of authors have described short-lived schizophrenia-like psychoses in patients with temporal lobe seizures. Hill, particularly, has described EEG changes in certain episodes of "catatonic schizophrenia" that often terminate with a grand mal seizure. Ervin et al. emphasized the same phenomena and pointed out again the suggested reciprocal relationship between the presence of overt seizures and the presence of overt psychotic behavior. This phenomenon has also been reported as a side effect of the administration of phenacemide (Phenurone), which is one of the more effective, though more toxic, anticonvulsants for temporal lobe seizures. These episodic psychoses look in many ways like acute schizophrenic attacks and would ordinarily be categorized most commonly as catatonic, paranoid, or acute undifferentiated schizophrenia.

An investigation of such acute psychotic disorders was reported by Dongier as a summary of a collaborative study in a number of European centers. A total of 536 psychotic episodes occurring in 516 epileptics between clinical seizures were evaluated with a set of standard forms that detailed the clinical symptoms of the psychotic episode, the EEG manifestations during the episode, a psychiatric classification of the episodic behavior, and an electroclinical classification of the patient's epilepsy. Even in such a collaborative study, obvious difficulties were present in finding a common terminology for similar events. The general effect of these difficulties, however, was to weaken any distinctions between groups. The conclusions they reached were of particular interest insofar as they reinforced the studies from a single center.

For their work, the researchers differentiated generalized centrencephalic epilepsy, focal epilepsy

(frontal, central, parietal, and occipital), and psychomotor epilepsy or so-called temporal lobe epilepsy. For much of the analysis, the psychomotor and focal epilepsies were taken as a group, to be compared against the centrencephalic cases.

A first point from their study is that, of 516 epileptics who showed interseizure psychotic episodes, 44 per cent of them turned out to be cases of psychomotor epilepsy, and only 6 per cent were cases of other focal epilepsies. Since the general incidence of psychomotor epilepsy in a total epileptic population is 15 to 20 per cent, this suggests a unique propensity of the temporal lobe cases for severe psychiatric disturbance. Looked at the other way, from the personal cases of Dongier, psychotic episodes were found in 30 per cent of generalized and 63 per cent of psychomotor epileptics in a series of 83 epileptics.

Another finding from this series was that, during the psychotic episode, some 65 per cent of the temporal epileptics showed disturbed affective reactions, as compared to 46 per cent of the centrencephalic cases, and 45 per cent of the temporal lobe cases showed depression, as compared to 24 per cent of the centrencephalics. This heightened incidence of affective disorder is consistent with the findings suggested about the interseizure personality in the temporal lobe group.

The general findings about psychotic episodes may be summarized in the following way.

Centrencephalic epileptics. Dongier stated, "These patients frequently show psychotic episodes which are relatively brief in duration (several hours). The episodes are never chronic nor do the patients become permanently mentally disturbed or demented. The episodes often begin but rarely end with the seizure." Two thirds of these episodes were of a confusional type. The EEGs were nearly always modified during the episode, usually in the direction of a diffuse slow dysrhythmia or with frequent spike and wave discharges that sometimes developed into a classical EEG picture of petit mal status. It was extremely rare to see unmodified tracings or tracings modified in the direction of normality. It seems reasonable to agree with Dongier's conclusion that these cases represent prolonged postictal states; indeed they would fall into the conditions described as postictal twilight states and would not be described as psychotic episodes.

Psychomotor epileptics. This group had psychotic episodes lasting days or weeks. They were rarely preceded by a tonic-clonic seizure but often ended in one. Dongier reported that they are distinguished from the other group in the following ways: (1) "Confusion is not always present during these episodes. They were usually characterized by disturbances of affect such as mood swings (with anxiety and particularly depression but with normal consciousness)." Paranoid ideation was also marked in these cases. (2) "There is never a continuous spike and wave

discharge during these episodes and only rarely is there slow wave dysrhythmia. On the contrary, we often observe either unmodified background rhythms or desynchronized tracings with disappearance of normal rhythms as well as disappearance of pathological activity (the 'forced normalization' mentioned before)" or (3) "occasionally a reinforcement of focal epileptic discharge in the temporal region without modification of the background rhythms."

In summary, temporal lobe epileptics particularly may show acute psychotic episodes with prominent schizophrenia-like features and little or no EEG abnormality to suggest a relationship to epilepsy. These may last for days or weeks and end abruptly. In addition, it seems likely that there is a group of patients, not manifesting clinical temporal lobe epilepsy, who on examination do show temporal lobe EEG abnormalities and who manifest acute or subacute psychotic episodes, which are often misdiagnosed as schizophrenic. These patients may suffer from the same basic pathophysiology as the known epileptics, and vigorous medical or surgical treatment may improve their prognosis considerably. One might clinically classify in this group a set of patients, in general young, who do not show florid psychotic symptomatology but who manifest primarily episodic behavior disorders, lack of impulse control, and affective lability. They are frequently difficult management problems on the ward and pose problems in diagnosis, frequently being thought of as borderline cases with hysterical character disorders or the like.

Chronic psychotic states and epileptic deterioration. Like the problem of the epileptic personality, a traditional picture of the epileptic psychotic or the deteriorated epileptic has existed. One sees in state hospitals a number of chronic epileptic patients in whom the combination of recurrent seizure, social neglect, recurrent head injury, and perhaps overmedication have led to a sad state of deterioration, but it seems unlikely that there is any unique psychotic end point for the epileptic. Even many of the apparently deteriorated cases can be markedly improved by good medical attention. Some epileptic patients face the statistical coincidence of a schizophrenic psychosis in addition to their epilepsy. The issue has been critically reviewed by Bartlett, who cited most of the pertinent statistical studies and who concluded that chronic schizophrenic psychoses do not occur more frequently in epileptics than in the general population. However, in several studies, those psychoses that do occur in the epileptic population occur primarily in those patients with temporal lobe epilepsy.

This observation adds fuel to the extensive study by Slater et al. of a group of schizophrenia-like psychoses occurring late in the course of temporal lobe epilepsy. They studied a group of patients with temporal lobe seizures of varying etiologies and oc-

currence at various times in life. The patients were admitted to the hospital in a psychotic state, with secondary symptomatology of delusions and hallucinations, psychotic depressions, and the like. Slater et al. concluded that these states tended to occur in patients an average of 14 years after the onset of temporal lobe pathology and independent of the severity of the seizures, the etiology of the epilepsy, the amount of medication taken, or the adequacy of medical control. They further differentiated this group genetically from their schizophrenic patients and outlined a clinical syndrome that they felt differed from the schizophrenic group, primarily in showing more signs of organicity. These patients tended to have a very poor prognosis, and the authors concluded that their psychotic syndrome was uniquely related to the pathological state of the temporal lobe.

This careful study should be extended to a larger group of patients, because it raises serious concern as to whether the persistence of temporal lobe (presumably subcortical) electrical abnormality poses a long term hazard of serious disability to the patient. Should this be the case—and in the light of the poor ability to achieve medical control of these seizures—the indications for relatively early surgical intervention in these cases might be broadened with the advances in surgical technique and safety.

Genetics and Marriage

From the Middle Ages in Scotland, when any man with epilepsy was castrated and any epileptic woman was buried alive with her children, to our enlightened age in the United States, in which several states have laws forbidding the marriage of epileptics, superstition and ignorance have caused the epileptic patient unjustified harassment in his role as procreator. The new science of behavioral genetics has only begun to clarify the pertinent issues, and it is up to the clinician to bridge the chasm between the statistics and the individual patient.

The twin pair data of Lennox and other workers indicate a strong inheritable predilection for epilepsy. When they divide the epilepsies into cryptogenic and symptomatic, they find among the cryptogenic about 85 per cent concordance for epilepsy in the monozygotic twins (versus 5 per cent for the dizygotic twins), and among monozygotic twins with symptomatic epilepsy they find about 14 per cent concordance (versus 0 per cent for dizygotic twins). This shows that manifestation of epilepsy is not inevitable, even in identical twins, but sensitivity does seem to be inherited, even to symptomatic epilepsy. Studies on post-traumatic epilepsy among Korean War veterans supports this view by showing the incidence of epilepsy among close relatives of those who developed epilepsy following head injuries was 7 per cent, as opposed to 1 per cent of the close relatives of soldiers who did not develop epilepsy after similar trauma. However, other

studies have found fewer differences, leaving the issue debatable.

Sensitivity to epilepsy varies among the general population. For example, when one looks at the severity of the EEG driving by photic stimulation, one obtains a bell-shaped distribution, with no abnormality at one extreme and convulsions at the other. The same phenomenon may also be observed for other means of epileptic activation. Similarly, Gibbs and others have discovered that about 10 per cent of the normal population have EEG abnormalities that do not produce any known clinical symptoms. Lennox has advanced the theory that the genotype determines the cerebral dysrhythmia rather than the convulsions, but because of the technical problems involved, little work has been done on the inheritance of the EEG pattern.

The variety of the epilepsies and their causes contributes difficulties to their genetic study because they do not form a genetic entity and each patient must be considered separately. Lennox has found the incidence of epilepsy in relatives of epileptics (2.5 per cent) is five times that in the general population (0.5 per cent). One of the few genetic analyses of a specific type of epilepsy was done by the Metrakoses on centrencephalic patients. They found a significantly higher (13 per cent) than normal (2.5 per cent) incidence of convulsions in the parents and siblings of centrencephalic epileptics. The most striking correlation was the 36.8 per cent incidence of cerebral dysrhythmia among the siblings of the centrencephalic epileptics. They concluded that the centrencephalic type of EEG is the expression of an autosomal dominant gene with highest penetration from the ages of 4 to 16. Another study showed that focal temporal EEG abnormalities behaved as the phenotype of an autosomal dominant gene in 10 families. These studies mark a change in emphasis in the genetics of epilepsy from the overt seizure to the underlying and more fundamental specific electrical dysrhythmia, a refinement that may prove very fruitful.

Most patients rightfully have little interest in these general statistics and are more concerned with their own particular chances. Clinicians can best help them by determining the familial characteristics of each patient's specific disease from carefully taken pedigrees and, if possible, from EEG studies of close relatives.

Marriage laws concerning epileptics are antiquated and usually disregarded. In counseling couples, the most important function of the clinician is to inform and reassure both the patient and his future partner, the latter having particular importance for the happiness of the marriage. When the couple asks about having children, the first consideration is whether the patient's physical and mental condition allows him to be a good parent; only then can the discussion be directed toward the genetic possi-

bilities. If only one future parent is afflicted with epilepsy and if head injury has been eliminated as the precipitating factor, the current estimate is that each of their children has a probability of between 0.025 and 0.05 of developing overt convulsions—a very slight risk. Evidence shows that this probability is increased if the other future parent has subclinical cerebral dysrhythmia or if both have epilepsy, but accurate figures are unavailable. Again, it is necessary to emphasize that meticulous study of pedigrees is of more validity than applying figures from the general population. It appears that the risk of transmitting epilepsy alone is generally too minute to warrant advising strictly against progeny, especially now, when so many convulsions can be completely controlled or cured by drugs or surgery and the outlook is auspicious for further advances.

In closing, one can add little to Strauss' view on eugenics and epilepsy:

Having children is always a joy and a risk. Whether an epileptic will want to take the additional risk of a possible transmissible disorder is not a matter which can be decided by any statistics. A decision can be made only by the prospective parents after they have been acquainted with the available knowledge and have been told frankly that any definite prediction as to the condition of their prospective children cannot be made ... even if a child should be sick from a convulsive disorder, probably it will be possible to make this child a happy human being.

(Treatment

Medication. The heart of the treatment plan for the epileptic is the adequate use of medication. Most seizures can be controlled with medication, but the vigorous and imaginative application sometimes required is often neglected. The keys to effective medical control lie primarily in two groups of drugs. For petit mal seizures, trimethadione (Tridione) and paramethadione (Paralidone) are the drugs of choice. On occasion in petit mal status or in some of the twilight states presented by them, the use of an amphetamine, particularly benzedrine, is extremely effective. These drugs have little or no usefulness in seizures other than true petit mal. All other seizures are best initially treated with diphenylhydantoin (Dilantin) or Dilantin in combination with phenobarbital.

Should this approach not be effective or be precluded by toxic or allergic reactions, a broad spectrum of other drugs may be used. These are added to from year to year, and the choice of them seems to depend somewhat on the individual physician's preference and on the unique peculiarities of the particular patient. At the present time, particularly useful drugs are methylphenylethylhydantoin (Mephentoin), primidone (Mysoline), chlordiazepoxide (Librium), and methsuximide (Celontin).

In working out an acceptable drug regime for a patient, one should systematically push the dose of an initial drug to its limit of effectiveness. If it proves

unsatisfactory, one should reduce the dosage somewhat, systematically adding another drug. Abrupt withdrawal of any of these compounds should be avoided, as there is danger of throwing the patient into protracted seizures. The goal of drug juggling should be *complete* control of seizures. Control at the level of one seizure every 6 weeks may be quite satisfactory to the physician, who has seen the patient have three and four a week, but it is not good enough for adequate rehabilitation of the epileptic. One seizure every 6 weeks may be just enough to preclude a normal social life and gainful employment. It sometimes requires a great deal of time, careful record keeping on the part of the patient, and patience and faith on the part of the physician to work out a schedule and combination of drugs that effectively controls the seizures and does not produce untoward symptoms. Along the way it may be necessary to utilize some mild stimulant, such as an amphetamine, to counteract the drowsiness produced by adequate medication, although this is not usually a problem.

All these drugs are potentially toxic and particularly affect the hematopoietic system, so that any patient on these drugs should be observed regularly and have hematological examinations. All the drugs have a finite frequency of allergic response, and this, too, should be watched, or they may in themselves produce toxic psychoses, which can be confused with phenomena related to the epilepsy. Should such a question arise, adequate determination of blood levels and changing of the drug are in order. Particular attention might be drawn to Phenurone, which is often quite effective in temporal lobe seizures notoriously resistant to other forms of drug medication. It is, however, an extremely toxic drug with liver complications and with a relatively high incidence of psychotic disorders occurring even when there is good seizure control. Phenurone should be used quite carefully and, if it is necessary to utilize it, should probably be initiated under hospital surveillance, with frequent checkups thereafter.

Adjuncts to therapy sometimes include shifting of the acid-base balance, particularly in the petit mal patients. Acetazolamide (Diamox) or a similar carbonic anhydrase inhibitor may be useful. The details of drug dosage, side effects, and monitoring should be looked up in some current handbook of therapy before embarking on a vigorous medication regime.

Attention should also be paid to maintaining physiological homeostasis for the patient. Seizure threshold may be lowered by fever, fatigue, salt and water retention, etc. Should these conditions occur because of intercurrent illness, it may be desirable to increase medication. The patient should be a party to an understanding of drug use and planning and can often judge for himself when a temporary increase in medication is called for. If he has the feeling that

he has the respect of his physician, these changes, which he will carry out anyway, will at least be communicated to the physician to prevent embarrassing dilemmas. At the same time, although he should be aware of these problems, which may increase his propensity to seizures, it should not be necessary to frighten him into immobility and from some attempt to lead a reasonably normal life. In this regard, alcohol poses a particularly tricky problem, since in excess it may well increase the seizure susceptibility, especially during the withdrawal period. Some experience with the individual patient should lead to a suitable evaluation of this issue.

Psychotherapy. Since the epileptic patient has a condition that may well persist for life and around which his future must be organized, it is well for him to have a reasonable psychotherapeutic relationship with his physician. This need not imply regular or insight-directed psychotherapy, but it should imply the kind of relationship that allows time for the patient to talk over his concern about the social problems involved in getting jobs and in wooing a mate, inheritance of his condition by his children, etc. The physician may well have to be prepared to intervene in some situations, particularly in those school systems that are so primitive as to preclude epileptic children of normal intelligence from classroom activities. Problems of driver's licenses, hazardous work, legal responsibility, etc., all need the thoughtful willingness of a physician to participate in constructive problem solving.

Attention has already been drawn to the perhaps more difficult problems presented by a number of the temporal lobe epileptics in their interseizure personality disorders. They are sometimes quite difficult patients to work with, but they benefit both in their life adjustment and in their seizure frequency from a thoughtful, formal psychotherapeutic relationship, which may be much more directive and controlling than insight-producing.

As for the unique psychiatric problems presented by the epileptic, two medication notes may be in order. First, already alluded to in cases of protracted petit mal or in cloudy and confused states in general, the central problem is one of a low level of arousal of the central nervous system, often commented on by the patient, who is aware that he can abort a seizure or prevent an anticipated one by heightening his state of attention. In such conditions, where medication rather than just sensible management is called for, amphetamine and amphetamine-like compounds are much more likely to be effective than sedatives. Secondly, in the disturbed psychomotor epileptic—whether manifesting one of the acute psychotic states described or just interictal irascibility, aggressivity, and impulsiveness—the use of phenothiazine tranquilizers is highly effective. Apparently, these are often avoided because of the evidence that the phenothiazines may be epileptogenic. But in these cases—

particularly those cases that show forced normalization of the EEG during the disturbed period—adequate phenothiazine medication is desirable and often effective.

Surgical intervention. When focal seizures are a manifestation of identifiable structural pathology and good medication control of the seizures is not obtained or the pathological process is itself progressive, surgical ablation is indicated, provided it does not lead to crippling effects, such as aphasia, major hemiparesis, etc.

Of special interest is the problem of surgery in the temporal lobe epileptic. These patients are very difficult to control with medication, and a number of them may have very disturbed lives as a result of their seizures or their interseizure dysfunction. Penfield on this continent, Falconer in England, and others around the world have demonstrated that ablation of the anterior temporal lobe can be an effective therapeutic measure in curing or at least making amenable to pharmacotherapy a number of temporal lobe epileptics. The procedure is not without hazard, but in recent years several modifications have been developed that promise to be of use. At Massachusetts General Hospital, for example, the use of implanted electrodes for precise focal diagnosis and later focal ablation without gross resection of the temporal lobe has seemed to be of value. Strategically similar though explicitly different maneuvers have been carried out by Turner in England and by Talairach in France, with considerable success and with far less hazard than the open resection. There are many considerations involved in the selection of patients for these procedures, but it should be emphasized that surgery is no longer a course of last resort in the psychomotor epileptic. It should be considered actively in his evaluation if there is any concern about medical control. Neurosurgical advice should, of course, be sought in making this evaluation.

Deserving of final mention is an even more experimental procedure described primarily by Jinnai et al. in Japan. They have described the use of focal lesions in the region of the fields of Forel in the treatment of patients with grand mal seizures. They reported encouraging success both in seizure control and in alleviation of the electrophysiological abnormalities seen in the EEG. This procedure is as yet without firm physiological basis, but should this interesting possibility be successfully pursued, it may be possible to offer therapeutic surgery to a wider spectrum of intractable epileptics than heretofore.

Suggested Cross References

Further material on the convulsive disorders may be found in Laufer's section on the brain-disordered child (Section 42.3), which includes a discussion of the epileptic child; in Cytryn and Lourie's chapter on mental retardation (Chapter 22); and in Solomon's chapter on neurology (Chapter 10), which contains an

alternate classification of epilepsy. Information regarding the fundamental neurophysiology and neuroanatomy and the neurochemistry of epilepsy is presented in Sections 2.5 to 2.9 and 2.2, respectively, in Area B. In that same area see Rainer's section on genetics (Section 2.1), with special reference to genetic counseling. For more detailed discussions of hysteria and schizophrenia, which were mentioned here in reference to the differential diagnosis of epilepsy, see Section 23.2 and Chapter 15, respectively.

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Chapter 22

Mental Retardation

22.1 • • •

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Introduction

Recent interest in mental retardation. Mental retardation may be viewed as a medical, psychological, or educational problem, but in its final analysis it is primarily a social problem. This explains the fact that throughout history the attitude toward the mentally retarded often reflected the general social attitudes of a given people or a given culture.

In more modern history there were three distinct junctures characterized by great public interest and professional creative thinking in the field of mental retardation. Characteristically, they all followed crucial periods of great social upheaval, resulting in a popular adoption of gradually more liberal, more truly democratic attitudes toward society's less fortunate members, including the mentally retarded.

The first germinal period in the field of mental retardation coincided with the time of the French and American Revolutions and the ideas of equality and rights for all men, which upset the feudal, vertical social structure. The times of Itard and his pioneering labors were also the times of Pinel, who unchained the insane, and the beginning of a popular vote and social legislation.

The second period followed the revolutions that swept Europe in 1848, in the wake of which a further liberalization of public opinion and gradually increasing legislative justice took place. In such a favorable climate, the ideas of Guggenbühl, Séguin, and Howe about special educational opportunities for the mentally retarded spread rapidly throughout Europe and North America.

The third, our present period, in turn followed the cataclysm of World War II. The great resurgence of professional and public interest in mental retardation and its sudden respectability are the result of several,

not necessarily related, factors. Again, probably the most important was the radical change in the social climate felt everywhere on the local, national, and international level. As if to atone for letting the ravages of World War II happen, the postwar trend has been toward securing equal rights and opportunities for all human beings, including the traditionally downtrodden. These include the colonial nations of Asia and Africa, racial and religious minorities everywhere, the old, the very young, the poor, and the sick. Government involvement in an increasing range of social issues has become universally accepted, despite some opposition of advocates of laissez-faire policies of the past.

Thus, the social climate has been favorable for overcoming the traditional public inertia regarding mental illness and mental retardation. Suddenly, the retarded were viewed as individuals with inherent needs and rights. Various civic groups became champions of those rights in the forum of the federal, state, and local governments. In the United States, in the best American tradition of self-help, the National Association for Retarded Children, founded in the 1950's by groups of parents of retarded children, has been the *spiritus movens* of the radical change in public opinion in favor of the retarded.

Historical survey

Early attitudes. There is very little information about the problems of mental retardation in antiquity, in medieval times, and even in modern history up to the beginning of the 19th century. We find only scanty references scattered among ancient religious and medical writings, indicating some awareness of the problem. Hippocrates mentioned anencephaly and other cranial malformations associated with severe retardation. The laws of Sparta and ancient Rome included provisions for extermination of severely retarded children in infancy, a practice revived recently during the infamous Nazi regime.

In medieval Europe the mentally retarded were at best tolerated as jesters and freaks of nature and at worst considered to be evil creatures, in alliance with the devil. This latter belief was particularly popular during the Reformation. In contrast, Asian religious

leaders such as Confucius in China and Zoroaster in Persia advocated humane treatment of the mentally retarded in their teachings. Jewish Talmudic scholars exempted the mentally retarded from criminal responsibility.

The era of humanism saw more interest on the part of the church authorities and the beginning of a more protective attitude. This interest was not shared, however, by the scientific and medical community, as attested by the conspicuous absence of any writings on mental retardation up to the beginning of the 19th century. Mental retardation was often considered a variant of insanity, and it was not until 1689 that Locke made a clear distinction between the two.

Nineteenth century attitudes. The spirit of the French Revolution heralded the beginning of efforts to rectify all kinds of social injustices and to put an end to the subhuman treatment of the mentally retarded. Significantly, the medical profession became caught up in the spirit of the times, and this led to pioneering work of several of its members. In the early part of the 19th century, Itard in France laid the groundwork for the future development of the education and training of the mentally retarded through his patient efforts with the wild boy of Aveyron.

In the middle of the 19th century, Guggenbühl in Switzerland introduced the idea of institutional treatment of the mentally retarded. His meteoric rise to fame gave impetus to the establishment of special educational institutions for the retarded, first throughout Europe and then in the United States and Japan. Guggenbühl's naive notions that the diverse forms of mental retardation were only expressions of cretinism and his promise of total cure (which prompted his downfall) should not detract from his contribution to the field. He made mental retardation a respectable field of medicine and educational endeavor and established special institutions for the mentally retarded throughout the civilized world.

Séguin published the first textbook in this field, *The Physiological and Moral Instructions of Idiots*. After his emigration to the United States in 1848, he contributed greatly to the fruitful, pioneering activity in this country in the field of mental retardation.

Howe, through his efforts to legislate state support for the care and instruction of the feeble-minded, helped the development of institutional care throughout the United States and Canada. By taking a realistic approach to the limitations of special education, Howe wisely avoided the pitfalls experienced by Guggenbühl.

Unfortunately, the enthusiasm of the early and middle parts of the 19th century, which led to the establishment of institutions for retarded children as places of learning and instruction, gave way to a pessimistic attitude in the latter part of the 19th century. This was probably a result of the great dis-

appointment felt when the promises of the early pioneers for total reversibility or cure of mental retardation failed to materialize. The emphasis was then put on vocational rather than scholastic aspects of training and on concentration of effort on the mildly retarded, to the exclusion of the more severely afflicted group. The change in attitude also affected the character and goals of the institutions for the mentally retarded. They were viewed no more as means of rehabilitation and education but rather as means of isolating the mentally retarded from the mainstream of community life. This trend was reinforced by several pseudoscientific speculations, which cloaked in modern terms the medieval concept of the inherent "badness" of the mentally retarded.

The efforts of the medical profession during this period were largely diverted from fruitful research and were directed toward finding ways of checking the menace of mental retardation by various means of eugenic control, ranging from sterilization to euthanasia and, more recently, birth control. The physicians remaining in the field, like their counterparts in mental hospitals, became isolated from academic centers of learning and research, since their subject was not deemed worthy of scientific investigation.

Twentieth century attitudes. The beginning of the 20th century witnessed the perpetuation of professional lethargy, but there were forces afoot that, in time, brought about a radical change, a renewed aura of scientific respectability, and indeed an unprecedented appeal, with everybody clamoring to get on the bandwagon. Several crucial discoveries may be credited for this unusual phenomenon. Garrod's concept of the inborn errors of metabolism was probably the first in the chain of significant events that attracted the curiosity of the medical academic community. Fölling's discovery of phenylketonuria in 1934 helped to popularize Garrod's concepts and in time pointed to possibilities of preventing mental retardation by circumvention or avoidance of the defective metabolic pathways. The same was true of the unraveling of the metabolic defect in galactosemia, which was followed by the detection of a host of other metabolic disorders. The genetic principles elaborated by Mendel and improvement in laboratory techniques gave impetus to the development of the rapidly expanding science of genetics. Improvements in obstetrical techniques, control of syphilis, and the discovery of Rh incompatibility, soon followed by the introduction of exchange transfusions, were among other important factors that suddenly opened new, exciting vistas in the field of mental retardation for the medical researcher and clinician alike.

A favorable public opinion coupled with the enthusiastic endorsement by the scientific community could not fail to bring about a radical, positive approach to the problem of mental retardation. One

civilized country after another adopted new laws and introduced means to further research and ensure the welfare of the mentally retarded. The United States actually lagged behind many countries on both sides of the Iron Curtain, especially when it came to the provision of decent facilities for care and education. Even today, many state institutions for the mentally retarded are a festering sore, an ugly medieval relic in this most affluent country.

However, in the early 1960's, under the direction and initiative of the late President Kennedy, a thorough program was prepared by a panel of experts. It addressed itself to the complexities of the problem and made sweeping recommendations that were, in part, adopted through ordinary legislative channels. Governmental support, favorable public opinion, and research opportunities keep attracting an increasing number of physicians to the field of mental retardation. To use a metaphor, mental retardation was the ugly maiden who was kept in the attic for a long time. Suddenly, suitors have begun to arrive in numbers, since they discovered that the prospective bride is not so homely after all, and, in addition, she now has a handsome dowry.

Problems of definition, nomenclature, and classification. The problem of adopting a universally acceptable system of defining and labeling mental retardation has long vexed many individual workers in this field and lately has attracted the attention of national and even international scientific and governmental bodies. The still existing confusion may be attributed primarily to the complexity of the problem of mental retardation, which defies simple conceptualization.

Definition. The biomedical and sociocultural adaptational models represent the two major approaches to the conceptual definition of mental retardation. The adherents of the former in our country and in the U.S.S.R. insist on the presence of basic changes in the brain as a *sine qua non* in the diagnosis of mental retardation. The proponents of the latter, on the other hand, emphasize the social functioning and general adaptation to accepted norms. Each of these approaches has many ramifications that complicate the issue even further.

Brain damage may be viewed as a demonstrable anatomical lesion, an alteration of the basic constituents of the brain tissue, a metabolic disturbance of the nerve cell, diminished capacity for interneuronal impulse transmission, or a combination of all these factors.

The sociopsychological approach focuses on the developmental impairment in infancy and preschool years, on learning difficulties in school age, and on poor social-vocational adjustment in adulthood. The prevailing cultural norms against which an individual's performance will be judged, rather than his neuropathology, may be decisive in defining the degree of social inadequacy, that is, the inability to

learn and adapt to the demands of a society and to be self-sufficient. Thus, individuals classified as mentally retarded in our technological, complex society might have been competent and successful in a more primitive and intellectually less demanding environment.

There is no known technique for *direct* assessment of intelligence or intellectual potential, nor is there a correlation of the latter with anatomical and functional impairment of the central nervous system. It is futile, therefore, with our present knowledge, to view mental retardation in a unidimensional frame of reference. Rather, it has to be considered as a multidimensional phenomenon that involves overlapping physiological, psychological, medical, educational, and social aspects of human functioning and behavior. This broader view is reflected in the definition of mental retardation adopted by the American Association on Mental Deficiency in 1961: "Mental retardation refers to sub-average general intellectual functioning which originates in the developmental period and is associated with impairment in adaptive behavior." This description circumvents the question of etiology, the problem of nature versus nurture, and the clinical course of mental retardation, that is, its treatability or even curability. Because of the avoidance of these highly controversial areas, it provides a useful, practical, operational definition acceptable to all disciplines.

Nomenclature. Mental deficiency, which is the term used in the American Psychiatric Association's manual on terminology and classification to designate subaverage intellectual functioning, is often used interchangeably with mental retardation. Recently, however, the World Health Organization recommended the use of the term mental subnormality, which in turn is divided into two separate and distinct categories: mental retardation and mental deficiency. According to this nosology, mental retardation is reserved for subnormal functioning due to environmental causes in the absence of central nervous system pathology, and mental deficiency describes subnormal functioning due to pathological causes. Mental deficiency is also used often as a legal term, applied to people with an I. Q. below 70.

The term feeble-mindedness was often used in American literature in the past and is still in use in Great Britain, where it generally denotes the milder forms of mental retardation. Oligophrenia is in common use in the U.S.S.R., Scandinavia, and some other Western European countries. Amentia appears only infrequently in modern psychiatric literature.

Our choice of the term mental retardation only reflects the widest preference of all professional groups.

Classification. The pluridimensional character of mental retardation is also reflected in the various approaches to classification of this condition. Essentially, they all deal with the developmental characteristics, potential for education and training, and

TABLE I
Developmental Characteristics of the Mentally Retarded¹

This table integrates chronological age, degree of retardation, and level of intellectual, vocational, and social functioning.

Degree of Mental Retardation	Preschool Age 0-5 Maturation and Development	School Age 6-20 Training and Education	Adult 21 and over Social and Vocational Adequacy
Profound	Gross retardation; minimal capacity for functioning in sensorimotor areas; needs nursing care	Some motor development present; may respond to minimal or limited training in self-help	Some motor and speech development; may achieve very limited self-care; needs nursing care
Severe	Poor motor development; speech minimal; generally unable to profit from training in self-help; little or no communication skills	Can talk or learn to communicate; can be trained in elemental health habits; profits from systematic habit training	May contribute partially to self-maintenance under complete supervision; can develop self-protection skills to a minimal useful level in controlled environment
Moderate	Can talk or learn to communicate; poor social awareness; fair motor development; profits from training in self-help; can be managed with moderate supervision	Can profit from training in social and occupational skills; unlikely to progress beyond 2nd grade level in academic subjects; may learn to travel alone in familiar places	May achieve self-maintenance in unskilled or semiskilled work under sheltered conditions; needs supervision and guidance when under mild social or economic stress
Mild	Can develop social and communication skills, minimal retardation in sensorimotor areas; often not distinguished from normal until later age	Can learn academic skills up to approximately 6th grade level by late teens; can be guided toward social conformity	Can usually achieve social and vocational skills adequate to minimum self-support but may need guidance and assistance when under unusual social or economic stress

¹ Adapted from *Mental Retardation Activities of the U. S. Department of Health, Education, and Welfare*, p. 2. United States Government Printing Office, Washington, 1963.

social and vocational adequacy. The degrees or levels of retardation are expressed in various terms. The American Psychiatric Association uses the terms mild mental deficiency (I.Q. 70 to 85), moderate mental deficiency (I.Q. 50 to 70), and severe mental deficiency (I.Q. below 50). The following terms are recommended by the World Health Organization: mild subnormality (I.Q. 50 to 69), moderate subnormality (I.Q. 20 to 49), and severe subnormality (I.Q. 0 to 19). The American Association on Mental Deficiency adopted the terms borderline (I.Q. 70 to 84), mild (I.Q. 55 to 69), moderate (I.Q. 40 to 54), severe (I.Q. 25 to 39) and profound (I.Q. 0 to 24) (see Table I). The terms idiot, imbecile, and moron still enjoy some popularity in Europe but are seldom used in the United States. (See Table I.)

Epidemiology

It is estimated that 3 per cent (5,400,000) of the U.S. population are mentally retarded. This often quoted estimate is only approximate, since there are no precise data available, except in a few areas of the country.

The distribution of mental retardation is uneven in different age groups. In the preschool years, only about 1 per cent of the population are diagnosed as mentally retarded, since only the severe forms of this disorder are recognized on routine examination. The highest incidence is found in school-aged children, with the peak at ages 10 to 14. This reflects the close supervision and continuous evaluation of the children's intellectual and social performance in a school

setting, with availability of standards of academic performance and the use of standardized intelligence tests. The inadequacy of these yardsticks for future life performance is attested to by the abrupt drop in the frequency of mental retardation after school age, when most of those who were identified as mentally retarded blend into the general population.

The overwhelming majority (87 per cent) of the mentally retarded fall into the mild category, and the remainder (13 per cent) belong to the moderate, severe, and profound groups.

Roughly 126,000 children born each year in this country are expected to be mentally retarded. It is estimated that of the total number of mentally retarded only about 60,000 to 90,000 belong to the severely and profoundly retarded categories; they require custodial care in a sheltered environment. The moderately retarded group numbers about 300,000 to 350,000; they can be trained in self-care, rudiments of social adjustment and judgment, and sometimes performance of simple productive tasks in a sheltered environment. These groups provide the bulk of mentally retarded individuals in institutions. The mildly retarded group includes roughly 5,000,000 people; they can be educated to a limited extent and are potentially able to adjust, at least marginally, to the demands of society and to employment. This group comes predominantly from the lower socioeconomic strata of our society, and it is believed that many of its members are retarded due to environmental deprivation. The lower socioeconomic groups also supply a disproportionately large number of the moder-

ately and severely retarded, but the discrepancy in these groups is not so great as in the mildly retarded group. There seems little doubt that more stringent developmental evaluation of preschool children and more uniform school standards would result in a far greater number of children identified as moderately retarded in the preschool and school age population.

Etiology and Syndromes

Prenatal factors. Since Garrod's original description of alkaptonuria in 1908, the inborn errors of metabolism have commanded the attention of researchers and clinicians, exceeding by far their relative frequency. The total of all the hereditary metabolic defects probably accounts for about 4 to 5 per cent of mental defectives, but the lessons already learned from the study of these disorders point to exciting diagnostic, therapeutic, and preventive possibilities. The introduction of paper chromatography played a major role in the rapid growth of the list of known amino acidurias, and several ingenious but rather simple methods allow for routine mass screening of large populations for biochemical abnormalities. Tolerance tests with suspect substances or related compounds permit the detection of heterozygous carriers and individuals with a milder form of a disease. Further biochemical research may bring the number of metabolic disorders to 10 per cent of the mentally retarded group.

The success of dietary measures in phenylketonuria (PKU), maple syrup disease, and galactosemia represent a major triumph in the medical treatment of mental retardation, which hitherto operated on a hit or miss basis. Although the mechanism of injury to the central nervous system in these disorders is not known, it is believed to be a result of abnormal accumulation of metabolites. The therapy is based on the principle of dietary omission or reduction of a specific dietary ingredient that cannot be properly metabolized because of a specific enzymatic block. This in turn helps to eliminate the abnormal accumulation of the metabolites, thus avoiding the potential injury to the central nervous system. Another therapeutic approach consists of dietary *addition* of essential metabolites, such as the addition of cystine in homocystinuria.

The intensive research in the area of the inborn errors of metabolism promises an increased understanding of normal and abnormal cerebral functioning. The exact role of various enzyme systems in the brain during various stages of embryogenesis and in the first few years of life is still unknown, but many exciting clues still await further clarification. The apparent simplicity of a single metabolic block is deceptive, since the accumulation of a metabolite leads to a sequence of secondary and tertiary events. Each of these events, singly or in combination, may be responsible for the ultimate damage to the de-

veloping brain. Too much or too little of a normal compound or the presence of an abnormal one may be involved. This exciting search, potentially of great significance to the entire field of mental illness, is facilitated by the fact that several inborn errors of metabolism, such as PKU and galactosemia, can be approximated in animals by feeding them large amounts of phenylalanine or galactose, without, of course, reproducing the basic enzymatic defect.

Finally, the recent advances in tissue and organ transplant hold out an exciting possibility of direct treatment of congenital enzymatic defects by transplanting enzyme-producing tissue, such as liver, from a normal donor to the affected individual, thus meeting the challenge head on instead of circumventing it.

Disorders of amino acid metabolism

Phenylketonuria (PKU). First discovered by Fölling in 1934, phenylketonuria has become known as the inborn error of metabolism associated with mental retardation par excellence. The intensive study of its many aspects with the attendant publicity was greatly responsible for the recent interest of the medical community in mental retardation. The information gained from the study of PKU serves as a model of investigation of other hereditary biochemical disorders, which has already led to the discovery of a host of inborn enzymatic defects.

PKU is transmitted as a simple recessive autosomal Mendelian trait. Its frequency in the United States and various parts of Europe ranges between 1 in 10,000 to 1 in 20,000. Although the disease is reported predominantly in people of North European origin, sporadic cases have been described in Negroes, Yemenite Jews, and members of Mongolian races. The frequency among institutionalized defectives is about 1 per cent.

The basic metabolic defect in PKU is an inability to convert phenylalanine, an essential amino acid, to tyrosine because of the absence or inactivity of the liver enzyme phenylalanine hydroxylase, which catalyzes this conversion. This in turn gives rise to several abnormal biochemical findings, such as: (1) elevated phenylalanine in the blood (10 to 25 times normal) and cerebrospinal fluid, excretion of an abnormal metabolite, phenylpyruvic acid, in the urine as well as phenylalanine (30 to 50 times normal) and several derivatives; (2) a related disturbance of tryptophan and tyrosine metabolism, leading to a marked decrease in serum serotonin and lower than normal blood levels of epinephrine and norepinephrine.

The majority of patients with PKU are severely retarded, but some patients are reported to have borderline or normal intelligence. Eczema and convulsions are present in about a third of all cases. Electroencephalogram (EEG) is abnormal in about 80 per cent, even in patients without convulsions, showing irregular spike and wave discharges. The majority of patients are undersized, and the head tends to be small. Although the clinical picture varies, typical PKU children are hyperactive and exhibit erratic, unpredictable behavior, which makes them difficult to manage. They have frequent temper tantrums and often display bizarre movements of their bodies and upper extremities and twisting hand mannerisms that sometimes resemble the behavior of autistic or schizophrenic children. Verbal and nonverbal communication is usually severely impaired or nonexistent. Coordination is poor, and perceptual difficulties are many. The original description of PKU patients as blond and blue-eyed (due to a relative deficiency of melanin, a by-product of tyrosine) applies to some, especially in the younger age group.

The best known screening test depends on the reaction of phenylpyruvic acid in the urine with ferric chloride solution to

give a vivid green color. This test has its limitations, since it may not become positive until the baby is 5 or 6 weeks old and it may be positive in other amino acidurias. Another screening method, commonly used, is the Guthrie test, which measures the phenylalanine level in the blood, using a bacteriological procedure. In addition to these simple screening methods, there are several chromatographic and biochemical tests available for the purposes of individual management and research.

Early diagnosis is of extreme importance, since a low phenylalanine diet, in use since 1955, results in significant improvement in both behavior and developmental progress. The best results seemed to be obtained with early diagnosis and the start of the dietary treatment prior to 6 months of age. The attainment of even normal or near normal intelligence is possible if the dietary treatment is begun before 3 months of age. In addition, children on this diet become more responsive, less hyperactive, and much easier to manage. There is also an improvement in the EEG pattern and a diminution or cessation of seizures.

Dietary treatment is not without dangers. Phenylalanine is an essential amino acid, and its complete omission from the diet may lead to such severe complications as anemia, hypoglycemia, edema, and even death. The problem has become more complicated with the recent knowledge of patients with elevated phenylalanine levels in the blood, as picked up on screening tests, who do not seem mentally retarded and do not excrete phenylpyruvic acid in their urine but do have a relatively low tolerance for phenylalanine. When these infants are not monitored well while on dietary treatment, resulting in low blood levels, they are likely to develop serious complications from phenylalanine depletion. It remains to be clarified whether this condition represents an independent entity, phenylalaninemia, or a partial or arrested form of PKU, due perhaps to the influence of a modifying gene. At any rate, it points out the importance of caution and careful follow-up in the diagnosis and treatment of PKU and other metabolic disorders.

Dietary treatment of PKU can often be discontinued at the age of 5 or 6 years, although no alternate metabolic pathways capable of keeping the blood phenylalanine levels in normal range have been discovered as yet. Sometimes, however, withdrawal of the diet results in deterioration of behavior and recurrence of seizures. Evaluation of the dietary benefits is further complicated by the fact that some PKU children have normal or near normal intelligence and behavior on a normal diet.

The parents of PKU children and some of these children's normal siblings are heterozygous carriers and can be detected by a phenylalanine tolerance test, which may be of great importance in genetic counseling of these people.

The exact mechanism of the brain damage in PKU is still unknown. Some researchers think that the high phenylalanine concentration interferes with the usual respiration of brain tissue or normal functioning of essential enzyme systems. Of particular psychiatric interest are the hypotheses that link both the mental deficiency and the behavioral abnormalities in PKU to the related disturbance in tryptophan metabolism, notably serotonin deficiency. However, the role of serotonin both in PKU and in psychotic disorders is still controversial and must await further clarification through careful biochemical and behavioral studies.

Maple syrup disease (Menkes disease). First discovered by Menkes in 1954, maple syrup disease is an inborn error of metabolism transmitted by a rare single autosomal recessive gene. The biochemical defect interferes with the decarboxylation of the branched chain amino acids: leucine, isoleucine, and valine. As a result, these amino acids and their respective keto acids accumulate in the blood and cause overflow amino aciduria. The urine has a characteristic odor, which gave the condition its name and which is due to the derivatives of the keto acids.

The diagnosis can be suspected by the use of ferric chloride

or dinitrophenylhydrazine, each of which interacts with the urine to give, respectively, a navy blue color or a yellow precipitate. The pathological changes are relatively minimal and consist mainly of poor formation of myelin in the brain.

The clinical symptoms appear during the 1st week of life. The infant deteriorates rapidly and develops decerebrate rigidity, seizures, respiratory irregularity, and hypoglycemia. If untreated, most patients die in the first months of life, and the survivors are severely retarded. Some variants have been reported, with transient ataxia and only mild mental retardation.

Treatment follows the general principles established in PKU and consists of a diet very low in the three involved amino acids. The reports to date are very encouraging, indicating the possibility of fairly normal physical and intellectual growth of patients on the dietary regimen.

As in PKU, the exact nature of brain damage is still not clear.

Hartnup disease. This rare disorder took its name from the family in which it was detected. Like the preceding diseases described, it is transmitted by a single recessive autosomal gene. The symptoms are intermittent and variable and tend to improve with age. They include a photosensitive pellagra-like rash on extension surfaces, episodic cerebellar ataxia, and mental deficiency. Of particular importance to psychiatrists is the fact that transient personality changes and psychoses may be the only manifestation of the disease, and these milder cases do not come to medical attention until late childhood or adolescence.

The metabolic defect involves defective tryptophan transport, and biochemical findings consist of a marked amino aciduria and increased excretion of indican and indole derivatives. The diagnosis can be made by paper chromatography of the urine.

Treatment with nicotinic acid and antibiotics such as neomycin may relieve the skin rash and possibly the ataxia, but it does not affect the mental retardation.

Citrullinuria. This is one of three recently described rare disorders involving the urea cycle. It probably involves an enzymatic defect in the conversion of citrulline into argininosuccinic acid. As a result, the level of citrulline in the blood, cerebrospinal fluid, and urine is elevated. The disorder is accompanied by mental retardation.

Hyperammonemia. This is another rare defect involving urea synthesis, probably resulting from a metabolic block in the conversion of ornithine to citrulline. The serum ammonia is elevated, and mental retardation has been reported.

Argininosuccinic aciduria. This third disorder of the urea cycle is as rare as the two preceding ones. The biochemical defect involves a block in the conversion of argininosuccinic acid to arginine in the brain. As a result, the argininosuccinic acid is elevated in the cerebrospinal fluid and to a lesser extent in the blood and urine.

The clinical manifestations include mental retardation, grand mal seizures, brittle white hair, and intermittent coma.

All three disorders of the urea cycle are being experimentally treated with a low protein diet.

Idiopathic hyperglycinemia. The biochemical findings in this rare condition consist of a marked elevation of the blood and urine glycine levels. Ingestion of leucine by the patient precipitates ketosis. The nature of the metabolic defect is unknown as yet.

The clinical picture is characterized by intermittent vomiting and ketosis, severe mental deficiency, and choreoathetosis. In contrast, the commoner condition, glycinuria, is not usually accompanied by mental disability. Dietary therapy is now in the experimental stage.

Histidinemia. This defect in histidine metabolism is transmitted by a single autosomal recessive gene and involves a block in the conversion of histidine to urocanic acid resulting from histidase deficiency. This in turn leads to an elevated histidine level in serum and urine. The urine also contains

imidazole pyruvic, imidazole lactic, and imidazole acetic acids in increased amount, which give a positive ferric chloride test (green).

Mild mental retardation and sometimes speech defect are a part of the clinical picture.

Homocystinuria. The metabolic defect in this rare disorder consists of a reduction or absence of cystathionine synthetase activity. Homocystine is excreted in the urine. The patients have an odd appearance and are mentally retarded. Subluxation of the lens of the eye is a characteristic clinical feature. Therapy is still in the experimental stage and involves the addition of cystine to the diet.

Lowe's oculorenal dystrophy. This disorder, transmitted by an autosomal recessive gene, presents a varied clinical picture that includes some of the following eye defects, buphthalmos, microphthalmos, cataracts, and corneal opacities. The renal ammonia production is decreased, and a generalized amino aciduria is found.

Cystathionuria. The metabolic defect in this disease consists of a block at the site of cleavage of cystathionine to cysteine and homoserine. Cystathionine is found in the urine, and the patients are mentally retarded.

Hyperprolinemia and Oast-House disease. These are two further examples of rare amino acidurias associated with mental retardation. The number of known amino acidurias will no doubt continue to increase as more retarded and brain-damaged individuals have their blood and urine studied by chromatographic methods.

Disorders of fat metabolism. It is generally assumed that disturbances in lipid metabolism related to the central nervous tissue are genetically determined, resulting from an enzymatic defect. The exact nature of the enzymatic blocks and their localizations in the chemical chain of reactions are still unknown. However, the nature of the various metabolic products causing injury to the various components of the central nervous system (CNS) has been determined by biochemical analysis in most of the disorders discussed below. These can be roughly divided into two groups: the first includes diseases characterized by an increase and storage of lipids in the CNS, and the second involves diseases characterized by a decrease in lipids in the CNS, resulting in demyelination.

There are several hypotheses as to the nature of the metabolic disorder in the diseases involving accumulation of lipids in the tissue. (1) Normal lipid is produced at an excessive rate. (2) The normal lipid is produced at a regular rate, but an abnormality in the end organ tissues results in accumulation. (3) An abnormal lipid is produced. Specific enzymatic defects have been recently demonstrated in some of these disorders.

Cerebromacular degenerations. The cerebromacular degenerations represent a group of disturbances in which there is progressive mental deterioration and loss of visual function. They are all transmitted by an autosomal recessive gene. The four types of cerebromacular degeneration differ as to the age of onset. The earliest one, Tay-Sachs disease, occurs chiefly among Jewish infants, particularly those from Eastern Europe; the others are found in members of all races.

The accumulation of lipid substances, that is, gangliosides, in neurons (the nerve cells) throughout the CNS is a characteristic showed by all forms of this disorder. In the Tay-Sachs vari-

ant, there is also an accumulation of gangliosides in the ganglion cells of the retina; in others the ganglioside deposits are found in the outer retinal layers.

The gangliosides can be chemically identified after brain or rectal tissue is obtained by biopsy. Neuraminic acid, a characteristic component of gangliosides, is elevated in the brain tissue but not in the spinal fluid.

Tay-Sachs disease begins in infants 4 to 8 months of age. The infants become hypotonic, slow down in their developmental progress, and become weak and apathetic. In addition, there are spasticity, accompanied by persistent primitive postural reflexes, cherry red spots in the macula lutea of each retina, convulsions, and progressive physical and mental deterioration leading to death in 2 to 4 years.

The Jansky-Bielschowsky type, also called the early juvenile or late infantile form of cerebromacular degeneration, has its onset at 2 to 4 years of age. There is a pigmentary degeneration of the macula and progressive dementia.

The juvenile form, Spielmeier-Stock-Vogt-Koyanagi, occurs in early school-aged children. This variant is characterized by a much slower degenerative process and usually starts at the age of 5 or 6 years when impairment of vision appears as the first symptom. The impairment is progressive and leads to blindness due to the atrophy of the optic nerve and pigmentary degeneration of the macula. Ataxia, convulsions, and mental deterioration complete the picture. The course is protracted over a period of 10 to 15 years.

The late juvenile form, Kuf's disease, is rare and occurs after 15 years of age.

All these variants of cerebromacular degeneration are progressive, and there is no treatment available to date.

Niemann-Pick disease. This disease is transmitted by an autosomal recessive gene and occurs predominantly in Jewish infants.

The biochemical defect involves storage of sphingomyelins in the neurons, liver, and spleen, which can be identified by biopsy of the rectum or the brain. The blood and the bone marrow contain foam cells and vacuolated leukocytes. Brady demonstrated recently the reduction of activity of a specific enzyme that catalyzes the hydrolysis of sphingomyelin in tissues of patients with Niemann-Pick disease.

The clinical picture consists of a developmental arrest and mental regression accompanied by abdominal enlargement due to hepatosplenomegaly, anemia, general emaciation, and occasionally a cherry red spot in the retina, similar to that found in Tay-Sachs disease. The onset is usually in infancy, following an initially normal development. Occasional cases have a later onset and a relatively slow chronic course, characterized by ataxia and a lesser degree of mental deficiency. No treatment is known at present, and death occurs in most cases in early childhood, before the age of 4.

Gaucher's disease. This lipidosis also occurs mostly in Jewish children and has an autosomal recessive mode of genetic transmission.

The metabolic abnormality, as shown by Brady et al., consists of a diminution of enzyme activity, namely of the enzyme that catalyzes the breakdown of glucocerebroside. This leads to an accumulation of the cerebroside kerosin in the neurons and in the cells of the reticuloendothelial system. Characteristically, there is an accumulation of Gaucher cells, that is, large, pale, round cells filled with kerosin, first in the reticuloendothelial system and then in other tissues. The demonstration of these Gaucher cells in the bone marrow or in biopsy material from the brain or rectum serves as a diagnostic proof of this disease. Clinically, the illness occurs in two forms.

The acute infantile form has its onset in infancy, following several months of normal development, and is characterized by progressive mental deterioration and developmental arrest. Hepatosplenomegaly, abdominal and cranial enlargement, hypotonia, and opisthotonus complete the clinical course, which is usually fatal before the end of the 1st year of life.

The chronic form has an insidious onset, usually any time before the 10th year of life, but occurs occasionally in adolescents and young adults. There is less or no involvement of the CNS, and the main clinical symptoms are physical, including hepatosplenomegaly, anemia, thrombocytopenia, and bone changes leading to pathological fractures and severe deformities. The course is chronic, characterized mainly by chronic physical handicaps.

Bigler and Hsia syndrome. This rare disorder is transmitted by an autosomal recessive gene. Its biochemical abnormality consists of an elevation of triglycerides in the blood.

The clinical features include hepatosplenomegaly and mental retardation. No treatment is available.

Progressive leukoencephalopathies. This group consists of several clinical syndromes characterized by a degeneration of the cortical white matter, with the onset varying from infancy to adulthood and even senility. The central pathological feature in all of them is the demyelination of the cerebral white matter, followed by a degeneration of the axon cylinders. In some cases there is an extension of the degenerative process to the cerebellum and the basal ganglia. The histopathological findings may be demonstrable in the biopsy material of the brain.

The genetic mode of transmission is autosomal recessive, except for Merzbacher-Pelizaeus disease, which is transmitted by a sex-linked recessive gene. Schilder's disease may often occur sporadically.

The clinical course is characterized by progressive dementia, developmental regression, hypotonia, spasticity, ataxia, cortical blindness and deafness, convulsions, and paroxysmal attacks of laughing. The nature of the clinical symptoms depends on the localization of the degenerative process. The prognosis is usually hopeless, and no treatment is available.

The four variations of this disorder are not always distinguishable from each other, and their classification is based primarily on the time of onset and the duration of the illness. Sometimes the clinical course is so acute as to suggest an encephalomyelitis. Some cases, however, manifest remissions lasting for years, during which progress of the disease is arrested.

Schilder's disease may begin at any age but is more common in older children and adults. There is demyelination of cerebral white matter to sudanophilic neutral fat. Long tract signs, such as spastic paraparesis or tetraparesis, are usually the first symptoms, followed by cortical blindness and deafness, convulsions, and dementia. Some cases are reported as responding to steroids, but caution is indicated in evaluation of these reports. The disease is chemically identical to, but clinically different from, multiple sclerosis.

In Krabbe's disease the developmental regression begins in the 1st year of life. The biopsy material of the brain contains peculiar multinucleated giant cells, globoid cells containing glycolipids.

Metachromatic leukodystrophy, histochemically, is characterized by demyelination and accumulation of metachromatic sulfatide in the brain and peripheral nerves. The metachromatic material may be demonstrable in the urinary sediment or by Austin's fluff test. The onset is usually in the first 2 years of life, but the disease may begin later, even in adulthood. The clinical course leads progressively to dementia and neurological deterioration.

In Merzbacher-Pelizaeus disease, the onset is usually in the first years of life, beginning with ataxia and nystagmus, followed by a progressive dementia, spasticity, and rigidity.

Disorders of carbohydrate metabolism

Galactosemia. Galactosemia is transmitted by an autosomal recessive gene. Its metabolic defect, detected in 1956 by Kalckar et al., consists of the inability to convert galactose to glucose, because of the enzymatic defect of galactose 1-phosphate uridyl-transferase. This is absent in the liver and in red blood cells, the latter fact being very helpful in substantiating the diagnosis in early infancy.

The urinary findings include the presence of galactose and general amino aciduria. The reducing substances in the urine may be detected by the use of Benedict's solution and Clinitest tablets but not by the use of Tes-Tape, which is specific only for glucose. The heterozygous carriers can be detected by a galactose tolerance test, but the tolerance test may also be abnormal in infants recovering from severe diarrhea and in patients with liver disease or hyperthyroidism.

Galactosemia, like PKU, is a fine example of rewarded combined effort in basic and applied research. The pinpointing of the exact location of the enzymatic defect, circumvention by dietary adjustment, and early detection, which allows for a prevention of serious brain damage, are held out as an example and a promise to researchers in other metabolic disorders.

The clinical manifestations begin after a few days of milk feeding and include jaundice, vomiting, diarrhea, failure to thrive, and hepatomegaly. If untreated, the disease may be fatal within a short time, or it may lead to progressive mental deterioration, associated with cataracts, hepatic insufficiency, and occasional hypoglycemic convulsions.

A galactose-free diet, instituted early, prevents all clinical manifestations and allows normal physical and mental development. Moderate amounts of milk may be reinstituted under careful monitoring at the beginning of school age, since the patients usually develop alternate metabolic pathways of galactose metabolism.

Glycogen storage disease (Van Gierke's disease). There are several forms of this autosomal recessive metabolic disorder of glycogen metabolism, involving several essential enzymes. The variant most frequently associated with mental retardation is the neuromuscular form of glycogenosis characterized by glycogen storage in the nerve cells, muscles, and other tissues, such as of the liver, heart, kidneys, adrenals, and the reticuloendothelial system.

The clinical manifestations usually begin in the neonatal period and include hepatomegaly, failure to thrive, acidosis, frequent hypoglycemic convulsions, and mental retardation. Hypotonia and heart involvement leading to cardiac failure are often encountered. Only symptomatic treatment for this disorder is available.

McQuarrie type of hypoglycemia. The mode of transmission in this metabolic abnormality is autosomal recessive. The major feature is a recurrent hypoglycemia associated with convulsions and coma, caused by a deficiency of alpha cells in the pancreas. The symptoms appear early in life, often shortly after birth, and lead to progressive mental retardation. Therapy with adrenocorticotrophic hormone (ACTH) or glucagon is effective and prevents mental retardation.

Leucine-sensitive hypoglycemia. This rare autosomal recessive condition is characterized by episodic hypoglycemia, associated with coma and convulsions, following ingestion of leucine, an amino acid commonly found in the diet. Mental retardation develops if the condition is not recognized and treated. Hypoglycemia following a leucine tolerance test is diagnostic for this disease. Treatment is dietary and consists of a low protein diet or a leucine-deficient diet.

Fructose intolerance. The genetic pattern is autosomal recessive in this disorder, which is characterized by episodes of

hypoglycemia after the intake of fructose or sucrose. The nature of the biochemical defect is still uncertain but may involve a deficiency in liver aldolase. Mental retardation results in unrecognized and untreated cases but may be prevented by dietary measures, which consist of a replacement of sucrose and fructose by other sugars.

Sucrosuria and hiatus hernia. It is yet uncertain whether this represents a genetic disorder. The characteristic findings include sucrosuria following a normal diet, esophageal hernia, and mental retardation. Omission of sucrose in the diet is not effective in preventing mental deterioration.

Miscellaneous metabolic disorders

Idiopathic hypercalcemia. The pattern of inheritance in this disorder is that of an autosomal recessive trait, and hypersensitivity to vitamin D probably represents the metabolic aberration. The serum calcium is elevated but may be occasionally normal, and suspicion may be ruled out only after three or four determinations.

The clinical features include irritability, mental retardation, a peculiar elfin facial appearance, short stature, hypotonia, hypertension, strabismus, and nephrocalcinosis.

Several therapeutic approaches are in use, of which the maintenance of patients on cortisone is the most commonly used in this country. The more severe form of the illness does not respond to therapy and often leads to early death or progressive mental deterioration.

Hypoparathyroidism. The etiology of hypoparathyroidism is obscure, but a familial tendency has been reported. The onset in most cases is during childhood. Early diagnosis and early institution of treatment may prevent physical and mental deterioration.

The metabolic error consists of a deficient production of parathyroid hormone by the parathyroid gland. Laboratory findings include elevated phosphorus and diminished calcium levels in the blood. Administration of Parathormone restores blood calcium and phosphorus to normal levels, which is of diagnostic value.

The clinical picture is dominated by episodic tetany and tonic convulsions. X-rays may reveal calcifications in the brain with a predilection for the basal ganglia. Symptoms of hypocalcemia and mental deterioration often develop in protracted cases.

Treatment in early recognized cases consists of administration of calcium and vitamin D or A T 10. In untreated cases of long standing, the mental deterioration is irreversible.

Pseudohypoparathyroidism. The metabolic defect in this autosomal recessive disorder resides in the renal tubules. They fail to inhibit reabsorption of phosphorus in response to Parathormone, which is produced in normal quantity. The laboratory findings are similar to those in hypoparathyroidism.

The illness is characterized by tetany, convulsions, intracranial calcifications, a peculiar round face, and many skeletal abnormalities, particularly of the hands. Mental retardation follows the repeated seizures. Treatment includes vitamin D and calcium.

Pseudo-pseudohypoparathyroidism. The autosomal recessive metabolic abnormality still bearing this cumbersome name produces signs similar to pseudohypoparathyroidism, including mental retardation, despite a normal blood level of both calcium and phosphorus. No treatment is available.

Goitrous cretinism. Cretinism as a condition associated with mental retardation has been known since antiquity. Throughout modern history up to the middle of the 19th century, all forms of mental retardation were considered as variants of this condition.

The classical endemic variety occurs in certain regions as a result of iodine deficiency in the diet. Sporadic athyreosis, congenital absence of the thyroid gland, is the common variety in this country and may be caused by transplacental transmission of immune bodies against thyroid from the mother.



FIGURE 1. Inadequately treated cretinism in a 5-year-old boy. (Courtesy of Dr. Richmond S. Paine, Children's Hospital, Washington, D.C.)

Other varieties of sporadic cretinism occurring in individuals with adequate iodine intake have attracted a lot of attention lately. Several variants are described, all resulting in faulty synthesis of thyroid hormone but associated with varying metabolic defects determined by autosomal recessive genes. Listed among the biochemical abnormalities in asymptomatic heterozygous carriers are the absence of dehalogenase, a defect in production of thyroxine in the thyroid gland, and a defect in the deiodinating moniodotyrosine. In some cases associated with deafness, a disposition to various thyroid disorders in the patient's relatives was reported.

The clinical signs in all varieties include hypothyroidism, goiter (except in athyreosis), dwarfism, coarse skin, disturbances in ossification, hypertelorism, and a large tongue (see Figure 1). Mental retardation becomes a part of the clinical picture if the disease is unrecognized and untreated in infancy. This is explained by the essential role that thyroxine plays in the formulation of structural proteins and lipids in the central nervous system during early infancy. The children are sluggish, their voices hoarse, and speech does not develop. Among the laboratory findings are a low basal metabolism rate, depressed protein-bound iodine, and a high cholesterol level. The radioactive iodine uptake is low, except in the variety reported by Stanbury, which is recessively inherited.

Treatment with thyroid extract may avert most of the symptoms if instituted early in life. It is not effective in adult cretins. Endemic goitrous cretinism is treated and prevented by the ingestion of small amounts of iodine.

Crigler-Najjar disease (familial nonhemolytic jaundice). This defect in the bilirubin metabolism in the liver produces a

nonhemolytic jaundice and represents an autosomal recessive trait. The indirect bilirubin in the serum is elevated, which leads to a gradual development of brain damage (kernicterus) and mental deterioration.

Pyridoxine dependency. The exact mechanism in this autosomal recessive disorder is unknown, but it probably involves some enzyme system in which pyridoxine (vitamin B₆) acts as a coenzyme. The affected infants have abnormally high pyridoxine requirements.

The clinical symptoms consist of seizures accompanied by EEG changes beginning toward the end of the 1st week of life. If the condition remains untreated, it results in spasticity and mental deficiency.

The diagnosis may be established by intravenous administration of 100 mg. of pyridoxine, which results in a dramatic cessation of seizures and improvement in the EEG. Therapeutically, the addition of 10 mg. of pyridoxine to the daily diet is required to keep the patient symptom-free.

Wilson's disease (hepatolenticular degeneration). This disorder of copper metabolism has a recessive mode of inheritance. The two variants of this disease, the juvenile and the adult forms, are inherited independently as separate entities.

The biochemical changes are similar in both forms and consist of a diminished blood level of copper-containing ceruloplasmin. This is accompanied by excessive copper deposits in various tissues, chiefly in the liver and the brain. The resulting liver cirrhosis and degeneration of the lenticular nucleus gave the disease its name. Other laboratory findings include an elevated copper excretion in the urine and amino aciduria involving primarily the aromatic amino acids (phenylalanine, tyrosine,

and threonine). The latter is being explained on a basis of kidney damage due to copper deposits or blamed on a defect in a copper-containing enzyme, tyrosinase.)

The heterozygous carriers are asymptomatic but often manifest abnormal levels of ceruloplasmin in the blood and a tendency to various hepatic difficulties. A copper-loading test is available for detection of heterozygous carriers.

The clinical signs in both forms of the disease include cirrhosis of the liver, progressive emotional and mental deterioration, pseudobulbar palsy, fatuous facial expression, spasticity, and a greenish brown ring in the iris (Kayser-Fleischer ring).

The juvenile form begins between the ages of 7 and 15. Inattentiveness in school and dystonia are usually the first signs. This form is usually unresponsive to treatment, since the dystonia is related not to copper deposits but to hepatic dysfunction, which causes brain damage to the basal ganglia. The nature of the relationship between the hepatic disorder and the brain damage, found also in other liver diseases, is unknown.

The adult form usually begins with tremors and dysarthria but may begin with psychiatric symptoms. It has a good prognosis. There are several treatment methods available, all aiming at lowering the serum copper level and increasing the urinary copper excretion. Penicillamine, a copper-chelating amino acid derived from penicillin, is presently the most effective therapeutic agent. Penicillin-sensitive patients may require the concomitant administration of steroids. Dimercaprol (British anti-lewisite; BAL) is also used with fair results.

Gargoylism (Hurler's disease). Most cases of this disorder are transmitted by an autosomal recessive gene, but sex-linked recessive transmission involving only males has also been observed. The basic metabolic disturbance, the nature of which is still unknown, results in the accumulation of a mucopolysaccharide, chondroitin sulfate B, and glycolipids in the brain, liver, spleen, and connective tissue.

The biochemical findings include chondroitin sulfate in the urine and characteristic foam cells in the blood and bone marrow; the lymphocytes contain metachromatic inclusions, and X-rays show several characteristic abnormalities, such as elongation of the sella turcica, beaking of the thoracic spine on the lateral view (kyphosis), club-shaped lower ribs, thickening of the long bones, misshapen metacarpal bones and phalanges, and skull malformations (see Figure 2).

The clinical course is slow and progressive and starts usually at a very early age, leading to death before adolescence. The hepatosplenomegaly causes abdominal enlargement. The stature is dwarfed, and the face acquires a peculiar appearance that gave rise to the name of the disease. The facial characteristics include bushy confluent eyebrows, thick lips, large tongue, and coarse features. The spadelike hands and sometimes hypertelorism and hydrocephalus complete the picture. There is nearly always a progressive mental deterioration, which often precedes the characteristic facial appearance. No treatment is available.

The differential diagnosis may present some problems. The superficial resemblance to cretins is easily ruled out by x-ray findings and by the hepatosplenomegaly as well as biochemical findings. Gargoylism may also resemble Morquio's disease, a hereditary condition characterized by skeletal deformities and dwarfism without impairment of mental development.

Chromosomal aberrations. Lejeune's discovery in 1959 of the existence of 47, instead of 46, chromosomes in patients with Down's syndrome (mongolism) ushered in a new, exciting era of cytogenetic research. The introduction of new, simplified techniques permitted the study of chromosomal patterns in large populations, which led to the discovery of many abnormalities often associated with mental retardation. The degree of mental retardation is usually



FIGURE 2. Two brothers with Hurler's disease (gargoylism). Note the characteristic facies and the hepatosplenomegaly. (Courtesy of Dr. Richmond S. Paine, Children's Hospital, Washington, D.C.)

more severe in autosomal aberrations and milder in sex chromosome aberrations. With the exception of Down's syndrome, the reported number of patients with chromosomal disorders is rather small, but the great scientific interest in their study is due to the hope of finding a key to the mapping of genetic loci for various enzymes, an important step for the better understanding of inborn errors of metabolism and other genetic disorders. There have been some exciting recent findings by Paine and others of deviations in various enzymatic levels in Down's syndrome that may help identify the genetic loci on chromosome 21. Such findings represent another step toward the better understanding of genetic activity and its correlation with clinical findings. Many similar clinical features are found in several seemingly unrelated chromosomal syndromes.

Autosomal disorders

a. Down's syndrome (mongolism): Since the classical description of mongolism by the English physician Langdon Down in 1866, this syndrome has remained the most discussed, most investigated, and most controversial in the field of mental retardation. Its etiology still remains obscure, despite a plethora of theories and hypotheses advanced with variable acclaim in the last 100 years. There is agreement on very few predisposing factors in chromosomal disorders, among them increased age of the mother and possibly increased age of the father and x-ray radiation. The problem of etiology is complicated even further by the recent recognition of three distinct types of chromosomal aberrations in Down's syndrome:

1. Patients with trisomy 21 (3 of chromosome 21 instead of the usual 2), who represent the overwhelming majority of mongoloid patients, have 47 chromosomes, with an extra chromosome 21. The karyotypes of the mothers are normal. A nondisjunction during meiosis, occurring for yet unknown reasons, is held responsible for this disorder.

2. Nondisjunction occurring after fertilization in any cell division will result in mosaicism, a condition in which both normal and trisomic cells are found in various tissues.

3. In translocation, there is a fusion of two chromosomes, mostly 21 and 15, resulting in a total of 46 chromosomes in affected patients, despite the extra chromosome material. This disorder, unlike trisomy 21, is usually inherited, and the translocation chromosome may be found in unaffected parents and siblings. These asymptomatic carriers have only 45 chromosomes.

Recent biochemical studies in Down's syndrome revealed increased levels of galactose 1-phosphate uridyltransferase and of acid and alkaline phosphatases, elevated activity of glucose 6-phosphate dehydrogenase and 5-nucleotidase, and diminished blood serotonin levels. These abnormalities were found only in the trisomic type. The enzyme levels were in the high normal range in the translocation type of the disease, a fact that may differentiate these two varieties without the cumbersome chromosomal studies. These biochemical findings suggest that the surplus genetic material in mongolism results in a derangement of genetic homeostasis, involving many genes or gene complexes. The question of the prime cause of this metabolic derangement awaits further clarification.

The incidence of Down's syndrome in the United States is approximately 1 in every 700 births. Down, in his original description, mentioned the frequency of 10 per cent among all mentally retarded patients. Interestingly enough, the frequency of patients with Down's syndrome in institutions for the mentally retarded today also approximates 10 per cent. In a middle-aged mother (over 32 years), the risk of having a

mongoloid child with trisomy 21 is about 1 in 100, but when translocation is present, the risk is about 1 in 3. These facts assume special importance in genetic counseling. Occasionally Down's syndrome is associated with acute lymphatic leukemia.

The neuropathological findings are limited to a tendency toward embryonic convoluted patterns of the brain, a small cerebellum and brain stem, abnormalities of the pituitary gland and irregular disposition of ganglion cells in the third cortical layer. Cardiac anomalies, particularly septal defects, are often found, as is hypogonadism.

Mental retardation is the overriding feature of Down's syndrome. The majority of patients belong to the moderately and severely retarded groups, with only a minority having an I.Q. above 50. According to many sources, patients with Down's syndrome are placid, cheerful, and cooperative, which facilitates their adjustment at home. The picture, however, seems to change in adolescence, especially in institutions, where a variety of emotional difficulties, behavior disorders, and (rarely) psychotic illnesses may be seen.

The diagnosis is made with relative ease in an older child but is often difficult in newborn infants. The most important signs in newborns include general hypotonia, oblique palpebral fissures, abundant neck skin, small flattened skull, high cheekbones, and a protruding tongue. The hands are broad and thick with a single palmar transversal crease, and the little fingers are short and curve inward (see Figure 3). Moro's reflex is weak or absent.

There are over 100 signs or stigmata described in Down's syndrome, but they are rarely found all in one individual. In addition to the signs enumerated above, among the most frequently encountered are a high cephalic index, epicanthal folds, fissured tongue, dwarfed stature, small rounded ears, strabismus, white speckling of the iris (Brushfield spots), and lax ligaments. The dermal ridges on the palms and soles have



FIGURE 3. Child with Down's syndrome (mongolism). Note the facial features, the single palmar crease, and the short and incurved little fingers. (Courtesy of Dr. Beale H. Ong, Children's Hospital, Washington, D.C.)

a characteristic configuration, which is often diagnostic. Occasionally, one sees a patient with only a few of these stigmata, looking relatively normal. Many of these have normal or even superior intelligence.

Life expectancy used to be about 12 years. But with the advent of antibiotics, few young patients succumb to infections, and one may contemplate a normal or near normal life expectancy for most patients. Despite numerous therapeutic recommendations, no treatment has proved to be effective.

b. Cat-cry syndrome (*cri du chat*): This aberration consists of a missing part of the fifth chromosome. The affected children are severely retarded and show many stigmata often associated with chromosomal aberrations, such as microcephaly, low set ears, oblique palpebral fissures, hypertelorism, and micrognathia. The characteristic catlike cry—due to laryngeal abnormalities—which gave this syndrome its name, gradually changes and disappears with increasing age.

c. Trisomy 13: This abnormality is also known as holoprosencephaly and is characterized by rudimentary olfactory lobes. The term arhinencephaly was used in the past. Among the clinical signs are low set ears, cleft palate, cleft lip, sloping forehead, single transversal palmar crease, polydactyly, and abnormal dermal patterns. Many associated congenital defects have been described. The patients are mentally retarded and often have minor motor seizures and apneic spells.

d. Trisomy 18: This abnormality occurs with a frequency of 1 in 500 live births. X-ray radiation of the gonads prior to conception has been suggested as the causative factor. The cases reported to date show a preponderance of females (80 per cent). The clinical picture includes mental retardation, low set ears, micrognathia, cardiac anomalies, prominent occiput, hypotonicity at birth followed by hypertonicity, short stature, equinovarus, and overriding fingers and toes. As in other chromosomal aberrations, there is a characteristic dermatoglyphic pattern.

Anomalies of the sex chromosomes. As a group, these disorders are associated with milder forms of mental retardation and sometimes with normal and even superior intelligence.

a. Klinefelter's syndrome: The male patients with this disorder have testicular atrophy evident at puberty and signs of feminization, such as gynecomastia. Their karyotypes usually show an XXY pattern. There is a darkly stained Barr chromatin body in the nuclei of the cells on the nuclear membrane; this is a female nucleus pattern dependent on there being two X chromosomes, one of which is genetically active and the other inactive and constituting the nuclear sex chromatin body, according to the Lyon hypothesis.

Other variants with similar physical characteristics have been detected, mostly among institutionalized mentally retarded. Their sex chromosome pattern shows a wide range of aberrations, such as XXXY, XXXXY, and XYYY. There are frequent mosaics and associations with autosomal trisomies.

The degree of mental retardation in all these patients may vary from mild to severe, but many of them have normal intelligence. The patients are generally cooperative but may develop serious social and body image difficulties, leading sometimes to social withdrawal, serious difficulties in adjustment, especially in adolescence, and paranoid tendencies.

b. Ovarian dysgenesis (*Turner's syndrome*): The main clinical features of this disorder are small stature, webbed neck, and cubitus valgus. The chromosomal pattern is usually XO, and only a minority of the patients are mentally retarded.

A greater preponderance of mental retardation of mild to moderate degree is found among the so-called super females, most of whom have no physical abnormalities, but they do have three X chromosomes, giving them a total of 47. A smaller group exists with four X chromosomes, for a total of 48.

Neuropathological aspects of prenatal developmental anomalies. The exact nature of the damage or malformation of the central nervous system underlying mental retardation is often difficult to assess. The reaction of the immature nervous tissue differs from the reaction of adult tissue to injury and disease, and the telltale signs of previous destruction in the form of an overgrowth of neuroglial and connective tissue are often missing. The effects of endogenous genetic disturbances may be indistinguishable from those of exogenous origin. The remarkable recovery potential of the immature brain may account for the often striking discrepancy between the degree of retardation and the relative paucity of neuropathological finding. Conversely, intellectual function may be normal in the presence of significant brain damage.

The time of the insult to the CNS, the nature of the injurious agent, and the extent of tissue recovery are the decisive factors in determining the ultimate extent and effect of the CNS damage. However, its final form, available to investigation, may not give precise clues as to the time and duration of the injury. In fact, it is often difficult to distinguish between an abrupt arrest of development and a more gradual delay in maturation.

Structural damage may vary a great deal in response to the same noxa. For instance, the effects of German measles on the fetus may range from deafness through microcephaly and hydrocephalus to fetal death. In addition to the stage of embryogenesis at the time of maternal infection, there are still many, largely unexplored, factors responsible for these wide variations.

Present knowledge is still limited as to the etiology of most intrauterine malformations of the brain, the incrimination of x-ray radiation and German measles being the only exceptions. The mechanism of brain damage in the neonatal period is more predictable, with a characteristic response of the brain tissue to ischemia and asphyxia, which produce structural lesions in the cortical and subcortical tissues. The infant in the neonatal period severs his dependence on the maternal circulation and thus becomes vulnerable to toxic substances that were formerly cleared and removed by the maternal circulatory system. This explains the fact that most of the inborn errors of metabolism do not become manifest until the neonatal period, and structural CNS damage may be prevented by early treatment. The postnatal period is also characterized by a rapid myelination marked by the appearance of various disorders of fat metabolism affecting the central nervous system.

Autosomal dominant disorders. These anomalies are determined by single dominant genes of variable expressivity and penetrance and are rare, since many of those afflicted are infertile. The clinical picture varies greatly, and mild forms with minimal signs and only mild mental retardation are often seen. In

addition to cerebral defects, these disorders involve ectodermal, visceral, and skeletal anomalies.

a. Dystrophia myotonica: Wasting and weakness of muscles of the extremities, face, jaw, and neck are the main characteristics of this disorder. Cataracts, alopecia, and testicular atrophy are found in some cases. All symptoms usually appear in young adults and are often accompanied by moderate to severe mental retardation.

b. Epiloia (tuberous sclerosis): This autosomal disorder may manifest itself with great variability, probably due to the irregularity of the abnormal gene or to the influence of additional modifying genes. The skin lesions consist of sebaceous adenomata, red on the face, and brownish white on the rest of the body. Throughout the cerebral cortex in the lateral ventricles and in the cerebellum, multiple nodules are found, of rubber consistency, composed mainly of glial tissue, with some giant undifferentiated nerve cells. In addition, tumors are found in various parts of the body, such as rhabdomyoma of the heart, mixed kidney tumors, hepatic fibrolipoma, and retinal nerve tumors. (See Figure 4.)

The clinical picture is often complicated by systemic manifestations, such as cardiac failure, respiratory disease due to pulmonary cysts, and retinal involvement. The degree of mental retardation may vary from mild to very severe, and other signs and symptoms show similar variability. Of special interest are cases with psychotic symptoms, often with only moderate retardation.

The prognosis varies with the degree and location of the systemic involvement. Mild forms of the disease may occur with only minimal skin involvement or epilepsy. X-ray of the skull may reveal multiple calcification.



FIGURE 4. Sebaceous adenomata on the face in tuberous sclerosis. (Courtesy of Dr. Richmond S. Paine, Children's Hospital, Washington, D.C.)



FIGURE 5. Neurofibromatosis. Note the *café au lait* spots over the trunk. (Courtesy of Dr. Richmond Paine, Children's Hospital, Washington, D. C.)

Treatment is limited to anticonvulsant medication, which is usually effective in controlling the seizures.

c. Neurofibromatosis (von Recklinghausen disease): The main features of this disorder are small brown patches distributed over the entire body along the course of subcutaneous nerves, autonomic nerves, and nerve trunks. Sensory nerves are usually more affected. Astrocytomas, ependymomas, and meningiomas may be found in the brain. The skin manifestation usually begins in childhood and may include large skin polyps and *café au lait* spots over the trunk and extremities (see Figure 5). Acoustic or optic nerve glioma may also occur. In addition to the skin manifestations, the clinical picture includes epilepsy and, in about 10 per cent of cases, mental retardation as well.

Anticonvulsant medication and neurosurgery may sometimes be effective, because of the benign nature of the tumors.

d. Encephalofacial angiomatosis (Sturge-Weber disease): This disorder is believed to be due to an irregularly dominant gene, but the exact mechanism of hereditary transmission is not yet clear. In its classical form, the syndrome includes a facial nevus in the distribution of the fifth cranial nerve, buphthalmos, hemiparesis of the contralateral extremities, convulsions, and mental retardation. The convulsions and mental retardation are due to intracranial angiomata, which often become calcified and may be radiologically demonstrated. Neurosurgical intervention has been attempted but is rarely successful.

e. Retinocerebellar angiomatosis (Hippel-Lindau disease): Familial occurrence of this rare disorder has been reported. The

pathological findings consist of angiomas in the cerebellum and the retina. The clinical picture includes mental retardation and cerebellar signs.

f. Arachnodactyly (Marfan's syndrome): Arachnodactyly is an inheritable disorder, probably transmitted by a single, dominant gene of variable expressivity. It involves changes in many parts of the body, chiefly in the skeletal, cardiovascular, and ocular structures. The patients are tall, have long extremities with long, spider-like fingers and toes, coloboma, bilateral lens dislocation, and cardiac anomalies. The accompanying mental retardation is usually mild.

g. Sjögren's disease: This rare disease is transmitted by a dominant autosomal gene. Its clinical features include mental retardation, congenital cataracts, and ataxia.

h. Congenital ichthyosis: Several variants of this skin disorder have been described. The clinical picture is characterized by generalized scaliness, associated with spastic diplegia or epilepsy in the form of generalized motor seizures. The mental retardation varies from moderate in cases with epilepsy to severe in cases with spastic diplegia.

i. Chondrodystrophy (achondroplasia): This disorder is characterized by very short limbs due to a disturbed ossification of the cartilage. The head is often large, and the accompanying mental retardation is usually mild.

j. Craniosynostosis: This group includes several conditions characterized by premature closure of cranial sutures, skull deformities, and brain damage due to increased intracranial pressure. Allen includes in this group the formerly separate syndrome of Crouzon (craniofacial dysostosis). The etiology of most cases is still unknown, but a dominant mode of inheritance was reported in some instances, with a familial tendency to the same type of anomaly. Since not all the cranial sutures are necessarily involved, the shape of the skull may vary greatly. Its normal growth is inhibited in a direction perpendicular to the obliterated suture line, and compensatory growth takes place in other directions. The degree of brain damage may

depend on the ultimate size rather than shape of the skull, but an associated brain anomaly may exist in some cases. A premature fusion of multiple sutures will result in increased intracranial pressure during the critical first 2 years of rapid brain growth.

The elongated cranium (dolichocephaly) is most common. The broad skull (brachycephaly) represents another variant. Obliteration of all cranial sutures results in a pointed skull (acrocephaly). Several facial and orbital deformities may be associated with various forms of craniosynostosis, such as hypertelorism, shallow orbits resulting in exophthalmos, a beak-shaped nose, choanal atresia, and several others. Syndactyly is often associated with acrocephaly.

The infants may be normal at birth but, during infancy, begin to manifest a variety of signs and symptoms due to increased intracranial pressure: papilledema, optic atrophy, vomiting, and seizures. Mental retardation often follows. The severity of the clinical picture rises in inverse proportion to the time of the fusion. X-rays of the skull may show digital markings due to increased intracranial pressure and calcification of the intercranial sutures. Surgical separation of the cranial bones may be effective if done early, before permanent brain damage occurs.

k. Hypertelorism: This disorder is characterized by a very wide distance between the eyes, which may be seen in several other disorders. Familial occurrence of this disorder indicates a dominant mode of inheritance in most cases, but some cases with a recessive mechanism have been reported.

In addition to the ocular feature, the patients manifest a flat nasal bridge, external strabismus, and sometimes a vertical midline groove in the forehead. The mentality ranges from normal to moderate retardation. Some retarded patients with this anomaly have hyperamino aciduria. Convulsions may occur.

l. Nephrogenic diabetes insipidus: This disorder is usually restricted to males and is counted by some among the sex-linked dominant genetic disorders. The defect lies in the renal tubules and leads to periodic dehydration. Mental retardation and delay in growth are frequent.

Developmental anomalies due to recessive or unknown genetic mechanism

a. Anencephaly: The etiology of this lethal anomaly is unknown, but it is believed by some to be an autosomal recessive disorder. It is one of the most common congenital brain malformations, and its incidence ranges between 0.5 and 3.7 per 1,000. The anencephalic fetus usually succumbs during delivery or shortly thereafter. The pathological findings include an absence of the cranial vault and most of the central nervous system or at least the absence of both cerebral hemispheres.

b. Hydranencephaly: This condition of unknown etiology is characterized by the absence of the cerebral cortex but intact meninges and cranium, the latter filled with clear fluid. The infant may live for several weeks or even a few months and may appear normal at birth. Shortly thereafter, however, he develops convulsions and rigidity of the extremities, and the head enlarges rapidly. Pneumoencephalogram and transillumination of the head are usually diagnostic.

c. Porencephaly: This disorder is characterized by cystic formations in the cerebral hemispheres, communicating sometimes with the ventricular system or subarachnoid space. The defects vary in size and shape, and the clinical picture depends on the amount of remaining functional cortical tissue. The patients who survive early childhood are usually bedridden, have bilateral hemiplegia or tetraplegia, and are either severely or moderately retarded.

d. Microcephaly: Microcephaly is a purely descriptive term, covering a variety of disorders whose main clinical feature is a small, peculiarly shaped head and mental retardation (see Figure 6).

Microcephaly may be found in 20 per cent of the institutionalized mentally retarded population. The etiology varies



FIGURE 6. Infant with microcephaly. (Courtesy of Dr. Richmond S. Paine, Children's Hospital, Washington, D.C.)



FIGURE 7. Setting sun sign in hydrocephalus. (Courtesy of Dr. Richmond S. Paine, Children's Hospital, Washington, D. C.)



FIGURE 8. Setting sun sign in a normal premature infant. (From Paine, R. S. Neurological conditions of the neonate. *Pediat. Clin. N. Amer.*, 8: 578, 1961. Reproduced with the permission of the author and the W. B. Saunders Company.)

greatly and includes a hereditary group, one due to intrauterine influences, and one due to insults in the perinatal or postnatal period.

The hereditary group is relatively uncommon and includes several varieties, all with an autosomal recessive mode of transmission with one exception—that described by Paine, which follows a sex-linked recessive pattern and is associated with generalized hyperamino aciduria. The clinical picture of the hereditary microcephalics varies but generally is milder than in acquired microcephaly. The patient's small head and birdlike face contrasts with an undersized but relatively well developed body. Only a minority in this group have disturbance in motor functions, and they are usually severely retarded. The rest fit into the moderately retarded group.

Microcephaly due to intrauterine influences comprises a far larger group. The etiology includes x-ray radiation during pregnancy, maternal rubella, toxoplasmosis, maternal diabetes and, cytomegalic inclusion body disease. These variants often have severe neurological abnormalities in the motor and sensory area that range from a mild spastic paralysis with general delay in development to a spastic tetraplegia or blindness, associated with profound mental retardation. Convulsions occur in this group with great frequency. The etiology is often indicated by associated pathological findings, characteristic of the causative agent. These include deafness, microphthalmia, cataracts, cardiac anomalies, hepatosplenomegaly, and many others.

In the perinatal and postnatal group the microcephaly is caused by fetal anoxia, episodes of cardiac arrest, or uncontrolled seizures.

The brain in all types of microcephaly is very small and presents a generalized maldevelopment of the cerebral convolutions and disorganization of the cortical structure of varying degrees. Some cases show intracranial calcifications and cortical atrophy.

e. Macrocephaly: The unusually large size of the brain in this disorder is due primarily to the proliferation of the glial tissue in the white matter of the hemispheres. The clinical features include mental retardation, epilepsy, and disturbances of vision.

In agyria and pachygyria, the convolutions of the brain are

absent or maldeveloped. Both anomalies are associated with a severe degree of mental retardation.

f. Hydrocephalus: This name covers a number of conditions having in common an increase in the cerebrospinal fluid, resulting in the enlargement of the head or the ventricles. This group of disorders is listed here because one of its variants, usually due to atresia of the aqueduct, has a sex-linked recessive mode of inheritance. Many cases, however, are due to developmental malformations of undetermined origin, including atresias of the foramina of Magendie and Luschke and of the aqueduct Sylvii, and Arnold-Chiari malformation. The latter is a medullary-cerebellar anomaly, often associated with spina bifida, meningocele, displacement of the medulla into the cervical canal, and occasionally cortical defects. The cases of hydrocephalus that follow viral, bacterial, or aseptic meningitis are due to obstructing fibrosis of the arachnoid tissue.

The abnormality is seldom noted until the 2nd or 3rd month of life, when a rapid enlargement of the head circumference makes its first clinical appearance. The fontanelle becomes tense, and the cranial sutures widen. The head enlarges in all directions. Symptoms of increased intracranial pressure, such as vomiting, papilledema, and rigidity, soon follow. Progressive hydrocephalus leads to dilation of the lateral ventricles, cortical atrophy, and many severe neurological symptoms; it often ends in complete mental and physical deterioration. In milder cases the condition may become spontaneously arrested, and the afflicted children may be only mildly retarded and even have normal intelligence in some cases (see Figures 7 and 8).

g. Agenesis of the corpus callosum: This rare disorder is characterized by the partial or total absence of the great commissure connecting the cerebral hemispheres. This anomaly may be associated with other cerebral defects, such as porencephaly, microgyria, and hydrocephalus. The etiology is unclear, but some cases are believed to be genetically determined.

The clinical picture varies with the extent of associated brain anomalies. Mental retardation of varying severity and major, minor, or focal seizures are common. Other neurological disturbances may occur, such as spastic diplegia, hemiparesis, athetosis, and optic atrophy. The pneumoencephalogram

shows several characteristic features, of which the marked separation of the lateral ventricles is one.

h. **Congenital mental retardation:** This large group includes a great variety of mentally retarded children who do not fit into any known clinical category. In addition to mental retardation already evident in early infancy, they may display a variety of nonspecific neurological signs, but many are asymptomatic. Autopsies may reveal many neurological changes, which do not follow a regular pattern.

The etiology of most of these cases is obscure and probably includes genetic influences, developmental arrest, and toxic infectious agents. It is to be hoped that, with increased knowledge, this "wastebasket" group will rapidly dwindle. The last 2 decades witnessed a good start in this direction.

i. **Laurence-Moon-Biedl syndrome:** This disorder usually follows an autosomal recessive mode of transmission, but some sex-linked tendency may be suspected from a higher frequency in males.

The main features include mental retardation, retinitis pigmentosa, obesity, hypogenitalism, polydactyly, and deaf-mutism.

Maternal infections during pregnancy

Syphilis. Syphilis in pregnant women used to be a major cause of a variety of neuropathological changes in their offspring, including mental retardation. Today the incidence of syphilitic complications of pregnancy fluctuates with the incidence of syphilis in the general population. Some recent alarming statistics from several major cities in the United States indicate that there is still no room for complacency.

Rubella (German measles). This disease has replaced syphilis as the major cause of congenital malformation and mental retardation due to maternal infection. The children of affected mothers may present a number of abnormalities, including congenital heart disease, mental retardation, cataracts, deafness, microcephaly, and microphthalmia. Timing is crucial, since the extent and frequency of complications are in inverse proportion to the duration of pregnancy at the time of maternal infection. When mothers are infected in the 1st trimester of pregnancy, 10 to 15 per cent of the children will be affected, and the incidence rises to almost 50 per cent when the infection occurs in the 1st month of pregnancy. The situation is often complicated by subclinical forms of maternal infection, which often go undetected.

Other diseases. Brain damage due to toxoplasmosis and cytomegalic inclusion body disease transmitted from the pregnant mother to the fetus is another universally recognized but relatively rare complication of pregnancy that often results in mental retardation and a variety of brain malformations. Damage to the fetus from maternal hepatitis has also been reported.

The role of other maternal infections during pregnancy—such as influenza, cold viruses, pneumonia, and urinary tract infections—in the etiology of mental retardation is at present under extensive investigation. The results are as yet inconclusive.

Complications of pregnancy. Toxemia of pregnancy and uncontrolled maternal diabetes present hazards to the fetus and may sometimes result in mental retardation. Maternal malnutrition during pregnancy often results in prematurity and other obstetrical complications. Vaginal hemorrhage, placenta previa, and premature separation of the placenta may be damaging to the fetal brain by causing anoxia. The same may be said about the prolapse of the cord.

The potential teratogenic effect of pharmacological agents administered during pregnancy was widely

publicized following the thalidomide tragedy. So far, with the exception of metabolites used in cancer chemotherapy, no usual dosages of drugs are known to damage the central nervous system of the fetus, but caution and restraint in prescribing drugs to pregnant women is certainly indicated.

Perinatal factors

Prematurity. Many studies point to prematurity as a major cause of disorders of the CNS that are often associated with mental retardation. Paradoxically, improvements in obstetrical techniques result in a higher survival rate of low birth weight infants, who are likely to be damaged, since there is an inverse relationship between the degree of damage and the weight at birth. Similarly, there is now a higher survival rate of brain-damaged children who are salvaged by improved obstetrical and pediatric methods.

Prematurity may result in intellectual deficits, sensory and motor handicaps, convulsive disorders, and learning and emotional difficulties. Only a minority of infants weighing less than 1,500 gm. (3 lb. 4 oz.) escape these sequelae.

Prematurity is more prevalent in low socioeconomic segments of the population. Its causes are many and include inadequate prenatal care, with resulting obstetrical complications, such as toxemia and pre-toxemic states; multiple births and illegitimate pregnancy; poor maternal nutritional status; mothers' smoking habits; and urinary infections.

Birth injury. This broad term covers all types of brain damage resulting from complications of labor or delivery. Some are due to mechanical trauma, others are due to anoxia, but most cases result from an interplay between these two factors.

Traumatic cerebral insults. These include cephalopelvic disproportion, breech delivery, abnormal presentations necessitating the use of mid-forceps and high forceps, and prolonged labor. They may result in subarachnoid and intraventricular hemorrhage, the latter occurring chiefly in prematures.

Anoxic factors. Anoxemia may occur before, during, and after delivery. Cesarean section and some of the obstetrical complications mentioned under prenatal factors may result in fetal anoxia due to a fall in systemic blood pressure. Changes in fetal heart rate, especially bradycardia, are the best indicators of fetal distress. Respiratory difficulties may be caused by mechanical factors, such as intratracheal mucus plug, or by fetal respiratory depression due to analgesic and anesthetic drugs administered to the mother during labor.

The neuropathological changes following birth injuries are varied and may be found in the cortex, the cerebellum, and the basal ganglia. The most common sequelae include destruction of cortical tissue, with resulting sclerosis, gliosis of white matter, calcification, and cystic cavitation.

Kernicterus. This name refers to yellow staining

of the basal ganglia, cerebellum, and brain stem, resulting frequently in cerebral palsy, mental retardation, and hearing deficit. The pigmentation is caused by the excess of nonconjugated (indirect) bilirubin, which is neurotropic, while the conjugated (direct) bilirubin does not enter the nerve cell, for still unexplained reasons. The conversion of indirect to direct bilirubin is effected through conjugation with glucuronic acid, mediated by the enzyme glucuronyl transferase.

Kernicterus follows some cases of neonatal jaundice, because of the low enzymatic activity of the newborn, especially the premature infant. It seldom develops unless the level of indirect bilirubin in the blood exceeds 20 mg. per 100 ml. The jaundice usually begins shortly after birth and becomes progressively more extensive, leading to hepatosplenomegaly, apathy, and neurological signs such as rigidity, inactivity, sometimes flaccidity, a high-pitched or feeble cry, poor Moro's reflex, downward deviation of the eyes, and poor feeding. These signs usually appear on the 3rd to 5th day after birth.

Erythroblastosis fetalis. This is the most common cause of nonphysiological jaundice and is due to mother-child incompatibility regarding the Rh factor, A or B, or (rarely) Kell, Kidd, and Duffy factors in the blood. The resulting breakdown of the infant red cells causes bilirubinemia and anemia. Stillbirth due to a generalized edema, hydrops fetalis, occurs in some cases.

Other causes. Neonatal sepsis, glucose 6-phosphate dehydrogenase deficiency, prematurity, administration of vitamin K, sulfonamides, salicylates, some antibiotics, and caffeine and sodium benzoate may all result in indirect hyperbilirubinemia. Exchange transfusion represents the most effective treatment and should be done repeatedly, if necessary, to keep the indirect bilirubin level in the blood below the critical 20 mg. per 100 ml. level. Exchange transfusion carries some risk to the infant, and the risk is greater in prematures. More judicious use of vitamin K, sulfonamides, antibiotics, and salicylates in newborn infants is definitely indicated.

Postnatal factors. Advances in antibiotic therapy that permit a higher survival rate of children with infections of the CNS have as a corollary a high frequency of neurological sequelae in the survivors. The extent of the damage varies from mild learning or behavioral disorders to severe dementia, and it depends on several factors, such as the severity of the infection, the nature of the microorganism, and the age of the child.

Purulent meningitis. This may be successfully treated in most cases if recognized early, but drug-resistant cases may lead to extensive destruction of brain tissue. Subdural effusion is one of many complications that may cause brain damage if unrecognized and untreated. Meningitis caused by pneumococcus usually results in the highest frequency of brain damage, and meningococcus meningitis is the most benign. Tuberculous meningitis also leaves many survivors with extensive chronic encephalopathy.

Viral meningoencephalitis. This group includes poliomyelitis, ECHO virus, Coxsackie virus, herpes simplex, and arthropod-borne encephalitis, still prevalent in some geographic areas. The clinical course varies a great deal, as does the extent of damage to the CNS. Infants run the greatest risk of

permanent sequelae, but recovery in even very severe cases is spectacular at times.

Aseptic meningoencephalitis. Aseptic meningitis is seen with the Coxsackie and ECHO viruses, mumps, and herpes simplex. It is usually benign and without residue. An exception is that, due to the herpes-simplex virus in the newborn period, which produces encephalohepatomyocarditis with a high fatality rate and usually damaged survivors.

Parainfectious encephalomyelitis involves small areas of perivenous demyelination but has a lesser inflammatory reaction and does not involve a demonstrable direct viral invasion of the central nervous system.

There is a major possibility of preventing many of these complications by immunization against measles and by performance of smallpox vaccination at the age when the statistical likelihood of involvement of the central nervous system is least—between 1 and 2 years of age. Steroid therapy may be of value in treatment, but this is still uncertain. The sequelae of these complications may include sensory and motor disabilities, convulsive disorders, and mental retardation.

Lead poisoning. This condition, which frequently leads to chronic encephalopathy and mental retardation, is still quite common in large cities among the disadvantaged population. Old houses in numerous slums, coated with lead-containing paints, and a faulty mother-child interaction, characteristic of children with pica, result in the still appallingly high number of permanently damaged children. Treatment with chelating agents such as Versene, followed by removal of the source of lead, may prevent residual damage.

Many other toxic substances accidentally ingested by infants and children may cause brain damage and are seen most frequently in chaotic households where children lack supervision and mothers are overwhelmed by their family obligations.

Another type of toxic influence in the postnatal period is presented by metabolic disorders, previously discussed, which often do not produce mental retardation and neurological disorders until after birth.

Traumas. Head injuries in children seldom produce serious brain damage and mental retardation.

Convulsive disorders. Although most convulsive disorders probably result from prenatal or perinatal influences, they make their appearance in the postnatal period, and their etiology often remains unclear. The underlying pathology of the central nervous system is usually responsible for the epilepsy and the associated mental retardation. This association is seen with great frequency among the moderately and, especially, the severely retarded. It is estimated that as many as 20 to 25 per cent of the population in institutions for the mentally retarded have epilepsy. Failure to treat status epilepticus promptly and vigorously may also lead to progressive mental deterioration. Major motor and mixed or unclassifiable seizures account for the majority of convulsive disorders among the mentally retarded.

Infantile spasms. This condition, also known as hypsarrhythmia or massive myoclonic seizures of infancy, usually affects infants between 3 and 12 months of age. The illness is characterized by brief lapses of consciousness with abrupt symmetrical flexion of the head, trunk, or extremities. The EEG is characterized by grossly disorganized slow background frequencies associated with diffuse random high voltage spike activity.

The condition leads to progressive mental deterioration, and mental retardation has been reported in close to 90 per cent of the cases. The etiology is unclear and probably includes a variety of mechanical (birth) and biochemical insults to the central nervous system. The majority of cases occur suddenly and for no apparent reason in a previously normal child.

Recent reports about the beneficial results of ACTH are promising, although they must still await the verdict of time.

Febrile convulsions. Convulsions accompanying nonspecific febrile illness in infancy are harmless in most cases. Sometimes,

however, they are a forerunner of an epileptic disorder. Rare cases have been reported of mental retardation following such convulsions.

Cerebral palsy. The estimates of intelligence of patients with cerebral palsy vary greatly, but all agree on the high incidence of mental retardation in this group. This incidence seems related to the type of cerebral palsy. The patients in the spastic tetraplegic group are most affected, and less than 15 per cent possess normal intelligence. In the hemiplegic category, the patients who acquired the handicap postnatally, especially in infancy, do worse than patients with hemiplegia due to prenatal or perinatal causes.

The incidence of mental defect in the hemiplegic group ranges between 40 and 50 per cent. Of the remainder, about half are of borderline intelligence.

Patients with the extrapyramidal type of cerebral palsy are more intelligent than the spastic group, and as many as 50 per cent may fall in the normal or superior range of intelligence. The intelligence of patients in the extrapyramidal category is sometimes underestimated due to hearing and speech disorders frequent in this group.

Heller's disease. This condition was first described by Heller, and, since the time of its original description, there has been a heated controversy. The lines are sharply drawn between those people who accept it as a legitimate disease entity and those who regard it as a meaningless label covering a variety of neuropathological and psychotic conditions. In his original report, Heller described children who developed normally in all respects until their 3rd or 4th year, when, without any apparent reason, they began to show signs of progressive deterioration. The changes began with restlessness, stereotyped and anxious behavior, and loss of already learned speech, and led to complete dementia. The children retained an intelligent facial expression and had no localizing neurological signs.

Since the original description by Heller, a number of clinical reports from various countries have appeared in the literature, and some give details of neuropathological findings that include nonspecific structural alterations in various areas of the brain. These authors prefer to consider Heller's disease as a *syndrome* of progressive mental deterioration beginning in early childhood and due to a variety of yet undetermined insults to the central nervous system. These may include traumatic, infectious, and biochemical influences occurring postnatally, or they may be genetically determined. Further systematic research may break down this global concept into several separate clinical units.

Sociocultural factors. It was mentioned previously that the overwhelming majority of the mentally retarded in the United States come from the lowest socioeconomic group. These are the indigent, dependent, helpless, hopeless, and often illiterate members of racial minorities, inhabitants of backward rural communities and urban slums. Exact statistics are not available, but the estimates of the frequency of mental retardation in this segment of the population range between 10 and 30 per cent, as contrasted with about 3 per cent in the total population. Many factors contribute to this sad picture, which was brought into sharp focus by the report of the President's Panel on Mental Retardation.

Medical problems. The medical problems of the disadvantaged group are many and are often related to the problem of mental retardation. The prospective mother is frequently malnourished and shorter than her more fortunate suburbanite sister. She is likely to have either poor, little, or no prenatal care. Con-

sequently, pretoxemic and toxemic states are seen in the disadvantaged group in much higher proportions. The diet often lacks the necessary minimum of vitamins, iron, and minerals. Maternal infections during pregnancy, including lues, are treated with delay or not at all. Many of these factors may result in grave hazards to the fetus. Infant mortality is higher than usual, and so is the rate of prematurity. Diabetes in the mother is often uncontrolled. Each of the many fetal risks may result in brain damage and mental retardation. As demonstrated by Pasamanick and others, this group's contribution to the continuum of reproductive casualty is extremely high.

The baby continues to be exposed to many health hazards after birth. He may never have regular postnatal care, including routine checkups and immunizations, and his contacts with medicine may be limited to occasional emergency visits to the hospital. As a result, he is more likely to have serious bacterial and viral infections. He is treated relatively late in the course of illness for conditions such as meningitis or dehydration, often when permanent damage has already been done. The same may be said of conditions potentially amenable to surgical treatment that may go unrecognized for a long time.

Where there is mild brain damage that could be expected to be compensated for by appropriate handling and experience, such damage often persists because of understimulation or overstimulation.

The infant's nutrition is often inadequate and consists chiefly of milk, resulting in frequent iron deficiency anemia. Actual starvation is not frequent in the United States, but there are many families with little income and many children, whose members subsist on a substandard diet. Several studies in Central and South America indicate that chronic protein depletion in infants and young children may produce irreversible mental retardation of mild to moderate degree.

As the child grows older, other health hazards are added, such as pica, which often ends in lead poisoning, encephalopathy, and mental retardation. Mothers of children with pica are often immature, overwhelmed by their family duties, and unavailable to their children. Old paint used on the walls of dilapidated slum houses provides a steady supply of lead for children who eat plaster. The frequency of the battered-child syndrome, burns, serious accidents, and ingestion of toxic substances, with inherent risks to the central nervous system, is disproportionately high in this group.

Emotional and social problems. These problems of the disadvantaged group have been widely discussed recently. There is always danger in describing a heterogeneous population. It is easy to oversimplify matters, to generalize, to think in stereotypes. The majority of disadvantaged families are upwardly mobile, have sound ambitions for their children, and have not given up the struggle to help themselves.

This discussion concentrates on the lowest 15 to 20 per cent of this group, which produces the majority of the culturally determined retardation. Family cohesion is often missing, the children are often illegitimate and reared by a variety of caretakers in addition to the mother, who is frequently working. These polymatric families often lack a father, and sometimes a grandmother assumes the role of head of the household. More often the roles of the family members are ill defined, resulting in a chaotic, disorganized household, where things are not planned but just happen. In such an environment, the dependency needs of the growing infant, toddler, and young child may not be met, and he is forced to fend for himself long before he is ready. Having many caretakers—grandmothers, aunts, neighbors, a 2-year-old sister—may result in distorted pictures of human attachments and object relations, so vital to future personality development and social interaction. Because of lack of proper limits and because of the behavior standards they are exposed to, the children may identify themselves with patterns of poor impulse control and are apt to act out rather than sublimate their aggressive and sexual drives. As a result of living in a world that seems hostile, without encouragement and praise, the child's self concept, including his body image, may be faulty. The fatalistic, hopeless attitudes of the slum environment can stifle initiative and motivation. The defenses necessary to allow the individual child to learn how to survive in this environment, where violence is not unusual, may also interfere with intellectual progress, particularly by emphasizing the need to deal with concrete realities, often ending in lack of flexibility in thinking.

Environmental deprivation. Recent research in sensory deprivation and studies of children in institutions have provided the main impetus for the study of the role of environmental factors in the etiology of sociocultural mental retardation. Appropriate sensory stimulation of the young infant to facilitate his intellectual development is being widely explored for utilization in preventive approaches. There are still many unanswered and controversial questions in this area, but there are already many areas of agreement.

The importance of a stable, focal care-taking person in the intellectual and emotional development of an infant and toddler is undisputed. Young children need routine and predictability in their environment as well as variety, offered in proper balance. For example, a range of verbal stimulations that begins to elicit response from the infant by the age of 2 months is crucial in the development of language, the foundation of abstract thinking.

The disadvantaged socioeconomic environment confronts a growing child with several hazards to his intellectual development. The level of sensory stimulation may be too low or too high, or it may vacillate between the two extremes, with many possible out-

comes, including the passive, unresponsive, or highly irritable child. Life may be drab and monotonous, with a paucity of new people, new toys, and new experiences, or it may be very chaotic and violent, devoid of any regularity, with new people coming and going without a predictable pattern. The available verbal stimulation is frequently deficient, resulting in a meager vocabulary, poor sentence structure, and concrete reasoning—a poor basis for a school learning experience. Nonverbal language, particularly body language, is often the chief communication medium, which deprives the child of more complex verbal skills, hindering his transition to more abstract thinking. The care-taking figure, even if regularly available, may at best attempt to satisfy the child's physical wants but will have little or no opportunity for playing with the child or providing him with new pleasurable experiences.

It is particularly in the institutional setting for infants and young children that the greatest hazards exist for environmental deprivation. There, preventive measures should be applied. Hospital nurseries, too, must provide a stimulating environment for babies.

Familial mental retardation. It was the usual practice in the past to begin the classification of the mentally retarded with the large category of familial retardation, also known as garden variety, physiological retardation, or "poor protoplasm." It is currently fashionable to dismiss this group as an artifact rather than a medical or biological entity. The main difficulty in resolving these opposing viewpoints lies in the lack of objective, observable, genetically determined characteristics of this group, which leaves the field open for speculation.

There is fairly wide agreement as to some characteristics of children in this category. Its members comprise about 75 per cent of all the mentally retarded in this country and usually come from the lowest socioeconomic group. In addition to being mentally retarded, they are the chief contributors to the ranks of juvenile delinquents, the jobless, and the mentally ill. They have no neurological signs, neuropathological abnormalities, chromosomal or known biochemical characteristics to distinguish them from the rest of the population. Finally, in borderline to mild retardation there is usually a consistency in I.Q. among members of the same family.

It may be assumed that intelligence, or rather its multiple components, are in part genetically determined. The distribution of measurable intelligence in the general population may be represented by a bell-shaped Gaussian curve skewed to the left, since there are far more people falling in the below average category than those in the above average or superior range. But the statistical speculations cited in support of the hereditary nature of intelligence are subject to considerable distortions. Nobody will dispute the high correlation between the I.Q. of

members of the same family. This is, however, complicated by the usually equal exposure of all the family members to identical or similar environmental influences.

The studies of Skeels on the remarkable effects of a stimulating environment in enhancing the intellectual level of retarded institutionalized children and recent experiences in the Head Start program indicate that, with appropriate experience, gains can be made by children from deprived families. Even more startling were the experiences during World War II with illiterate recruits, who were taught to read and write in crash programs of only 3 months' duration.

Psychiatric factors

Personality development in mentally retarded children. Differences in the degree of intellectual functioning in the mentally retarded are compounded by the divergence of etiological factors, ranging from clearly demonstrable brain damage—occurring in all phases of prenatal and postnatal development from a multitude of causes—to emotional and cultural deprivation. The resulting extreme heterogeneity of the mentally retarded group is probably responsible for the often conflicting and confusing views about the personality development and frequency of psychopathology of its members. What contributes to the existing confusion in this field is the paucity of well conducted studies and surveys that use similar standardized methods of investigation. Most assumptions are often based on studies using residents in state institutions or patients in psychiatric clinics and hospitals. No wonder the views on the personality development of the mentally retarded range widely from the assumption of little or no difference from the normal population in the frequency of emotional disturbance to the contrasting opinion that assigns to the mentally retarded a very high risk of psychotic illness—up to 40 per cent in some studies.

Most people agree that there is, at present, no solid objective body of evidence to support a definitive opinion in this matter, and only well detailed, well designed studies of the course of personality development in well defined uniform groups of mentally retarded will provide the answer in the future. Fortunately, similar studies of normal infants and children are being conducted with increasing frequency. They contribute very useful clues to the field of mental retardation, in addition to providing good research models. Until the results of such systematic studies become available, clinical experience, coupled with cautious speculation, will have to be relied on.

Many borderline, mildly retarded, and even severely retarded persons are capable of having as normal a personality development as those with normal intelligence. Given an accepting and adequately stimulating family environment and appropriate educational and vocational training facilities, the majority of retarded children can develop good social and vocational adjustment and capacity for appro-

priate interpersonal interactions and attachments. However, in the process, they face hazards along the way that exceed the ones facing the normal population. Such hazards seem to increase in direct proportion to the degree of retardation.

Emotional vulnerability

Factors within the child. Modern research in child development stresses the degree of intellectual functioning as a factor of overriding importance in the timetable but not as the essence of the child's successful negotiation of progressive phases of emotional maturation. To give one example: most people agree on the fundamental role of early attachments in infancy, manifesting themselves in recognition and preferential treatment of the mother by the infant (about 4 to 6 months) and in the phenomenon of separation anxiety and fear of strangers (about 6 to 8 months). The infant's recognition of his mother as an entity, separate from himself and clearly distinguishable from others, is an intellectual process that precedes or parallels its affective counterpart. This process of self-differentiation depends, in turn, on intact sensory and perceptual mechanisms, memory, and the ability to organize bits and pieces of experience into a meaningful whole. The infant's failure or delay in the recognition of his mother, for whatever reason, will delay—if severe, it may even preclude—the development of these vital early attachments, thus slowing down and disrupting the timetable of emotional development. One such distortion is the longer duration and greater intensity of the child's dependency period, requiring a delay in developing independence of thought and action. It is particularly important to insure proper resolution of the dependency needs. If they are not properly solved, the child can remain preoccupied with having these needs met throughout its life.

The phase of negativism often starts later in infancy in the retarded and lasts longer than usual, which may interfere with the attainment of autonomy and mastery. The child's responsiveness to people in his environment is often reduced, because of perceptual difficulties and lack of alertness. This, in addition to delay or failure in the mastery of spoken language, interferes with the intricate problems of interpersonal communication, causing a breakdown in the reciprocal exchange of meaningful messages between the child and his environment.

The mentally retarded child often has difficulties on a constitutional basis in handling anxiety and frustration, postponing gratification, handling disappointments, and accepting substitutes. This weakens his emotional resilience and lengthens the period of recovery from an emotional crisis, however small. As the child grows older, his lessened adaptability interferes with the general processes of socialization, which requires cooperation, compromise, and a capacity to give.

The retarded child's self-image, closely related to

his self-acceptance, is often unfavorable, due to his frequent frustrations, failures, mistakes, and distortions in body image.

Play is of crucial importance in the development of a healthy personality. It permits experimentation and the finding of solutions to problems, represents a medium of expression of feelings and ideas, and provides a model for social interactions. The mentally retarded child may lack originality in his play. He may lean toward repetition and stereotype, particularly if there are organic bases for his difficulty. Such children use a minimum of toys and are often unable to play in larger groups or imitate play without help. All this potentially deprives them of yet another vehicle of emotional growth, unless programs are set up to help overcome these handicaps.

In spite of the hazards, it is possible for the vast majority of the retarded to develop personality patterns as normal as compatible with their level of mental functioning. Developmental stages must be properly handled. To function as an individual, a child needs self-help skills and the motivation to use them. To function in society, he needs adequate control over impulses, a sense of responsibility, a good conscience, a reciprocal interest in and participation with others, and habit and character patterns (especially work patterns) that allow for productivity, even though at a limited level.

Since the most important components of personality development are evolved in the first 5 years of life, it is essential to provide the optimal setting and conditions in which this can take place. Most often this is in the home, if the presence of the retarded child is not decompensating for the family.

The role of the family. The role of the mother and other family members in the personality development of a young child is crucial. The parent-child interaction passes through several predictable stages, leading from a very close mother-child union to a gradual loosening of the emotional ties. Usually, the early closeness between mother and child is promoted by the mother's feeling of pride and acceptance and is continually reinforced by the child's predictable responses, such as smiling, cooing, cuddling, and playfulness. Delay in such responses and knowledge of the child's mental retardation often induce parental inner turmoil, grief, a sense of disappointment, shattered hopes, and sometimes feelings of guilt and failure. These feelings, if unresolved, make it difficult for many parents to accept the child, to be proud of him, and to give him affection and recognition.

Ignorance of the fact that the child is mentally retarded is equally hazardous, since parental expectation of normal behavior may be frustrated, leading to tension, confusion, and often estrangement between parent and child. The parents sometimes respond by vacillating between denial, overprotection, infantilization, and overt or covert rejection. The resulting tensions and conflicts may present definite handicaps in the emotional development of the growing child.

Where there are brighter siblings, the inability to compete can be traumatic for the retarded child.

The influence of the community. The community may affect the personality development of the retarded child directly and indirectly. To begin with, the prevailing general attitudes toward mental retardation will profoundly influence the parents' reaction to having a retarded child. The more technologically advanced, sophisticated communities, which put a premium on education and intellectual achievement, have been less accepting and tolerant than the more primitive, underdeveloped ones.

As the child grows older and his social world widens, he comes to depend more on his peers for emotional support and stimulation. His acceptance by other children in the neighborhood, on the playground, and in school will largely depend on the personal attitudes, tolerance, and compassion of their parents. The retarded child, because of his inability to compete, is frequently excluded from neighborhood groups, leading to further frustration and feelings of inadequacy.

The various hazards to normal personality development in the mentally retarded make it difficult, but not necessarily impossible, to achieve normal adjustment. The intellectual capacity plays an important but not deciding role in this process, and it would be a fallacy to equate the level of emotional maturity with mental age. An adolescent mongoloid with a mental age of 4 or 5 years can be trained to perform a set of simple tasks, permitting him to hold a regular job in a supervised setting, which would hardly be expected from a normal 4- or 5-year-old child. The recent visibility given mental retardation tends to create a more enlightened community with more special services and facilities for the retarded, which in turn preserves and enhances their acceptance of themselves.

Maternal deprivation. The undisputed risks that maternal deprivation present to the emotional and intellectual development of a normal child are certainly far greater in a mentally retarded one. The retarded child needs more than the usual amount of mothering, affection, and stimulation. Denial of these results in an often irretrievable loss of whatever inner resources the child possesses. This matter is of particular importance in the problem of early institutionalization.

A more subtle form of maternal deprivation may result from the child's inability to respond to normal mothering because of sensory or perceptual difficulties. The mother's depression, self-preoccupation, or rejection may lead her to neglect the child's emotional needs.

The impact of retarded children on the family. The parents of retarded children represent the total spectrum of human personality variations, and yet there is often a tendency to treat them as a homogeneous group, beset by overwhelming feelings of guilt, anxiety, hostility, and insecurity. There is

no doubt that many parents respond to having a retarded child with some degree of emotional disorganization, but the intensity and quality of their reactions vary greatly. Most of them experience considerable tension and anguish at the time of initial diagnosis, causing a weakening of the habitual defense system and a temporary breakdown of adjustment patterns. Most studies of families with mentally retarded children indicate that the period immediately following the diagnosis is extremely crucial and may have a deciding influence on the parents' handling of the child in the future.

The ultimate impact of the retarded child on the family depends on several factors, such as the degree of retardation, personality development and life adjustment of each parent preceding the arrival of the retarded child, the degree of their professional and social success, the adequacy of the marital adjustment, other children in the family and their intellectual progress, and the parental socioeconomic status. Reasonably well adjusted parents with a positive self-image are usually able to absorb the retarded child without upsetting the family balance or jeopardizing the well-being of other family members. A marriage based on mutual support and free communication and the presence of other normal children helps cushion the blow to the parents' self-esteem.

If, however, the parents are emotionally immature and beset by neurotic conflicts, the arrival of a defective child may precipitate a crisis that sometimes leads to family breakdown. The difficulty of managing a retarded child may contribute to this, particularly if management is complicated by hyperactivity, excessive irritability, or other distressing and hard to control manifestations. As a result, the child may be cast in the role of the family scapegoat, destined to drain off family tensions. In such cases, the removal of the child to an institution is often followed by an increase of marital tensions and sometimes by divorce or separation.

The social life of these families frequently becomes limited, leading to a feeling of isolation. The siblings' acceptance of the retarded child depends largely on parental attitudes and gratification of their own dependency needs.

The degree of family turmoil rises in direct proportion to the parents' social status. In this regard, the disadvantaged members of society fare better than the privileged ones.

The predominant defenses of the family may help or hinder their adjustment to the presence and handling of their retarded child. Denial, which may frustrate the physicians involved, may also allow the family to work usefully with the child. The danger is in overprotection and unrealistic pressure on the child for achievement. Projection, with the parents concentrating on blaming others for the child's situation, can lead to losing sight of the child's needs. Displacement can be useful if properly directed, such

as involvement of the parents in community action on behalf of the retarded. Withdrawal can be destructive if it leads to the whole family's isolating itself and hiding from the rest of the world or concentrating all its investment in the retarded child to the neglect of the other children in the family.

The role of the physician. An informed and interested physician may play a pivotal role in preventing family tensions. An effective intervention on his part includes clarification, support, and reassurance. Bluntness, disinterest, or lack of caution in prognostication only adds insult to injury. The physician's empathy and flexibility help bring the parents' feelings and attitudes to the surface. Patience and flexibility are of particular importance in dealing with parents from low socioeconomic strata. Paying attention to their difficulties in verbalizations and to cultural and ethnic variations in attitudes toward mental retardation greatly increases the physician's effectiveness.

An extensive psychiatric intervention is superfluous for most parents but many profit greatly from counseling by an experienced social worker, and some may need psychiatric treatment. Group therapy for parents of retarded children has also been useful. Above all, the physician should move to relieve the parents' helplessness in the face of the diagnosis of retardation. He needs to give them appropriate things to do, especially in the area of helping the child be as normal as possible in personality and adjustment.

Psychological factors

The nature and development of intelligence. The problem of the nature and determinants of intelligence has baffled people from time immemorial. The controversy continues unabated in our century and has assumed renewed significance with the current interest in mental retardation. It is generally agreed that intelligence represents a man's problem-solving capacities, his adaptability to new situations, his ability to form concepts and to profit from experience. Thus, intelligence may be viewed not as static but rather as forever changing according to the individual's life circumstances.

The difficulty in even defining intelligence in a generally acceptable way may explain in part the never ending controversy about the causative factors in the development of intelligence. In the early part of this century, the lines were sharply drawn between the proponents of the theory of fixed and genetically predetermined intelligence and those who considered environmental factors the most decisive ones. This nature versus nurture controversy was perpetuated by many developments and discoveries, providing support for both factions. Mention can be made of the rapid advances in genetics and increased knowledge of the cell processes, the conceptual model for brain activity provided by information theory and cybernetics, studies of identical twins reared in dissimilar

environments, the recognition of the relevance of obstetrical complications to the functioning of an individual, and the interest in maternal and cultural deprivation.

Today there is a movement away from the extreme positions and a gravitation toward the center. Thus, intelligence is most commonly viewed as resulting from interaction between biological and sociocultural factors. The former include genetic characteristics, prenatal and perinatal factors, favorable and unfavorable influences. The sociocultural factors are experiential and operate on the psychological level. Mental retardation often results from disturbances in all these areas: a genetically vulnerable individual may suffer obstetrical complications and be exposed to a culturally deprived environment. Such cases present a challenge to the most skillful diagnostician. To quote Pasamanick: "The biological determinants serve primarily to establish physiological limits and the floor of potential in the organism. The sociocultural factors are like the soil in which the plant is nurtured. By enrichment or impoverishment, human intellectual potential can be made to blossom or to wither, to achieve its limits or to *fall far short of them.*"

Such a general description of intelligence fits many current theoretical approaches. There is disagreement, however, as to the best methods of tapping or measuring intelligence. The several intelligence tests in common use, which assign to an individual a numerically expressed intelligence quotient (I.Q.), are very useful in predicting school performance. They are, however, less reliable in predicting future social adjustment and problem-solving ability. In addition, the test scores may be lowered by abnormal character traits, overwhelming anxiety, distractibility, and many other factors.

In the past, reliance on the I.Q. often led to keeping a child back in school, since the score was believed to be immutable. The studies of Bayley and others convincingly proved the fallacy of this assumption. There is also a growing realization that intelligence, seen as a sum total of all intellectual processes, is inadequately reflected in the conventional tests. The variety of these processes is far greater than had been thought previously.

The majority of the mentally retarded come from the low socioeconomic segment of society, and their intellectual potential is inadequately measured by the culturally biased conventional tests. There have been several attempts to devise culture-free tests, none of which have gained general acceptance as yet.

The work of Piaget and of the Pavlovian psychologists suggests a possible solution. They place the emphasis on the *nature* of the thinking process rather than on the performance during a defined test period, which may fail to demonstrate the individual's actual intelligence potential.

Some basic defects in cognitive development.

There is general agreement about the reduced ability of the mental retardate to learn, to acquire knowledge at the same rate and in the same quantity as normal children. The differences are small in the simple forms of learning, but the gap widens in direct proportion to the complexity of the learning process. The many existing theories that attempt to define and analyze in detail the process of cognition have been related with varying success to the learning deficits of the mentally retarded.

The difficulty of directing attention to relevant cues has been recently stressed. Short term retention seems deficient in the mentally retarded, but long term retention is not disturbed. This may partially explain the fact that the retarded individual does not profit from a previous single learning experience as much as a normal child with a comparable mental age. The retarded person requires much more repetition and practice.

The sensory and perceptual handicaps found in many of the mentally retarded may significantly contribute to their learning difficulties. Where such defects exist, their responsiveness to various stimuli of normal intensity and duration differs from that of the normal child, making learning difficult without appropriate modification, repetition, and other forms of reinforcement of the stimuli.

The inability to inhibit already learned responses hinders the broadening of the available repertoire of responses in the same situation.

The main handicap is represented by the diminished capacity in abstracting and generalizing from experience, due to the deficit in verbal ability. The lessened permeability between cognitive functions results in monotonous thinking and lessened flexibility and inventiveness, as compared with normal children of the same mental age.

Jean Piaget's developmental psychology. The work of Jean Piaget in Switzerland is compared by some to Freud's monumental contribution. Almost singlehandedly, over a span covering half this century, Piaget evolved a comprehensive theory of intelligence and the process of acquiring knowledge. Although his work shares many ideas with the learning theory, the Russian theory of intelligence, and ego psychology, to mention just a few, it remains a unique, unparalleled study of the function and development of the human mind. Although Piaget was chiefly concerned with the workings of the normal mind, his theory and methods of investigation are of great potential use in the study of the defective or subnormal mind as well. A brief description of the basic aspects and terminology of Piaget's work must necessarily precede any explanation of the possibilities of its application to the field of mental retardation.

Piaget views the evolving intelligence as a result of a continuous interaction between the individual and his environment. The active attempt on the part of the individual to mold and adapt the external en-

vironment to his own needs is called assimilation. The process of adjusting oneself to the external environment is called accommodation. The continuous reciprocal interaction between the individual and his environment, if harmonious, leads to an equilibrium, or adaptation. This, in turn, gives rise to a new advance in the ever unfolding process of intelligent functioning, characterized by a specific behavior pattern, or schema. These schemata do not remain static but undergo further changes and differentiation as the interaction between the individual and his environment continues, leading to new equilibria and new and increasingly complex schemata. The interplay among the individual schemata leads to gradual integration and generalization of behavior and the thinking process.

(In this ever expanding dynamic process of evolving intelligence, Piaget distinguishes several stages, characterized by distinct types of behavior and thinking. The progression from one stage to the next more complex one is an orderly, predictable process, although the rate of this progress varies with the child's basic neurophysiological endowment, maturation, experience, and appropriate social interaction. The major periods in Piaget's model of intelligence development are: (1) the sensorimotor stage (birth to 1½ years), (2) preoperational stage, subdivided into the preconceptual stage (1½ to 4 years) and the intuitive stage (4 to 7 years), (3) the stage of concrete operations (7 to 11 years), and (4) the stage of abstract operations (11 years onward). The stages represent a detailed analysis of the developing thought process, from the reflex behavior of the infant to the abstract thinking of the adolescent.)

Unlike most psychologists, Piaget is not primarily interested in the content of the child's performance, which permits measuring and quantification. Rather, he is interested in the thought process underlying the child's functioning. Viewed from this vantage point, each behavioral item, even if functionally meaningless, assumes importance as representative of the child's thinking, however primitive. For instance, the seemingly bizarre repetitious hand movements of an infant are seen as attempts to substitute a magic, ritualistic procedure for a desired act, such as reaching for a favored toy that is unavailable at that time.

Piaget's concepts have already been applied to the study of the mentally retarded. They represent a more fruitful approach, especially to the severely and moderately retarded, than the traditional testing methods, which become unreliable below the I.Q. of 50. Rather than describe a retarded individual in terms of a "magic number" that implies a defined store of knowledge, it is easier and more useful to describe his functioning in terms of his arriving at a certain stage of his intellectual development, characterized by a specific behavior and reasoning process. Thus, the profoundly retarded individual may be viewed as arrested or fixated at the sensorimotor stage of de-

velopment; the moderately retarded person is capable of reaching only the intuitive and preconceptual stages; the mildly retarded person does not advance beyond the stage of concrete operations; and the borderline retarded individual stops at the simpler levels of abstract thinking.)

The mannerisms so often seen in profoundly retarded children, which baffle students of human behavior, become clearer when compared with the very similar behavior of a 7- to 8-month-old infant and may be regarded as quite purposeful in Piaget's framework of the developing mind. Since this manneristic behavior of the profoundly retarded is used so often to obscure and obfuscate the problem of childhood psychosis and infantile autism, it is to be hoped that, in time, Piaget's concepts will shed some light on the still very dark no man's land bordering childhood schizophrenia, infantile autism and mental retardation.

Diagnostic factors

History. Although caution is indicated in taking history from a parent, it often remains the only source of information. The history of pregnancy, labor, and delivery, the consanguinity of the parents, and the presence of hereditary disorders in their families deserve particular attention. The parents may also provide information about the child's developmental milestones. This area is especially subject to distortions, due to parental bias and anxiety. History is particularly helpful in assessing the emotional climate of the family and their sociocultural background, which play an important part in the evaluation of clinical findings.

Physical examination. This has to include a careful observation of the child's behavior level of activity and the quality of his interaction with his parents, and other people, as well as inanimate objects. Various parts of the body may have certain characteristics commonly found in the mentally retarded due to prenatal causes. The configuration and size of the head offer clues to a variety of conditions, such as microcephaly, hydrocephalus, and Down's syndrome. The patient's face may have some of the stigmata of mental retardation, which greatly facilitate the diagnosis. Some of the facial signs are hypertelorism, flat nasal bridge, prominent eyebrows, epicanthal folds, corneal opacities, retinal changes, low set and small or misshapen ears, protruding tongue, and disturbance in dentition. Facial expression, such as looking dull, may be misleading and should not be relied on without other supporting evidence. Color and texture of the skin and hair, high arched palate, the size of the thyroid gland, the size of the child and his trunk and extremities are further areas to be explored. Measurement of the head circumference is an essential part of the clinical investigation.

Dermatoglyphics, or the handprinting patterns, may offer another diagnostic tool, since uncommon

ridge patterns and flexion creases are often found in retarded children. Abnormal dermatoglyphics may be found in chromosomal disorders and in children who were infected prenatally with rubella.

Neurological examination. The incidence and severity of neurological signs generally rise in inverse proportion to the degree of retardation, but there are many cases of severely retarded children without neurological abnormalities. Conversely, about 25 per cent of all children with cerebral palsy have normal intelligence.

The disturbances in motor areas manifest themselves in abnormalities of muscle tone (spasticity or hypotonia), reflexes (hyperreflexia), and involuntary movements (choreoathetosis). A lesser degree of disability in this area manifests itself in clumsiness and poor coordination.

The sensory disturbances may include hearing difficulties, ranging from cortical deafness to mild hearing deficit. Visual disturbances may range from blindness to disturbances of spatial concepts, design recognition, and concept of body image.

Paine advanced the knowledge of the evolution of postural reflexes in infants, which may help the examining physician in his prognosis. Caution, however, is indicated, since some children who initially present various motor abnormalities later show no abnormal motor signs and may not be mentally retarded.

Hyperirritable infants, jittery or convulsing with asymmetrical neurological signs, need careful attention, since about half of them may be brain-damaged in later life. The infants with the poorest prognosis are those who manifest a combination of inactivity, general depression, and exaggerated response to stimuli.

In older children, hyperactivity, short attention span, distractibility, and a low frustration tolerance are further hallmarks of brain damage.

In general, the younger the child at the time of investigation, the more caution is indicated in prediction of future ability, since the recovery potential of the infantile brain is very good. Following the child's development is probably the most reliable approach.

Pneumoencephalogram is somewhat hazardous and seldom indicated in the evaluation for mental retardation. The occasional findings of internal hydrocephalus, cortical atrophy, or porencephaly in a severely retarded, brain-damaged child are not considered very contributory to the general picture.

Skull x-rays are usually done routinely but are illuminating only in a relatively few conditions, such as craniosynostosis, hydrocephalus, and several others that result in intracranial calcifications. These include toxoplasmosis, tuberculous sclerosis, cerebral angiomas, and hypoparathyroidism.

The electroencephalogram (EEG) is best interpreted with caution in cases of mental retardation. The most notable exceptions are patients with hyp-

sarrhythmia or *grand mal* seizures, where the EEG may help establish the diagnosis and suggest treatment. In most other conditions, one deals with a diffuse cerebral disorder that produces nonspecific EEG changes characterized by slow frequencies with bursts of spikes and sharp or blunt wave complexes. The confusion over the significance of the EEG in the diagnosis of mental retardation is best illustrated by the reports of the frequency of EEG abnormalities in Down's syndrome that range from 25 per cent to the majority of patients.

Laboratory procedures. These include examination of the urine and blood for a host of metabolic disorders. The recently described enzymatic abnormalities in chromosomal disorders, notably Down's syndrome, promise to become useful diagnostic tools. The determination of the karyotype in a suitable genetic laboratory is indicated whenever a chromosomal disorder is suspected.

Hearing and speech evaluations. These should be done routinely. The development of speech may be the most reliable single criterion in the investigation of mental retardation. Various hearing impairments are often present in the mentally retarded; on the other hand, they may, in some instances, simulate mental retardation. Unfortunately, the commonly used methods of hearing and speech evaluations require the patient's cooperation and are often unreliable in the severely retarded.

Psychiatric examination. The psychiatric examination of mentally retarded children does not differ essentially from such examination of children with normal intelligence. The similarity decreases, however, in direct proportion to the severity of the mental defect. In no other category, except perhaps with psychotic children, is nonverbal communication and careful observation of the patient and his activity of greater importance.

The psychiatrist's contribution should always include study of the interpersonal aspect of the retarded patient's personality development. The way he reacts to both human and inanimate objects and how he relates to the examiner and to his mother or caretakers may tell most about his social maturity. Just as with infants and young children, it may be useful to examine even the older retarded patients with and without a parent or a parent substitute in evaluating dependency status and response to separation.

The child's control over motility patterns should be ascertained, and clinical evidences of distractibility and distortions in perception and memory may be evaluated. The use of speech, reality testing, and the ability to generalize from experiences are important to note.

The nature and maturity of the child's defenses, particularly the exaggerated or self-defeating uses of repression, denial, introjection, and isolation, should be observed. Sublimation potential, frustration tolerance, and impulse control, especially over motor,

aggressive, and sexual drives, should be assessed. Also important is self-image and its role in the development of self-confidence, as well as assessment of tenacity, persistence, curiosity, and the willingness to explore the unknown.

The severely retarded child presents the greatest challenge to the examiner. Bizarre, primitive, and seemingly purposeless behavior is often difficult to interpret. Categorizing the patient's observable behavior in response to the examiner's interaction with him, or independent of it, using as a model the developmental examination of infants, may help to systematize observations and provide a reasonable estimate of the patient. It is helpful for the psychiatric examiner to combine appropriate components of neurological and psychological examination methods with his own approaches.

In general, in the psychiatric examination of the retarded child, there should be a picture of how the child has solved the stages of personality development. From the areas of failure or regression, it is possible to develop a personality profile of a type that allows for more logical planning of management and remedial approaches.

Psychological examination. The examining physician may avail himself of several screening instruments, such as those developed by Gesell, Caldwell, Illingworth, and Knobloch, that are useful for infants and toddlers. As in so many areas of mental retardation, there is a heated controversy over the predictive value of infant psychological tests. The correlation of abnormalities during infancy with later abnormal functioning is reported by some authors as very low and by others as very high. It is generally agreed that the correlation rises in direct proportion to the age of the child at the time of the developmental examination.

Copying geometric figures may be used as a quick screening test of visual-motor coordination. The same can be said of the Goodenough Draw-a-Person Test, Kohs Block Test, and geometric puzzles.

Psychological testing, performed by an experienced psychologist, must be considered a standard part of an evaluation for mental retardation. The Gesell, Bayley, and Cattell tests are most commonly applied in infants. For children, the Stanford Binet and the Wechsler Intelligence Scale for Children (WISC) are most widely used in this country. Both of these tests have been criticized for penalizing the culturally deprived child, for testing mainly potential for academic achievement rather than for adequate social functioning, and for their unreliability in children with an I.Q. of less than 50. Some people have tried to overcome the language barrier of the mentally retarded by devising picture vocabulary tests, of which the Peabody Vocabulary Test is the most widely used.

The tests often found useful in detecting brain damage are the Bender-Gestalt and the Benton Visual

Retention Tests. These tests are also applicable in mildly retarded children.

The need for new test methods. There is a need reported from many quarters for new, unconventional appraisal methods of the mentally retarded that would allow the examination of the child's strengths and handicaps in a number of areas of functioning with greater precision. Most of the existing tests give only an inaccurate, global, and somewhat amorphous picture in children with severe intellectual handicaps, in whom a precise appraisal is of paramount importance. Only the knowledge of small units of functioning may help in creating suitable specific educational programs that take advantage of the child's assets. One such approach is utilized in the Illinois Test of Psycholinguistic Abilities, which tests auditory, vocal, and motor responses, both alone and in combination. The recent application of Piaget's theory to mental retardation may represent another possible approach to this diagnostic dilemma.

Social functioning. This important area, which reflects the patient's adaptive behavior, has been relatively neglected. The most popular test that measures social functioning is the Vineland Social Maturity Scale. Based on the observations of the patient and the description of his care-taker, it assigns to him a social quotient (S.Q.). The test taps the individual's competence in meeting life contingencies and dealing with his environment. It is especially useful in the severely retarded who are untestable by other methods. The social quotient (S.Q.) should not be considered synonymous with the intelligence quotient (I.Q.).

Differential diagnostic problems. A variety of conditions may simulate mental retardation. Children who come from very deprived homes that provide inadequate stimulation may manifest motor and mental retardation that is reversible if an enriched, stimulating environment is provided in early childhood. A number of sensory handicaps, especially deafness or blindness, may be mistaken for mental retardation if, during testing, no compensation for the handicap is provided. Speech deficits and cerebral palsy will often make a child appear retarded, even in the presence of borderline or normal intelligence.

Chronic, debilitating diseases of any kind may depress the child's functioning in all areas. Convulsive disorders may give an impression of mental retardation, especially in the presence of uncontrolled seizures.

Chronic brain syndromes may result in isolated handicaps, failure to read (alexia), failure to write (agraphia), failure to communicate (aphasia), and several others, that may exist in a person of normal and even superior intelligence.

Emotional difficulties may often lead to an apparent retardation. Emotionally disturbed children do poorly in school and often perform far below their actual mental level.

An alert psychiatrist or pediatrician experienced

with normal and abnormal children is usually able to assess properly the child's mental status in most of the above-mentioned conditions.

The most controversial differential diagnostic problem concerns children with severe retardation, brain damage, early infantile autism, childhood schizophrenia, and, according to some, Heller's disease. The confusion stems from the fact that details of early history are often unavailable or unreliable, and, by the time they're evaluated, many children with these conditions manifest similar bizarre and stereotyped behavior, mutism, or echolalia and function on a retarded level. By the time these children are usually seen, it does not matter from a practical point of view whether the child's retardation is secondary to a primary early infantile autism or schizophrenia or whether the personality and behavioral distortions are secondary to brain damage or retardation on other bases. When ego functions are delayed in development or are atrophic on any other basis, the physician must first concentrate on overcoming the child's unrelatedness. The child must be reachable before one can successfully apply remedial educational measures.

Several differentiating diagnostic criteria have been suggested, such as neurological signs, EEG, withdrawal, obsessiveness, better relation to objects than to people, and retention of an intelligent physiognomy. Since these conditions may be interrelated, the diagnosis may be very difficult without an adequate follow-up. Some people use the term "atypical child," implying a common organic matrix for all these conditions. This approach has inherent dangers that always accompany the grouping of medical conditions according to one or several common symptoms. It invites diagnostic complacency and discourages efforts to find more precise diagnostic criteria.

Prevention

Primary prevention

Public education. A preventive approach to mental retardation can only succeed in an educated, enlightened community. Without wholehearted support of the people for whom it is intended, the best conceived plan is doomed to failure. Public education is of particular importance in enforcing preventive measures against mental retardation, since one has to sweep away a cobweb of superstition, inertia, and revulsion that has developed over the ages, compounding and perpetrating the ignorance in this area.

The public has to be educated that mental retardation is a symptom producing a handicap and not a curse or visitation; that, as in many other illnesses, its etiology can be studied, treatment found in some of its variants, and amelioration found in most; that mentally retarded people have feelings of love and hate, anger and compassion, and have a need for affection, comradeship, and a sense of belonging,

like all of us; and that, as citizens, they have inalienable rights, which include the best that medicine and education have to offer and the right to the pursuit of happiness, which, in the case of the mentally retarded, means a right, inasmuch as possible, to a productive existence and humane treatment.

Only when such basic issues are clarified and become common knowledge and conviction can people begin to think in preventive terms and take preventive measures seriously. As experience with mass vaccinations, venereal diseases, and prenatal care in this country clearly showed, merely to offer the means of prevention, however perfect, will be useless unless people avail themselves of existing facilities. The public attitude is of even greater importance in the prevention of mental retardation. In addition to concrete, relatively easily administered measures, such as vaccinations and screening examinations of blood and urine, the main hope lies in far more complicated measures, such as ensuring an appropriately stimulating environment for a young infant or providing an emotionally stable environment for the growing child.

Public education has to proceed on several levels—impressing school children with basic facts about mental retardation, reaching their parents through communication media and through patient personal efforts of interested professionals, going out among those of the underprivileged who are at greatest risk and trying to win their cooperation. Isolated examples of such personal crusades and their sometimes spectacular success make headlines, but, unless they become a formalized mass phenomenon, there is little hope of finding a solution to the problem of familial culturally determined retardation, which accounts for the majority of all mental retardation in the United States.

All members of the community, regardless of their socioeconomic status, have to be kept abreast of the new developments and insights, ranging from the importance of preventing measles to the modern concepts of institutional care. Significant strides have been made in the last decade or two in this field of public enlightenment, both in the awareness of various causative factors and in the need to create and support measures to prevent them. But only small inroads have been made in the most disadvantaged group.

Improvement of socioeconomic standards. Basic to any real improvement in this area is the raising of the standards of living and education among disadvantaged, forgotten citizens. There is little value in preaching about the value of proper nutrition to people who lack bare necessities or in explaining the virtues of verbal stimulation and a great variety of toys to a husbandless mother of eight, living on public assistance. One has to attack the basic social and economic conditions that give rise to all the secondary phenomena, such as malnutrition, prematurity, ob-

stetrical hazards, understimulation, and overstimulation. People who are given good vocational training that permits them to compete successfully in the labor market and be economically secure are much more inclined to think in terms of securing good health and education for themselves and their families. But half measures and superficial palliative solutions cannot be effective in interrupting the vicious self-perpetuating cycle of poverty.

Unlike the inborn errors of metabolism, in which the abnormality can be successfully treated by measures concentrating on one point in the metabolic pathway, the pathway of poverty has many defects or blocks. Only a concerted, simultaneous, vigorous effort that attacks all these points at once may drastically alter the total picture. Improvement in employment opportunities presents one such strategic point. The reform of welfare practices, to permit more than bare survival, represents another. A coordinated effort by social agencies, government authorities, and community leaders, including representatives of the poor, to strengthen family stability in slums through vigorous case work, financial aid, and rehabilitation of individual family members is of equal importance.

Only a cohesive, economically and emotionally secure family can offer the proper soil for both intellectual and emotional growth. To reach and to stabilize the family units in the slum culture requires new, bold approaches, often departing from the traditional ones in psychiatry and social work.

The securing of proper housing is another aspect of rehabilitation that is important for medical as well as social reasons. One cause of mental retardation, lead poisoning, is fostered by pica. The newly acquired knowledge about the psychodynamics of pica may be useless in the prevention of lead poisoning unless decent dwellings, free of lead paint, are provided.

Providing vigorous programs of adult education and vocational retraining and wholesome recreation for people of all ages may help to overcome the inertia and fatalistic attitudes which present the major obstacles to the implementation of preventive and corrective measures. In helping people adopt and accept modern principles of prenatal or infant care, group discussions and group lectures in small circles are far more effective than official sermons by cold, impersonal authorities who fail to bridge the gap separating the rich from the poor. Only a reawakening of a sense of dignity can provide the proper motivation for self-improvement and self-help, which are far more effective than paternalistic spoon-feeding.

School buildings, school personnel, and school programs have to be improved and enriched to reach the young. Preschool training in the early formative years needs more vigorous community assistance. Whenever possible, this should be done in close cooperation with the child's family, impressing them with its importance and patiently teaching them the

principles of healthy diet and verbal and nonverbal stimulation.

Whenever a mother is working or is unavailable, a community-supported infant and child care center, staffed by well trained educators and aided by volunteer members of the community, may provide an appropriate program. Many less affluent countries have social laws that protect the working mother by the provision of generous, paid prenatal and postnatal leaves and adequate day care centers for their infants and children located near their homes or places of work. Practices in this country are still quite antiquated and need urgent revisions.

Preventive medical measures. Improvement of prenatal care is a recognized cornerstone in all efforts to prevent mental retardation. To begin with, restricting the number of pregnancies in adolescence and after the age of 40 will reduce the risk of chromosomal aberrations and obstetrical complications. Prevention of prematurity; detection of Rh and other blood incompatibilities; adequate nutrition during pregnancy, including vitamin and mineral supplements; control of maternal diabetes, pretoxicemic states, syphilis, and other infections by appropriate medication and diet—all these no doubt help reduce the number of reproductive casualties that Pasamanick et al. showed to be responsible for a host of disorders associated with mental retardation.

Preventive obstetrical measures include good technical preparation of the delivering physician, not always available in overcrowded city and rural hospitals; reduction of the amounts of anesthetic and analgesic drugs given to women in labor, since they often have a depressing effect on the baby; a less lackadaisical obstetrical attitude toward neonatal transient apnea, which can produce lasting brain changes, despite its short duration; better monitoring of the vital fetal signs during labor; caution in the use of new drugs during pregnancy, unless their lack of harmful effects on the baby is proved beyond a reasonable doubt; and standardization of delivery records by the universal adoption of the Apgar scoring system, which may become the first *reliable* information in the natural history of mental retardation.

Pediatric preventive measures cover acute and long range problems. The measures covering acute problems include improvements in infant resuscitation techniques; early recognition of hemolytic diseases of the newborn and their vigorous and early treatment by skillful exchange transfusions and the still experimental intrauterine transfusions; early recognition of transient convulsive disorders caused by such factors as hypoglycemia, hypocalcemia, and pyridoxine deficiency and their prompt treatment. A close cooperation between the obstetrician and the pediatrician and their respective departments is indispensable in securing improvements in neonatal care.

The long range pediatric measures involve prevention of acute illnesses potentially dangerous to the central nervous system. In addition to already available vaccinations against many viral and bacterial diseases, new ones may be expected shortly, especially against German measles. Further, the supervision and, if necessary, improvement in the infant's nutritional status, especially his intake of protein, vitamins, and other essential food ingredients, is very important. Recognition and early treatment of various diseases potentially affecting the central nervous system, such as meningitis, hypernatremia, lead poisoning, and convulsive disorders, will help to reduce the number of sequelae resulting in mental retardation.

Obstetricians and pediatricians are doing a creditable job of primary prevention in their private practices, but this care is not universally available for the indigent, and most vulnerable, population. This opinion is best supported by reliable statistics indicating that in the rate of infant mortality the U.S. is in 10th place, having a worse record than far less affluent and technologically advanced nations. Another statistic indicates that in many big city slums, as many as four fifths of all pregnant women never have any prenatal care. Human social factors explain the failure to use existing free prenatal and well baby clinics. Several measures could help remedy this paradoxical situation. Providing a continuity of doctor-patient relationship in the clinics by having the same physician see a patient over a span of at least 1 year, instead of providing the prevailing impersonal assembly line atmosphere, would certainly be a major incentive to the continuity and regularity of medical care. The impersonal use of "Mother," "Miss," etc., without the addition of the family name, hardly inspires confidence or induces a resolve to follow the physician's directions or to return for the next scheduled appointment.

The role of other specialized personnel is vital to the success of any preventive mass program. The public health nurse, the social worker, the nutritionist—all can maintain a warm contact with their patients and their families, facilitating communication and ensuring a follow-up. Latest innovations in this field include a traveling well baby clinic on wheels, operating literally on the principle of reaching out into the community, and child care counselors recruited from among middle-aged, intelligent women, trained intensively in infant development and well baby care, who help spot potential distortions in the baby, in the mother, or in the mother-baby interaction and who work intensively with the mothers to help them in child rearing.

These measures may help, no doubt, but the real key to the dilemma of improving physical and mental health in indigent populations may well be in the new concept of comprehensive health programs, based at headquarters in a multipurpose community health

center or hospital and branching into the community through the use of satellite preventive clinics. Each such program encompasses a delineated part of the city, the inhabitants of which and their health status will become known to the program staff. A thorough knowledge of the community permits the early spotting of hard core multihandicapped families and other potential risks and permits zeroing in on a troubled family in a very intensive way. This kind of network will help reduce greatly the number of stragglers, the ones who skip appointments or who are too inhibited or depressed to seek help on their own. Such programs, if successful in winning over the community and its leaders, are the main hope at present for the effective prevention of much of the mental retardation in this country.

Genetic counseling. Genetic counseling, which usually involves the question of the desirability of future offspring by the parents, siblings, and sometimes more distant relatives, can be done by private practitioners and staff physicians in clinics and hospitals. Knowledge in this area is still limited, and precise data are available in only a few conditions. Thus, the amount of presently available information can be acquired and usefully applied by any practicing physician. This use has to be preceded, however, by an exact diagnosis, which may require biochemical and cytogenetic studies.

In many cases of mental retardation, the problem of genetic transmission is either unknown, unresolved, or very complex. Counseling of such cases is better left to mental retardation evaluation centers staffed by specialists in this area and equipped with a cytogenetic and biochemical laboratory, permitting the performance of specialized tests.

In the counseling of parents of patients with Down's syndrome, it is of greatest practical importance to differentiate between the cases resulting from translocation and those caused by trisomy. In the former, the risk of having a second child with Down's syndrome is 1 in 3; in the latter, it averages 1 to 2 per cent.

With some exceptions, conditions known to be caused by a dominant recessive gene are quite predictable, in that the children of affected persons have a 1 in 2 chance of inheriting the same disorder, but the asymptomatic relatives do not carry the deleterious gene.

In cases of autosomal recessive genes, the accurate prognosis is more complicated, but certain fundamental facts are known and may be used in practice. The parents of one child with such a condition run a 1 in 4 risk of having a second affected child. This is true in PKU and galactosemia. The siblings of PKU patients are heterozygous carriers in two thirds of all the cases that can be confirmed or ruled out by a phenylalanine tolerance test, but their chance of having a PKU child is only 1 in 250, provided they marry outside their own family. Equally predictable

are the sex-linked diseases, in that half the sons of a carrier mother are affected, and half the daughters are carriers.

In stating the likelihood of a second defective child, the counselor is doing nothing more than making a statement of mathematical statistical probabilities. There may be a statistical risk of 1 in 4 of two heterozygous carriers having a phenylketonuric child, for example, but the couple may be lucky or unlucky and may have either four normal or four affected children in a row. The physician's role is to present the known facts and also the uncertainties to the parents frankly and openly, to tell them what the chances are insofar as these are known, but to recognize that what to do in the presence of any particular set of odds is a parental rather than a medical decision.

Counseling the family about the procreation of the mentally retarded themselves presents several legal, ethical, and scientific problems. The severely retarded are seldom fertile, and the proof of genetic inferiority of the majority of the mildly retarded is still lacking. Regional approaches to this problem are reflected in differing state laws affecting sterilization and abortion. An increased interest in this question can be anticipated with the present trend to keep the mentally retarded within the community. An appointed panel of medical specialists and lawyers acquainted with the intricacies of this problem would seem most suitable to examine each case on its own merit and to pay attention to possible hardships to the family, the community, and the patient himself. Judicial sterilizations and abortions may be very helpful in individual cases, but their influence on the prevalence of mental retardation in the population is negligible.

Secondary prevention

Early identification and treatment of hereditary disorders. Despite considerable progress in this area, there are still only a few conditions in which early detection and treatment may prevent mental retardation. Mass screening for inborn errors of metabolism is recommended at present only for PKU, galactosemia and possibly maple syrup disease, but several other conditions may be added shortly to this list.

The simple urinary tests for PKU (ferric chloride) do not become reliable until the baby is 4 to 6 weeks old. The Guthrie bacteriological method of blood examination may help detect the condition in the 1st week of life, which is of importance, especially in indigent patients, who may not be readily available for testing after their discharge from the obstetrical unit. Dietary treatment with a low phenylalanine diet is effective in preventing at least the severe degrees of retardation and the behavioral manifestations if it is started in the first 6 months of life. This treatment carries certain hazards, and its administration re-

quires the teamwork of several specialists—physician, nutritionist, social worker, nurse—to assist the parents and to evaluate the child at frequent intervals. Such supervision is probably best carried out in specialized centers.

Galactosemia can be readily screened by using Clinitest and examining the urine for reducing substances. Treatment requires the omission of milk from the diet; several milk substitutes are readily available. Early detection and institution of treatment is effective in preventing mental retardation and other manifestations of this disease. Milk may be reintroduced into the diet in moderate quantities at the age of 4 or 5 years, since by that time the child apparently develops alternative metabolic pathways for handling galactose, but these are not sufficient to handle a quart of milk a day.

The third condition in which early diagnosis is crucial is hypothyroidism. Although diagnosis is not always easy in early infancy, careful examination, coupled with a high index of suspicion, helps the physician detect the disorder in most cases. His suspicion aroused, the physician has several tests available with which to confirm the diagnosis, such as radioactive iodine uptake, protein bound iodine (PBI), and butanol extractable iodine (BEI) in the blood. On confirmation of the diagnosis, it is essential to institute immediately vigorous treatment with thyroid extract, preferably during the first 6 months of life. Treatment started after that time seldom prevents mental retardation, although it may still mitigate the results of thyroid deficiency.

There is now dietary treatment available for a number of amino acidurias, such as maple syrup disease but, despite recent developments of several diagnostic methods, mass screening for most of these conditions does not seem justified at present.

Medical and surgical treatment of other conditions. Prompt diagnosis and treatment of bacterial meningitis with antibiotics and occasionally with steroids may prevent neurological sequelae, including mental retardation. The sequelae of viral meningocephalitis are best prevented by immunizations, since at present only supportive therapy is available, although there is some promising research in the area of antiviral therapy.

Lead poisoning, caused by the chronic ingestion of lead, should be suspected, especially in indigenous populations, in cases of unexplained vomiting, abdominal pain, irritability, failure to thrive, and encephalitic signs. At Children's Hospital of the District of Columbia, interest in the pica phenomenon led to a high index of suspicion in the staff, resulting in a rate of detection of plumbism in the clinic population exceeding by far the frequency in other pediatric centers. Prompt deleading with Versene is usually effective, but relapses are frequent, due to the personality difficulties of the mothers and continued availability of lead paint in dilapidated slum dwell-

ings. Each relapse increases the risk of permanent central nervous system damage. Effective prevention must include provision of decent, lead-free housing and intensive parental counseling.

Surgical treatment that is effective in preventing mental retardation is limited to only a few conditions. Evacuation of a *subdural hematoma* following a trauma or meningitis is a simple procedure that has to be supplemented in some cases by the excision of the membrane from the subdural space. If untreated, the condition may result in irreversible brain damage and mental retardation.

The surgical treatment of hydrocephalus is far less satisfactory. Several procedures for shunting the excess cerebrospinal fluid to various areas of the body are employed with varying success in different centers, but the over-all results are still rather disappointing.

Craniosynostosis, premature closure of the suture lines, may be corrected by a craniectomy. If performed early in infancy, the operation will allow the rapid brain development of this period and prevent damage caused by its restriction. It is important not to confuse this condition with congenital microcephaly, in which surgical measures are useless.

Excision of the epileptogenic focus in temporal lobe epilepsy may be effective in cases that fail to respond to anticonvulsant medication.

The results of various experimental procedures designed to increase the blood flow to the brain and thus improve mentation have not been very promising to date.

Early recognition and handling of children with isolated handicaps. There is a growing recognition of the existence of a large number of infants and children with isolated motor, sensory, perceptual, behavioral, and intellectual difficulties. By some estimates, the number comes to about 5 per cent of the general school population. Etiology varies from hereditary factors to mild brain damage due to obstetrical insults. The early history in many of these children suggests some prenatal, perinatal, or postnatal difficulties, and the resulting variety of symptoms gives support to the concept of a continuum of reproductive casualty. In as many as half of these patients, the early history is noncontributory, and one could think, in mild cases, in terms of delay of maturation of the CNS.

The perceptual difficulties may manifest themselves in disturbances of body image, spatial relationships, and design recognition. These are often accompanied by EEG changes and give rise to many learning problems. Perceptual training aimed at overcoming these difficulties is still in the experimental stage, but it is to be hoped that practical methods in this area will emerge shortly, with specific recommendations as to appropriate play materials and play methods.

In frank sensory deficits, such as deafness or blindness, the child can be helped by intensive use

of the remaining normal sensory pathways, which enables the developmental and socialization process to progress along normal lines by maintaining communication between the child and his environment. Failure to recognize these handicaps early and to employ compensatory avenues of sensory input often results in preventable mental retardation and withdrawal.

Deficiency in the motor area may manifest itself as general clumsiness and poor coordination, which interfere with the mastery of motor skills, such as writing. Making allowances for this will prevent penalizing the child and holding him back in school. Early recognition of this handicap in a younger child helps the parents delay introduction of such activities as bicycle riding or ice-skating to spare the child the sense of failure.

Isolated scholastic difficulties may involve number concepts, reading, handwriting, or abstract thinking. Help in these areas, by way of small groups or individual tutoring, may make it possible for the child to keep up with his age-mates. There are a number of teaching methods available to deal with these learning problems, and it is incumbent on school officials to provide such specialized services.

Distortions in reactivity patterns, such as hypersensitivity and hyposensitivity to various sensory stimuli, may be overcome if recognized early and treated appropriately. An infant or young child with a low arousal threshold does better with a lowered intensity of environmental stimulation. The reverse holds true for children with a high arousal threshold.

Distractibility and hyperactivity due to mild brain damage or to unspecified constitutional factors present stumbling blocks to learning and are starting points of child-parent and child-teacher conflict, resulting in a behavior problem. Effective medical measures include the use of amphetamines, phenothiazines, and some antihistamines. The educational measures usually employed aim at increasing the child's attention span by limiting his visual field to only a few items essential to the task at hand. Small classes for such children allow the teacher more flexibility and a more liberal behavior policy than is possible in a regular large classroom. The parents' attitude toward the child improves as they are better able to understand the causes of his erratic behavior.

The problem of aphasia in children is the most difficult and controversial of all manifestations of minimal brain syndromes. The difficulty is primarily on the receptive level and may occur at any point of the central auditory pathways, resulting in a variety of disorders in the reception of auditory stimuli. Expressive aphasias, which prevent the child from expressing his thoughts while allowing him to perceive and interpret sounds correctly, are relatively rare in children. Aphasias may often be masked by mental retardation or autistic withdrawal and, if not recognized and treated early, may well result in these conditions. The training of aphasic children, aiming

chiefly at maintaining communication, requires highly specialized personnel and is done best under the aegis of a hearing and speech department in an academic center.

All these handicaps, regardless of etiology, are very taxing to the child, his parents, and his teachers. The resulting conflicts may contribute to the development of serious psychiatric difficulties, such as uncontrollable aggressive behavior, difficulties in group adjustment, withdrawal, and passivity. Despite a normal intellectual potential, the children may function on a retarded level if continued in an unsuitable school program. The emotional difficulties and the retardation are best prevented by an early diagnosis followed by long term parental counseling and guidance by the physician or appropriate paramedical or educational specialists. Psychotherapy is required for only those few patients who have already developed serious school difficulties. Environmental adjustments, such as the establishment of a routine, flexible but firm limit setting, appropriate regulation of the sensory input, and opportunity to burn excess energy, often result in a rapid, striking improvement, particularly in infants and young children.

Early identification and treatment of the culturally deprived child. Infants from disadvantaged, deprived backgrounds are indistinguishable from their more fortunate age-mates in the 1st year of life. They often score even higher than middle class children on infant development tests, which are all heavily weighted with sensorimotor items. However, in the 2nd year they begin to fall behind, and by the age of 2 or 3 years they show delay in speech development, less originality and spontaneity in play, and a constriction, rigidity, and general impoverishment of the thinking process. It is estimated that, by the time deprived children begin their school career, the gap separating them from more privileged children widens to about 1 to 2 years.

The early recognition of environmental deprivation by the physician requires his knowledge of both normal and deviant child development. Periodic developmental examinations or screening by physicians or other trained professionals is the best guarantee of early detection.

The treatment of culturally determined retardation aims at filling the gap by providing more sensory, verbal, and emotional stimulation and by the introduction of new, pleasurable experiences and useful skills to widen the child's intellectual horizon. Appropriate counseling and guidance may make it possible to conduct such enrichment programs at home, but often a well staffed child care day center provides the most appropriate setting for the mental rehabilitation of these children. There is reason to believe that an intensive, systematic application of such enrichment programs throughout the country may reduce the number of mentally retarded by at least 50 per cent.

The environmental hazards for children from deprived backgrounds are not limited to the preschool age. They enter school under serious handicaps, and only a rich program conducted by experienced teachers in small classes may bring them up to the expected grade level. Unfortunately, these children often attend schools housed in dilapidated buildings, in crowded classes conducted by inexperienced teachers overwhelmed by the magnitude of their task. As a result, the prevailing standards are below the national average, and the initial gap widens, leading to a relative retardation.

The detection and treatment of emotional difficulties in young children may prevent serious learning difficulties in the future. This requires more attention being paid to the child's personality development in the course of well baby and child health care. The emphasis on detection has to be coupled with a greater availability of facilities and staff for parent counseling and psychotherapy.

Tertiary prevention

Treatment of behavioral and personality difficulties. The emotional problems of the mentally retarded differ in many ways from similar ones of children with normal intelligence. Consequently, they often require methods of treatment not commonly employed with the latter group. This applies particularly to the moderately or severely retarded; the mildly retarded may profit greatly from conventional play and activity group therapy.

The chief obstacle to effective psychotherapy is the difficulty in establishing communication with the child. Meaningful verbal interchange is difficult or impossible, due to faulty language development and impairment of concept formation. The latter often interferes with the use of toys and play situations as symbolic representations of the child's concerns. The therapist has to operate on a very concrete level in order to reach the child and above all has to be flexible and pragmatic. Methods used with disturbed infants and young children may be usefully applied, aiming toward making the child comfortable and relatively free of anxiety. Physical contact may be indicated in some children, but others react to it with panic and disorganization. Repeated clarification of situations and the therapist's reactions and intentions is very reassuring. Engaging the child in shared activities is probably the most effective way to establish a meaningful relationship. Unlike that in conventional psychotherapy, firm limits have to be established and adhered to consistently, particularly in children with difficulty in impulse control. Verbal and nonverbal reassurance and praise should be used generously, and situations should be set up that permit the patient to succeed. In addition, concrete evidence of affection in the form of small gifts, toys, and candy is very helpful, as are such pleasurable activities as trips to the drug-

store, park, playground, etc. Many would call it relationship therapy or good mothering, but it certainly is psychotherapy in the broad sense of the word.

Counter-transference problems may be serious and often resemble those encountered in the course of treatment of psychotic children. The patience and ingenuity of the therapist are taxed much more in cases of mental retardation associated with psychosis. As in the treatment of adult schizophrenics, the therapist, in order to be effective, may require certain personality attributes that are yet to be determined but that probably include spontaneity, flexibility, and tolerance.

Individual and group psychotherapy may be effective only if it is an integral part of a structured program involving the total milieu of the child, including his home and day or residential school. Establishing an appropriate school program, matching the child with suitable teachers and child care workers, establishing order and consistency at home, and building an appropriate recreational program are all essential components of such a total program, which has to be coordinated and unified. One may see the psychiatrist's role primarily as that of coordinator and guide of such programs.

Drugs play an important role in the psychiatric treatment of the mentally retarded. Many reports of institutionalized children describe excessive drug dosage, often 10 to 20 times higher than is usually recommended. Since most of the ataractic drugs are not without hazards, caution is indicated, and excessive dosage should be discouraged. This is especially true of children living at home or in institutions without constant medical supervision. Phenothiazines are the most widely used and probably the most effective drugs. Hyperactive, restless children often profit from amphetamines. Antihistamines have also been applied by some with good results. Barbiturates are usually contraindicated, since they often produce the unexplained paradoxical effect of increasing the restlessness and tension.

Parent counseling. Parent counseling is of paramount importance. The approach to parents has to be flexible and pragmatic. Some parents need help only in coming to grips with their feelings about the child and require a conventional dynamic casework approach. Judiciously used support, reassurance, guidance, and practical advice as to the management of the child are often indicated. Homemaking services, temporary placement of the child in institutions, and similar arrangements increase the parents' effectiveness by giving them periodic relief. Group therapy, which permits the sharing of burdens and getting reassurance from similarly afflicted parents, is especially effective with parents of retarded children, and this explains the rapid proliferation, success, and popularity of parents' groups in the last 2 decades.

The problem of institutionalization is probably

the most difficult aspect of counseling and guiding parents of retarded children. The huge, impersonal, understaffed state institutions for the retarded are the outgrowth of the nihilistic and pessimistic thinking about mental retardation in the past. The physicians who then recommended immediate hospitalization following the diagnosis were in accord with the contemporary medical thinking and community attitudes. Today the public's philosophy in this area is undergoing a radical change; it was given impetus by the research on maternal deprivation and the new community orientation on mental retardation.

Early institutionalization (before age 6) is seldom indicated and takes a heavy toll in the social and the intellectual development of the child. Many parents might keep the retarded child at home, at least for the first few formative years, if they have the appropriate guidance, support, and interest of the physician. There are instances, of course, where the family equilibrium is so shaky and the emotional balance of the family members so precarious that early removal of the child from the home is necessary in the interest of the family. This, however, is the exception rather than the general rule.

Effective parent counseling by the physician requires his thorough knowledge of the appropriate community agencies and resources in his area, such as educational facilities, institutions, vocational rehabilitation, public school classes for the retarded, and sheltered workshops.

Modern concepts of institutional care. The early pioneers of residential care for the mentally retarded stressed education and training. The failure of early exaggerated hopes to materialize caused a shift of emphasis. Institutions took on a custodial character, protecting the retarded individual and isolating him from the community. Today the thinking in this field has come full circle. Training, education, treatment, and rehabilitation are once again the primary goals. This radical change in orientation closely parallels a similar revolution in the concept of mental hospitals. Both areas now share similar goals of intensive treatment and reintegration of the patient into the community. The main obstacle to this goal is the large size of most state institutions and their inclusion of patients of all ages with all degrees of mental and physical handicaps, which precludes individual attention except for the most promising patients, that is, the least retarded.

The realization that mentally retarded people have need of affection, approval, and dignified treatment prompted the current gradual change of institutional settings. Instead of huge, sterile barracks with endless rows of beds and little else, a homelike setting is advocated, planned around smaller units that include living rooms, playrooms, separate kitchens and dining rooms, and attractive bedrooms. The homelike atmosphere is underscored by the careful choice of personnel for such units or cottages. Their emotional

stability and motivation guarantee their effectiveness as substitute parents. Dealing with a relatively small stable group of children and adults helps the retarded child, especially in his social maturation, in the areas of impulse control and the development of meaningful human relationships. The small group concept is extended to classrooms, workshops, and recreational facilities. Children are grouped according to age, degree of retardation, and type of handicap. Only such grouping permits the tailoring of the program to fit the needs of the individual child.

Contact with the child's family should be maintained primarily through the location of residential care centers within the community, by liberal visiting hours, and by the encouragement of regular, frequent home visits whenever feasible.

In addition, a number of other facilities may serve the needs of mildly retarded individuals who cannot be cared for at home and yet do not require a full time residential center. These facilities are best located in the vicinity of a larger institution or health care center, where needed services may be obtained without delay. The half-way house or hostel originated in Western Europe and proved very useful in the handling and rehabilitation of chronic schizophrenic patients. It also seems ideally suited for adolescent and adult mildly retarded individuals who require a minimum of supervision and can work in the community. Patients of the same age group who require more guidance may do well in sheltered workshops, where they are engaged in productive work geared to their skills, under close supervision. Recreational day centers for children of all ages give parents a welcome relief and an opportunity to lead a normal life and may enable them to keep even a disturbed child at home. The parent can be assisted in home care by a number of specialized services, such as visiting nurses, social workers, and visiting housekeepers, and by an opportunity for temporary short term placement of the retarded child in an institution or summer camp in times of crisis and increased family tension.

At present, there are about 200,000 mentally retarded individuals in residential care, which amounts to about 4 per cent of the estimated total retarded population. Recent experience clearly shows that the introduction of modern diagnostic, treatment, and training facilities into the community reduces the need for long range institutional placement, which in time will probably be limited to bedridden, profoundly retarded patients and those with severe emotional disturbance.

Vocational rehabilitation. The area of vocational training and rehabilitation has been neglected in the over-all educational program for the mentally retarded. The stress has been on academic skills, leading to frequent disappointments because of negligible gains, despite intensive and patient efforts. Since recent experience indicates the capacity of almost all

mentally retarded to be productive, the emphasis is gradually shifting to vocational and provocational training, especially within the adolescent group.

To be effective, such programs have to include a variety of training possibilities tailored to the individual's skills and previous experiences. A detailed assessment of the patient's strengths and defects in functioning must precede any sensible program planning. As in all other phases of education and training, the success of such programs depends largely on a small instructor-trainee ratio, on the amount of individual attention available, and on the support of the community. Vocational services should include counseling of the trainees and their families and an employment placement service.

Physical rehabilitation. The mentally retarded, especially those in the moderate or severe group, are often afflicted with a variety of physical handicaps that further reduce their potential for normal functioning. Sensory deficits, especially of vision and hearing, require correction whenever possible and special training if the damage is irreversible. Blind, deaf, or aphasic children do better as a rule in specialized centers, with special training and educational facilities. Children with motor difficulties often require orthopedic services as well as physical therapy. For such children, the unavailability of crippled children's programs to the retarded is particularly to be deplored.

Awareness of the unfavorable body image of the mentally retarded has recently prompted some consideration of the role of plastic surgery in correcting some of the stigmata of the mentally retarded for cosmetic reasons.

Special education. The education of the mentally retarded shares, with the education of normal children, the goal of preparing the student for future satisfactory life adjustment and helping him develop his full potential. There is often disagreement among educators, however, as to what presents a reasonable objective for a given child and the best way to achieve it. This has resulted in many rival theories and curricula, which can confuse rather than guide the educator.

It may help bring the controversy into historical perspective to remember that the principles of special education laid down by the early pioneers over a century ago are still among the best guidelines available. Recent knowledge of the importance of neurophysiological, cultural, and affective factors in the learning process confirms rather than detracts from their validity.

Itard's five objectives in the management of the wild boy of Aveyron were: "(1) To render social life more congenial to the boy by making it more like the wild life he had recently kept. (2) To excite his nervous sensibility with varied and energetic stimuli and supply his mind with the raw impressions of ideas. (3) To extend the range of his ideas by

creating new wants and expanding his relations with the world around him. (4) To lead him to the use of speech by making it necessary that he should imitate. (5) To apply himself to the satisfaction of his growing physical wants, and from this to lead on to the application of his intelligence to the objects of instruction" (Kanner).

Guggenbühl stressed "(1) the development of sensory perceptions beginning with primary excitations and progressing to more refined complex stimuli, (2) attempts to awake the soul through habituation to regular routine, memory exercises, and speech training" (Kanner).

And Séguin, in his classical textbook, published in 1846, said: "To be physiological, education must at first follow the great natural law of action and repose, which is life itself. To adopt this law to the whole training, each function in its turn is called to activity and to rest; the activity of one favoring the repose of the others; the improvement of one reacting upon the improvement of others; contrast being not only an instrument of relaxation but of comprehension also. The general training embraces the muscular, initiative, nervous, and reflective functions, susceptible of being called into play at any moment" (Kanner).

The preceding passages sound surprisingly modern and seem in perfect accord with our views concerning sensory stimulation; the value of a familiar, stable environment; the intersensory organization as a precursor of intelligence; the role of motivation; the value of routine and of stimulus variation; the importance and promotion of speech; and the Pavlovian bipolar view of the higher nervous activity, oscillating between the states of excitation and inhibition, to mention just a few.

The role of emotional ties between the student and the instructor is not explicitly stated by these pioneers, but is implicitly conveyed by their conduct. Itard devoted 5 years exclusively to the training of the wild boy of Aveyron, and Séguin spent 18 months on the treatment of an idiotic child.

The present system of special education employs the division between the educable—those capable of grasping the rudiments of academic skills—and the trainable—those capable of acquiring only basic social habits. The general characteristics of the retarded group, particularly where there is also brain damage, include rigidity and concreteness of thinking, distractibility, and poor motivation. (The methods applied to overcome these handicaps vary, but they all share several general principles strikingly similar to those mentioned above: limiting the number of available stimuli; gradual introduction of new, more complex experiences; emphasis on success to bolster motivation; and utilization of several mutually reinforcing approaches—visual, auditory, tactile, kinesthetic, and verbal—in the teaching of a single concept.)

A few of the new trends in special education may be mentioned here: (1) the lessened emphasis on academic performance and greater stress on prevocational and vocational training and on practical life experiences; (2) the attempt to recognize small rather than global units of the child's functioning, permitting the precise identification of his assets and building an individual program around these assets; (3) the introduction of operant conditioning techniques in the training of the severely retarded, based on the principles of reinforcement of desired behavior by reward, reported as less effective in retarded children than in animals but useful in the habit training of this group; (4) the recognition of the value of psychiatric guidance and consultation by teachers and instructors.

The current emphasis on preschool education may be considered as the most important innovation in the field of special education. It is now generally recognized that early intervention may accelerate mental and social development and break up or correct faulty learning habits. Some people advocate such intervention in infancy, regarding this age group as most malleable and responsive to environmental changes.

Legal Aspects

The more humane approach to the mentally ill and the mentally retarded in the 19th century had a strong impact on the law throughout the civilized world. Concern for the weak, minors, and the naturally disabled is increasingly reflected in changing laws and statutes.

Many inherent difficulties greatly complicate the legal issues of mental retardation. The most formidable obstacle to the uniformity of opinion and procedures has to do with the lack of clarity in the areas of definition and classification. It is still controversial as to what criterion should be used by the legal authorities to classify a person as mentally retarded and to determine the degree of his handicap and legal responsibility. The common use of the intelligence quotient is being challenged by many lawmakers who prefer to consider the current degree of social adjustment and competency. Regardless of the choice of criteria, the issue is further complicated by the realization that mental retardation is not a static condition but rather one that is subject to change in response to environmental as well as maturational factors. The most expedient and just approach to the definition of mental retardation for legal purposes has to include the individual's level of present functioning and his intellectual potential as measured by various standardized tests, which may project the individual's functioning in the future.

Civil law. One of the most important legal issues in mental retardation has to do with residential care. Whenever possible, one prefers a voluntary admission to an involuntary commitment. This is often

complicated, however, by the degree of retardation or emotional upheaval that precludes a conscious choice on the part of the retarded individual. In the case of a minor, the parents usually assume the responsibility for the decision, and in cases of parental neglect or absence, the child falls under the general jurisdiction of the juvenile court and other official protective services. In the case of an adult patient, a legal procedure to determine his incompetency is often necessary before an involuntary commitment takes place.

Until recently, a patient admitted to a state institution for the mentally retarded often remained there for the rest of his life. Under the impact of new knowledge, however, an increasing number of residential patients are released into the community. Since permanent institutionalization is no longer considered beneficial or necessary for most mentally retarded, it is important to retest the mentally retarded patients in institutions at regular intervals to guarantee their basic right to live in a normal community if their general level of functioning improves sufficiently to permit it. This is obviously one of the many areas in which lawmakers will look for assistance from the medical and behavioral sciences.

Recently, it became obvious that most people in state institutions are there for two reasons: (1) the lack of proper educational, vocational, recreational, and counseling facilities in most communities, and (2) emotional difficulties. To guarantee the rights of the mentally retarded, the law would have to oblige the communities to create and improve appropriate facilities, including opportunities for psychiatric treatment.

The problems of guardianship and legal competency are often complicated, and a highly individualized approach by the legal authorities is most desirable. It is of great importance to determine the degree to which mental retardation interfered with the exercise of good judgment by the given individual. This will then be decisive in delineating the areas of social incompetency requiring decisions by third parties. It is preferable for the court to specify the areas to be included in the guardianship. A flexible plan may prevent the mentally retarded individual from administration of his property without restraining him from decisions concerning his person. Specific decisions may be required in matters such as signing of legal documents, voting, driving, marriage, adoption, and eugenic sterilization. The court will have to rely in all these matters on professional opinion, and the role of the psychiatrist as an expert in the area of human behavior is of crucial importance in helping the legal authorities arrive at a just solution. The usefulness of psychiatrists and of other members of a professional team—psychologists, social workers, vocational specialists—will largely depend on their acquaintance with mental retardation in all its complexity.

To safeguard the rights of the mentally retarded, a protective government agency is needed to supervise individual cases, especially when the immediate family fails to assume the responsibility. Such an agency might help a retarded person challenge court decisions through ordinary legal channels and should be available for consultation to the patient, the family, or other legally approved guardians.

Criminal law. This area is even more controversial than that of civil law because, in addition to the rights of the individual, public safety and the rights of the community are of great concern. Since the middle of the 19th century, there has been a growing awareness in the Anglo-Saxon law of emotional and intellectual handicaps, reducing the criminal responsibility of some members of society. Another growing trend is to view the sentence as a therapeutic and rehabilitative rather than a punitive process.

The paramount issue is that of competency to stand trial. Here again, the court will have to rely on professional, expert opinion, and the role of the psychiatrist in this context is quite obvious. His testimony will help the court to determine the defendant's capacity to exercise sound judgment, to highlight the circumstances leading to and surrounding the crime, and to decide on appropriate measures designed to be therapeutic. The psychiatrist will also be called on to help determine what degree and extent of isolation of a mentally retarded criminal is necessary for the protection of the community.

The previously mentioned protective government agency should attempt to ensure the legality of the judicial proceedings, the validity of the defendant's confessions, and the availability of proper legal counsel. This agency should also supervise the existing therapeutic rehabilitative facilities in state institutions, prisons, and the open community. A wide range of facilities within a state, including foster homes, half-way houses, and vocational training, will help the court reach a just decision.

The actual implementation of these measures varies greatly in the United States, with some striking differences between states and communities. Further improvement requires a general public enlightenment to help overcome some deeply rooted fears and prejudices. In addition, it requires a greater involvement and cooperation in the problem of mental retardation on the part of the legal, medical, and paramedical professions. The most perfect law will be useless without a trained interdisciplinary team familiar with all the facets and ramifications of mental retardation. The growing awareness of the need for change and reform of legal statutes in accord with contemporary knowledge of the nature of mental retardation found expression in several studies addressing themselves to this complex but necessary task, of which the most publicized was the Re-

port of the Task Force on Law of the President's Panel on Mental Retardation.

Role of the Psychiatrist

In the past, when organic approaches dominated the field of psychiatry, mental retardation was considered an integral part of mental illness; *dementia* and *amentia* were viewed as not very far apart. The predominantly dynamic orientation of the early part of our century was one of several factors responsible for the present dichotomy between the two disciplines. The change in psychiatric thinking, which now stresses the interplay among biological, psychological, and cultural factors in the shaping of human personality, permits the reintegration of mental retardation into psychiatry, the latter seen broadly as a science concerned with human behavior. The normal and deviant behavior of the majority of the mentally retarded shares many features with that of people with normal intellectual endowment. The problems are often similar, except for the timetable of their occurrence. The methods applied for the prevention of emotional difficulties in normal children seem to be equally effective in the mildly retarded group, which comprises about 85 per cent of the retarded. The behavior disorders of the severely retarded often resemble those presented by psychotic children and may call for similar therapeutic measures.

Increased understanding of personality development and its many biological and environmental determinants can be usefully applied to the study of personality development in the mentally retarded. Psychiatrists, especially child psychiatrists, seem uniquely equipped to contribute to the clarification of our basic thinking in this still controversial field. Conversely, the detailed study of the mentally retarded may increase our general knowledge of the reciprocal interaction of cognitive and affective factors in the process of learning and of the biochemical and neurophysiological corollaries to the adaptation of the human organism to stress.

The many hazards in the process of personality development faced by the mentally retarded point to the pivotal role of the psychiatrist in the prevention of retardation, as a consultant to other physicians, educators, and rehabilitation programs and as a direct participant, when indicated, in the treatment, care, and rehabilitation of the retarded. His training helps him recognize the innate developmental forces and environmental influences. By timely intervention, he may direct the handling of distorted personality patterns so as to identify and help interrupt patterns of pathological interaction between the retarded patient and his family or his care-takers. His training in identifying sources of anxiety and the nature of defensive maneuvers helps him in bringing about a reduction of tension, thus promoting emotional maturation and motivation for learning.

The study of the theoretical and practical aspects of mental retardation will greatly benefit the psychiatric trainee by offering him a unique exercise in nonverbal communication; an opportunity to study the evolution of defenses in their primitive forms, rarely seen in normal children and adults; and a dramatic demonstration of the interplay of dynamic and organic factors in human behavior. The strong feelings of counter-transference often provoked by working with mentally retarded patients permits the trainee to identify and come to grips with the regressive forces within himself in the early stage of his career, thus increasing his general therapeutic effectiveness.

The psychiatrist's role as an interdisciplinary coordinator, currently emphasized in psychiatric training, seems especially applicable to the field of mental retardation. The complexity of the problem calls for cooperation of many medical and nonmedical specialties. His knowledge of group dynamics and training in recognition of and dealing with the interaction of social, biological, and psychological factors places the interested psychiatrist on at least a par with the other candidates for leadership in many areas of service and community planning. Furthermore, as an expert in human personality development, he should play an important role in the training and education of physicians, psychologists, social workers, and educators in the field of mental retardation. His clarification of the sometimes bizarre behavior of the mentally retarded and the intrafamily tensions provoked by a retarded family member will greatly increase the effectiveness of all disciplines.

The role of volunteers in the field of mental health and mental retardation is of great practical importance in view of the acute shortage of trained personnel. Psychiatric guidance and supervision may increase the volunteers' competence and permit maximal utilization of their services, particularly in the process of social rehabilitation.

The reasons behind the institutionalization of the majority of the retarded are the behavior and attitudes that make it difficult or impossible for the individual to function in the community. The retarded child has as much right to have help with such personality disturbances as his brighter brothers and sisters. Thus, the psychiatrist has an obligation to be equally available to the retarded child and adult.

Role of physicians in other countries. All the pioneers in the beginning of the 19th century came from within the medical profession. They provided the leadership in medical matters of diagnosis and treatment and laid the foundation for the educational and training endeavors as well. The end of the 19th and the early part of the 20th century witnessed a gradual withdrawal of interest in the problem of mental retardation on the part of physicians. Diagnostic and therapeutic nihilism replaced the enthusiasm of people like Itard, Howe, and Séguin.

Medical research came virtually to a standstill, with only a few notable exceptions. The isolation of the mentally retarded both from the community and from the mainstream of academic learning deterred most physicians from personal involvement. It was left to psychologists and educators to pick up the slack and to make the major contributions to the understanding and the management of mental retardation. This phenomenon was more pronounced in the United States than in Europe.

A renewed medical interest in mental retardation in Western Europe and the U.S.S.R. began in the 1930's and has continued with increased vigor since the end of World War II. In the U.S.S.R., psychiatrists and neurophysiologists provide the leadership in research and in practical management, in close collaboration with the fields of psychology and education. In Western Europe, the impact of post-war social psychiatry led to experimentation with new concepts of community-based facilities for the mentally retarded. Most of the modern facilities that now serve as models for planners in this country are directed by physicians who usually come from the ranks of pediatrics and child psychiatry. Although nobody in Europe denies the necessity of interdisciplinary cooperation in this complex area, the physician is generally regarded as the one best suited to guide and coordinate such efforts. The excellence of many existing programs in Europe attests to the wisdom of this approach.

Needs of the Future

Educational programs for medical students and postgraduate trainees. The recent public interest in mental retardation will be followed by a gradually increasing involvement of the entire medical profession, which will be called on to assume leadership and responsibility in providing maximal help to the mentally retarded. The response to this call will depend largely on the development and expansion of training facilities in mental retardation for medical students and residents. The training programs have to be balanced between the theoretical and the practical aspects of the problem and will require a university-based or -affiliated clinical facility for the mentally retarded.

The training of medical students may be regarded as the most essential step in the process of physicians' education in mental retardation. The theoretical training should include human development, biochemistry, genetics, and social aspects of mental retardation. The student should also become acquainted with the problems of community resources and planning, with emphasis on prevention. The practical training is best done in a diagnostic and treatment clinic or in a residential facility that provides opportunity for observation and participation in medical management, parent counseling, contact with other such disciplines as psychology and social work, and some interaction with

public agencies. In addition to this basic, mandatory program, selected students should be encouraged to explore the field of mental retardation in greater depth, through participation in research projects and prolonged clerkship in a clinical setting.

Education in mental retardation must continue in postgraduate programs on several levels. Certain disciplines, such as pediatrics, psychiatry, obstetrics, and neurology, are most involved in the diagnosis, treatment, and prevention of mental retardation. Pediatricians are most strategically situated to detect and combat mental retardation. It is essential, however, to impart some fundamental knowledge of the problem to all physicians, especially to future general practitioners, the "primary" physicians. Such knowledge about mental retardation may be obtained during internship and residency programs and in postgraduate courses and is best provided by addition of specialists in mental retardation to the hospital staffs.

One may predict an increased need of physicians capable of assuming leadership in the field of mental retardation. This need becomes more apparent as the state plans for comprehensive mental retardation programs are emerging. Future leaders will best be recruited from pediatrics, psychiatry, and neurology. Their intensive training should cover the entire spectrum of problems relevant to mental retardation, such as diagnosis and treatment, placement, administration, research, and community relations. It is to be hoped that a variety of such programs will be developed to provide a cadre of versatile specialists, capable of meeting the different needs in this rapidly expanding field.

Community planning. The diversity of the handicaps associated with mental retardation requires a variety of services to meet all needs. They must include diagnosis, treatment, training, recreation, rehabilitation, and protective supervision, and they require a combination of medical specialties, social work, special education, and vocational training. These broad areas of service may be provided by private physicians and agencies, various state facilities and university clinics, public and private schools and hospitals. At present, there is an acute shortage of such services, but as various programs emerge, waste and duplication can be best prevented by careful community planning. The planning body should use existing facilities and support the creation of new ones. It should also pay attention to the training of professional personnel, without which not even the most modern facility can operate.

Recently, the concept of a comprehensive multi-purpose center has gained in popularity. Such centers constitute a fixed referral point in the community. Here, a thorough evaluation and treatment of the entire range of problems is provided, and there is also the most suitable place for parent counseling, with emphasis on proper placement. Such a facility could

cover a defined geographic area, and its usefulness might be increased by strategic location of satellite clinics in its vicinity. In such centers, a risk registry of high risk children would permit early identification of mentally retarded individuals in the area and an early start of treatment if available.

The recognition of the need for coordination of community services has brought forth the concept of "life planner." Such an individual would be intimately acquainted with the contribution of different progressions relevant to the field of mental retardation. His background and skills would enable him to provide life consultation and guidance to the retarded person and his family.

Areas of future research. The present research effort will no doubt become intensified with the establishment of university-based multidisciplinary research centers throughout the country. Several avenues of such future efforts are listed below.

Biochemical research. The inborn errors of metabolism will continue to present a most challenging field. In addition to the recognition of specific blocks of metabolism processes, the interplay between enzymes and the problem of cellular metabolism still await elucidation. The parallel discoveries in chromosomal and enzymatic research may permit the mapping of chromosomes. A breakthrough in the understanding of storage diseases seems imminent. Better understanding of brain metabolism represents another fruitful area, as does the elucidation of the structure of chromosomes.

Other organic factors. There is a pressing need for a better understanding of fetal metabolism and the placental function. The effects of the normal and abnormal birth process on the brain of the newborn and the role of maternal viral disease during pregnancy need to be elucidated further.

Educational research. Basic and applied research will be required to improve present teaching methods. Better knowledge of cognitive processes, application of motivational research, and emphasis on practical life adjustment may bring about radical changes in special education. Introduction of new testing methods may permit a better assessment of the student's strengths and weaknesses. This will obviate the present global approach and would permit the tailoring of individual curricula. The study of language development of the mentally retarded needs urgent attention.

Psychiatric and neuropsychiatric research. Correlation of organic factors with the mental status and personality development represents an area likely to be shared by psychiatry and neurology. Longitudinal personality studies of mentally retarded children will permit better planning for prevention of emotional difficulties and may contribute to a better understanding of early infantile autism and other childhood psychoses.

Suggested Cross References

Some of the specific syndromes associated with mental retardation are discussed in different contexts in Section 2.1 on genetics, in Chapter 10 on neurology, in Section 42.3 on childhood organic brain disorders, and in Section 21.1 on epilepsy. The section on genetics also contains a more detailed discussion of inheritance and of chromosomal aberrations and genetic counseling. Information regarding fundamental neurobiochemical and neurophysiological concepts may be found in Sections 2.2 and 2.5 through 2.9, respectively, in Area B, on the basic behavioral sciences. In that same area there are three sections that deal with social-familial determinants of behavior and intelligence: Section 4.3 on the family and psychiatry, Section 4.2 on sociology and psychiatry, and Section 4.1 on anthropology and psychiatry. Section 3.2 on cognition contains more detailed information regarding the nature and determinants of intelligence. More detailed information regarding the use of psychological tests in the assessment of mental retardation may be found in Section 39.3 on the psychological testing of children and in Section 12.1 on testing of intelligence and personality.

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Chapter 23

Psychoneurotic Disorders. I: Anxiety, Conversion, Dissociative, and Phobic Reactions

23.1 ANXIETY REACTION

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The American Psychiatric Association's *Diagnostic and Statistical Manual, Mental Disorders* defines anxiety reaction as follows:

In this kind of reaction [anxiety] the anxiety is diffuse and not restricted to definite situations or objects, as in the case of phobic reactions. It is not controlled by any specific psychological defense mechanism as in other psychoneurotic reactions. This reaction is characterized by anxious expectation and frequently associated with somatic symptomatology. The condition is to be differentiated from normal apprehensiveness or fear. The term is synonymous with the former term 'anxiety state.'

Anxiety

W. H. Auden has called our era "the age of anxiety." Whether there is, indeed, much more anxiety now than in previous periods is impossible to state with certainty. Realistic threats or stresses have been plentiful in past times: starvation, disease, war, slavery, and natural disasters were ubiquitous and, in many places, still are today. Yet the complexity of civilization, the rapidity of change, and the partial relinquishment of religious and familial beliefs and values are creating conflicts and anxieties less frequent in the more rigidly organized, hierarchical societies of the past.

In any case, much more attention is now being paid to the amount, type, and effects of anxiety, as reflected in current medical practice. Indeed, anxiety has become the cornerstone of both psychosomatic medicine and psychiatric theory and practice. Disordered psychological function is ultimately laid at the doorstep of anxiety in almost every clinical disturbance in the psychiatric textbook, with the possible exception of

sociopathic personality disturbances and disorders secondary to structural damage of the brain. Even in patients with structural damage, anxiety due to feelings of incompetence, inadequacy, and helplessness is a prominent feature of the disturbance.

Definitions. Anxiety is a diffuse, highly unpleasant, often vague feeling of apprehension, accompanied by one or more bodily sensations that characteristically recur for the same person, for example, an empty feeling in the pit of the stomach, tightness in the chest, pounding heart, perspiration, headache, or the sudden urge to void. Restlessness and a desire to move around are also common.

Anxiety is an alerting signal; it warns of impending danger and enables the person to take measures to deal with a threat. Fear, a similar alerting signal, is ordinarily differentiated from anxiety on the basis of whether the threat is known or unknown, external or internal, immediate or future, definite or vague, non-conflictual or conflictual in origin.

This distinction arose by accident. The early translators of Freud mistranslated *angst*, the German word for fear, as anxiety. As Rado pointed out, Freud himself generally ignored the distinction between fear and anxiety. On psychological grounds, evidence seems adequate to ignore the usual distinction that anxiety is associated with a repressed, unconscious object, whereas fear is related to a known, external object. Clearly, fear may also be due to an unconscious, repressed, internal object displaced to another "thing" in the external world. For example, a boy may be afraid of dogs because he is actually afraid of his father and unconsciously associates his father with dogs, or he may be vaguely apprehensive about leaving his home because he has experienced sexual excitement while witnessing dogs mating in the street and now unconsciously links dogs with his guilt-laden sexual feelings.

Psychological features of anxiety and fear. Although fear and anxiety may be indistinguishable

in terms of unconscious psychodynamics (mental mechanisms or psychological forces), the distinction has been made so often in psychiatric publications that it will be observed in this section (see Table I). The separation of fear and anxiety, moreover, is psychologically justifiable, even if not on the usual grounds. (The emotion caused by a car rapidly approaching you as you cross a street differs from the vague discomfort you may experience when you meet new people in a strange setting. The main psychological difference between these two emotional responses lies in their acuteness or chronicity; Darwin maintained that the word "fear" is derived from what is sudden and dangerous. Duration also seems to be vital in the neurophysiological phenomena of anxiety and fear.)

Neurophysiological characteristics of anxiety and fear. Physiological evidence for the separation of anxiety and fear has been assembled by Gellhorn. (Acute fear is accompanied by a decrease in blood pressure, heart rate, and tone in striated muscles and may cause fainting. These signs are associated with a preponderance of vagal parasympathetic or trophotropic activity. Psychologically, the person is overwhelmed by passivity and helplessness. Darwin gives this psychophysiological description of acute fear merging into terror:

Fear is often preceded by astonishment, and is so far akin to it, that both lead to the senses of sight and hearing being instantly aroused. In both cases the eyes and mouth are widely opened, and the eyebrows raised. The frightened man at first stands like a statue motionless and breathless, or crouches down as if instinctively to escape observation.

The heart beats quickly and violently, so that it palpitates or knocks against the ribs; but it is very doubtful whether it then works more efficiently than usual, so as to send a greater supply of blood to all parts of the body; for the skin instantly becomes pale, as during incipient faintness. This paleness of the surface, however, is probably in large part, or exclusively, due to the vaso-motor centre being affected in such a manner as to cause the contraction of the small arteries of the skin. That the skin is much affected under the sense of great fear, we see in the marvellous and inexplicable manner in which perspiration immediately exudes from it. This exudation is all the more remarkable, as the surface is then cold, and hence the term a cold sweat; whereas, the sudorific glands are properly excited into action when the surface is heated. The hairs also on the skin stand erect; and the superficial muscles shiver. In connection with the disturbed action of the heart, the breathing is hurried. The salivary glands act imperfectly; the mouth becomes dry, and is often opened and shut. I have also noticed that under slight fear there is a strong tendency

to yawn. One of the best-marked symptoms is the trembling of all the muscles of the body; and this is often first seen in the lips. From this cause, and from the dryness of the mouth, the voice becomes husky or indistinct, or may altogether fail....

As fear increases into an agony of terror, we behold, as under all violent emotions, diversified results. The heart beats wildly, or may fail to act and faintness ensue; there is a deathlike pallor; the breathing is labored; the wings of the nostrils are widely dilated; 'there is a gasping and convulsive motion of the lips, a tremor on the hollow cheek, a gulping and catching of the throat'; the uncovered and protruding eyeballs are fixed on the object of terror; or they may roll restlessly from side to side.... The pupils are said to be enormously dilated. All the muscles of the body may become rigid, or may be thrown into convulsive movements. The hands are alternately clenched and opened, often with a twitching movement. The arms may be protruded, as if to avert some dreadful danger, or may be thrown wildly over the head.... In other cases there is a sudden and uncontrollable tendency to headlong flight; and so strong is this, that the boldest soldiers may be seized with a sudden panic.

In contrast to anger, in which secretion of noradrenaline increases, fear is accompanied by increased secretion of adrenaline. In acute fear, this increase is insufficient to counterbalance the parasympathetic effect. In a stressful experimental or real life situation—such as riding in an airplane or viewing an emotionally charged movie, in which the person makes no attempt to escape—excretion of adrenaline increases, with little change in excretion of noradrenaline. During interviews before the hospital staff, psychiatric patients excrete more adrenaline but not noradrenaline, provided they remain passively compliant. In acute fear, discharge of the entire autonomic nervous system is probably followed by a dominant parasympathetic-cholinergic (trophotropic) response and then a secondary sympathetic-adrenergic (ergotropic) reaction.

Fear of this profound nature is not often seen clinically. More commonly, the fear is less acute, and a shift to the sympathetic side of the balance in the hypothalamic system occurs and may produce such symptoms as sweating, tachycardia, pupillary dilation, and perhaps tremor due to increasing muscle tone. The balance may also shift in adrenaline-noradrenaline output.

According to Gellhorn, the chronic state of fear or anxiety is associated with a "tuning" of the ergotropic system in response to repeated alerting stimuli that successively lower the threshold for new stimuli; the heightened ergotropic system then dominates the trophotropic system, and blood pressure rises and heart rate increases (palpitation).

Individual patterns of anxiety vary widely. Some patients have cardiovascular symptoms, such as palpitation and sweating; some have gastrointestinal symptoms, such as nausea, vomiting, feeling of emptiness, butterflies in the stomach, gas pains, or even diarrhea; some have urinary frequency; and some have shallow breathing and tightness in the chest. All of these are visceral reactions. However, in some patients, muscle tension prevails, and they complain

TABLE I
Psychological Features of Anxiety and Fear

	Anxiety	Fear
Object.....	Unknown	Known
Threat.....	Internal	External
Definition.....	Vague	Distinct
Conflict.....	Present	Absent
Duration.....	Chronic	Acute

of muscle tightness or of spasm, headache, and wry neck. The decreased sympathetic activity that follows a decrease in muscle tension is the physiological basis for prescribing muscle relaxation drugs or techniques in anxious patients.

In acute fear, the parasympathetic or trophotropic reactions are the dominant clinical manifestations. In anxiety, sensitivity and responsiveness of both sides of the autonomic neuroendocrine system are simultaneously heightened, and the clinical manifestations depend on the individual pattern of anxiety. Each patient has his idiosyncratic expression of anxiety; once the observant physician detects the pattern, he can recognize characteristic visceral symptoms and minute changes in vascular response and muscle tone.

Since chronic anxiety and anger increase ergotropic reactivity and secretion of noradrenaline, what is the relation of these? According to Gellhorn, "Chronic anxiety... is due to the simultaneous activation of the ergotropic and trophotropic systems at a high level of arousal or psychologically speaking to fear and aggression." Anxiety, then, is a chronic feeling of discomfort due to repeated stimuli that tune up the ergotropic autonomic nervous system and create an excessive discharge in the visceral and motor systems. The motor system, by proprioceptive feedback, accentuates the heightened sensitivity of the ergotropic system.

Stress and anxiety. The stimuli that trigger the chronic state of anxiety are referred to as stresses, but Selye noted that a careful distinction must be made between the external event or internal drive and the organismic response to the stress, since these are occasionally confused. The term "stress" should be reserved for the stimulus that triggers the excessive autonomic reactions described. An external event, then, such as loss of a job, or an internal drive, such as the desire to punch the boss in the nose, can be called a stress only if the patient is unable to cope with it, only if the nervous reactivity is excessive or prolonged.

Whether an event is stressful or not, then, depends on the nature of the event as well as on the resources, the defenses, and the coping mechanisms of the person. These all involve the ego, a collective abstraction that refers to the processes by which a person perceives, thinks, and acts on external events or internal drives. If his ego is functioning properly, he will be in adaptive balance with both his external and internal worlds; if it is not functioning properly and the imbalance continues long enough, he will develop chronic anxiety. The time required to establish a psychoneurosis varies widely among human beings.

Whether the imbalance is between the pressures of the outside world and those of the patient's ego or is internal, between his impulses (aggressive, sexual, or dependent) and his conscience, the imbalance produces a conflict. Conflicts caused by external events are usually termed interpersonal, whereas those caused by

internal events are called intrapsychic. Of course, a combination of the two is possible, as in the case of the underling who has an excessively demanding or critical boss and who must control his impulse to bash the boss on the head for fear of losing his job. Interpersonal and intrapsychic conflicts are, in fact, usually combined, since human beings are social animals and their main conflicts, despite their inner representations, are with other people.

Conflict seems to be another essential ingredient of anxiety, although its absence is not a requisite for fear, since conflict is present in a special type of fear called phobia. In the genesis of experimental neurosis, conflict is an essential ingredient, as when sexual arousal is prevented or interfered with so that a strong excitation cannot be discharged or when an attack of rage is not executed because of inhibition of movement.

The cause of chronic anxiety can be summarized in the following way. Repeated attacks of fear—or a single attack in exceptional cases, as in persons with a traumatic neurosis or in those with certain phobias—provide the chronic stress to produce intense and long lasting autonomic neuroendocrine reactivity, accompanied at the psychological level by conflict. This pattern results in chronic anxiety.

Levels of anxiety. Like all emotions, anxiety exists at three levels. In ascending order, there is a neuroendocrine level, a motor-visceral level, and, finally, a level of conscious awareness. Generally, the person is conscious of only a disagreeable feeling and more rarely of intense discomfort, but he is usually not aware of the cause of his anxiety.

The disagreeable feeling has two components: (1) the awareness of the physiological sensations (palpitation, sweating, butterflies in the stomach, tightness in the chest, shaking knees, quavering voice), and (2) the realization of being nervous or frightened. The anxiety may be increased by a feeling of shame—"Others will recognize that I am frightened." Many patients are astonished to find that others are not cognizant of their anxiety, or, if they are, do not know the intensity of the patient's sensations.

In addition to the motor and visceral effects of anxiety, the important effects on thinking, perception, and learning should not be overlooked. The brain is a central integrating mechanism, but it is also an end organ. Anxiety tends to produce confusion and distortions of perception, not only of time and space but of people and the meaning of events. These distortions can interfere with learning by lowering concentration, reducing recall, and decreasing ability to relate one item to another (association).

An important aspect of emotional thinking, including anxious or fearful thinking, is its selectivity. Under the influence of anxiety, a person is apt to select certain items in his environment and overlook others, all in the direction either of falsely proving that he was justified in considering the situation frightening and

in responding accordingly or, conversely, of seeking reasons for false self-reassurance that his anxiety was misplaced and unnecessary. If he falsely justifies his fear, his anxieties will be augmented by the selective response, setting up a vicious circle of anxiety—distorted perception—increased anxiety. If, on the other hand, he falsely reassures himself by selective thinking, appropriate anxieties may be reduced, and he may then fail to take the necessary precautions.

Selective perception and thinking may affect not only the inclusion and the exclusion of events, people, and things, but also the meaning of words and actions. It may thus become an instrumental factor in prejudice, which, *a priori*, determines the meaning of an event before it happens or stereotypically assigns a person or action to a certain class or group on the basis of a shared attribute, often irrelevant to the action that is the focus of attention.

Adaptive functions of anxiety. As an alerting signal, anxiety can be considered as basically the same emotion as fear. It warns of a threat, external or internal; it is probably life-saving more than once in a lifetime. At a lower level, it warns of threats of bodily damage, pain, helplessness, possible punishment, or frustration of social or bodily needs; of separation from loved ones; of a menace to one's success or status; and ultimately of threats to one's unity or wholeness. In this way it prompts the necessary steps to prevent the threat or at least to lessen its consequences. A few examples of warding off threats in daily life include getting down to the hard work of preparing for an examination; dodging a ball thrown at one's head; sneaking into the dormitory after curfew to prevent punishment; running to catch the last commuter's train; rehearsing a speech before many or one (boss, girl friend). Anxiety prevents damage by alerting the person to carry out certain acts that forestall the danger.

Since it is clearly to one's advantage to respond with anxiety in certain threatening situations, we can speak of normal anxiety in contrast to abnormal or pathological anxiety. Anxiety is normal for the infant who is threatened by separation from parents or by loss of love, for the child on his 1st day in school, for the adolescent on his first date, for the adult when he contemplates old age and death, for anyone who is faced with illness. Anxiety is a normal accompaniment of growth, of change, of experiencing something new and untried, of finding one's own identities and meaning in life.

Pathological anxiety, on the other hand, is an inappropriate response to a given stimulus by virtue of either its intensity or its duration. Sometimes the physician may not be certain whether a given anxiety reaction is appropriate, but in patients with chronic anxiety, such reactions are usually inappropriate.

An interesting phenomenon is the courage displayed in a real emergency by a patient who responds to trivial stimuli with intense fear. A woman patient with

almost daily anxiety attacks, for example, calmly and skillfully dealt with a holdup of a finance company she managed and was astonished when she was shown the discrepancy between her anxiety responses in handling servants, dog, and neighbors and her lack of anxiety during the holdup.

In this sense, anxiety can be compared with another alerting signal—pain. A few persons with congenital absence of the sensation of pain have been studied. Although they do not fear visits to the dentist, they cannot seem to prevent getting all sorts of cuts and burns; they even manage to eat their tongues. In the absence of pain, they are ill prepared to identify their infections or to take the necessary precautions when ill.

Substitute anxiety for pain, and imagine a person with congenital absence of the sense of anxiety. How long would he survive? In contrast to pain, anxiety is a signal that warns of distant or future threats to the entire organism, rather than of nearby or immediate threats to specific sites of the body.

Of the two alerting signals, pain is generally withstood better than anxiety. The ability to tolerate anxiety varies widely. Indeed, this ability may be an essential factor in differentiating the normal from the neurotic person, for the neurotic has great difficulty coping with anxiety appropriately. During combat, however, many soldiers who had had only slight anxiety in civilian life succumbed to stress under battle earlier than neurotic soldiers to whom anxiety was not strange. Experience with anxiety can thus be helpful in coping with new situations, but it may also increase vulnerability to stress. Among other things, this variability indicates the complexity of ego processes and the difficulty of making rigid rules about human behavior.

Anxiety usually leads to action designed to remove or reduce the threat. This action can be constructive, in which case one can speak of coping mechanisms if the action is largely a conscious, deliberately selected one (such as studying for an examination) or of defense mechanisms if behavior is largely determined by unconscious forces (such as repressing or burying a threatening impulse or idea, pushing it out of awareness).

A mechanism of defense can be adaptive or non-adaptive, depending on the consequences. Repression is used many times in the course of a person's life to achieve harmony with his environment and within himself. Only if symptoms of pathological behavior result can repression or any other mechanism of defense be considered abnormal.

The need to rid oneself of this painful and disagreeable emotion is so great that a person may resort to a variety of devices designed to repair the situation. All too often, these reparative devices miscarry and result in self-damaging behavior. They may overshoot the mark, just as an inflammatory reaction that develops to wall off an abscess may destroy tissue or

impair function or just as fever designed to destroy bacteria may rise too high and destroy the patient. Sometimes the "repair" exacts too high a price in reducing function or pleasure. Examples of miscarriages of organized reparative attempts at limiting or reducing anxiety are phobic, depressive, compulsive, hysterical, conversion, dissociative, and inhibited patterns of behavior.

In many instances anxiety is not bound by these attempts at repair, and it breaks through and combines with phobic, compulsive, hysterical, or other psychoneurotic patterns to create mixed psychoneurotic reactions. When attacks of anxiety are the most prominent clinical feature, however, it is proper to speak of an anxiety reaction. Occasionally, anxiety reactions are almost pure, without any admixture of psychosomatic, compulsive, or hysterical symptoms. A combination of pathological responses, however, is far more common.

Anxiety Reaction

Anxiety reaction, the official terminology of the American Psychiatric Association, has now replaced "anxiety state," which, in turn, had replaced the even older "anxiety neurosis." Freud used "anxiety neurosis" in 1894 to describe a syndrome characterized by general irritability, anxious expectation, anxiety attacks, somatic equivalents of anxiety, and nightmares. He made a distinction between "actual neurosis," to signify the tense irritability and anxiety due to failure of physiological discharge of sexual tension, as in coitus interruptus, and "anxiety hysteria," comprising phobias, conversion symptoms, and other hysterical manifestations as well as anxiety based on a psychic "dammed up libido." In 1926, Freud finally recognized that anxiety could be caused by conflicts over nonsexual as well as sexual drives and hypothesized that anxiety is the cause of repression rather than its consequence. In any case, anxiety was separated from hysteria as the term "anxiety hysteria" was abandoned and in the United States was eventually replaced by "anxiety reaction." However, in some European psychiatric textbooks, anxiety neurosis is still used, while anxiety reaction is used in others.

Epidemiology. It is extremely difficult to determine the incidence (the number of new cases during a unit of time) of any psychiatric illness. It is almost impossible to determine precisely *when* new cases appear; even first admissions to hospitals may tell nothing of the earlier history of patients. In the case of an entity such as anxiety reaction, for which hospitalization is rarely required, the number of first admissions as an index of incidence is clearly impractical. Nor can the number of out-patient admissions be used, since there is no way of knowing how many persons with the same syndrome do not seek help or go to nonpsychiatrists or paramedical professional persons for help. It is even difficult to collect adequate statistics from psychiatrists in private practice, although recent

attempts in one county have been made to establish a county-wide, uniform registry of psychiatric patients. The problem is complicated by the varying criteria for diagnosing anxiety reaction in different psychiatric centers. What may be called anxiety reaction in one center may be termed schizophrenic reaction in another.

Because of these difficulties, most epidemiological studies have been designed to measure the prevalence (total number of cases in a given population at a given time) of a given psychiatric disorder. Even though it is easier to measure prevalence than incidence, this approach has serious obstacles as well. The standard nomenclature classifies full blown pathological disorders, not milder emotional disturbances. By questionnaire or interview, the investigator collects symptoms and can, therefore, describe only patterns of symptoms. Most studies categorize a person by groups of symptoms that correspond only roughly to the standard classifications; and then they grade the severity of symptoms. The finding by Hollingshead and Redlich that the incidence of neurosis is higher among persons in the upper classes than among those in the lower classes and that the opposite relation is true for psychosis has been widely disseminated. A more recent study of other communities by Leighton et al., on the other hand, indicated greater prevalence of psychophysiological and psychoneurotic symptoms among the lower than the upper classes. In at least a third of the population, these chronic, mildly impairing disturbances create problems that require alleviation and prevention. Since anxiety reactions constitute a high percentage of psychoneuroses and since most psychophysiological symptoms are expressions of anxiety reactions, a significant segment of the community, perhaps one fourth, has anxiety reactions severe enough to warrant professional aid.

Leighton et al. contended that "if the entire population of Stirling County [a rural community in Nova Scotia] were studied intensively by competent psychiatrists, approximately two-thirds would be found to have been suffering at some time during their lives from a psychiatric disorder (for the most part, low-grade and chronic) according to the criteria of the APA Manual" and that "at least half the adults [in Stirling County] are *currently* suffering from some psychiatric disorder." The Midtown study by Srole et al. reported that only 2 out of every 10 adults had been untouched by some psychiatric disability. In the Stirling County study, three variables were important in determining variation in distribution of psychiatric disorders: sex, age, and disintegration of the sociocultural system, all of which are of importance in etiology.

Etiology

Historical aspects. Understanding of the multiple complex factors in the development of an anxiety reaction is obscured by failure of most authors to

distinguish among acute anxiety, chronic anxiety, and anxiety reaction. Psychiatric publications contain extensive discussions of the cause of anxiety, but much less frequently discussions of the anxiety reaction syndrome.

Mistranslation of Freud's word for fear, *angst*, popularized the term anxiety. Freud radically changed his early views about the origins of anxiety, and his later formulation still dominates current thinking. He regarded anxiety as the cause of repression, a mechanism that wards off "instinctual" (a term only loosely related to a biologist's concept of instinct) drives that threaten the individual with loss of love or symbolic castration. These drives are usually incompletely repressed and, as they reach consciousness, evoke anxiety.

Rank popularized the concept of "birth trauma," now known as "separation anxiety" or anxiety over the fantasied separation from one's mother. Freud regarded the flooding of the organism by stimuli during birth as the prototype of anxiety later in life, for anxiety is characterized by excessive bombardment by stimuli of the nervous system, which then hyperreacts. In this sense, the birth experience, despite the absence of self-awareness, may lay the groundwork physiologically for later anxiety experiences.

Sullivan stressed the relation of the genesis of anxiety to the emotional bond between mother and child, especially until the child is 27 months old. The anxiety of the mother is transmitted, perhaps proprioceptively, to the child, who in turn transmits his anxiety back to the mother—a vicious circle or, in communication terms, a positive feedback. Sullivan regarded anxiety as essentially a fear of mother's disapproval because of a threat to this empathic bond between mother and infant. Anxiety occurs whenever a child senses his mother's disapproval, since he learns that his comfort or discomfort is dependent on whether his mother is loving and nonanxious ("good") or nonloving and anxious ("bad").

Adler regarded anxiety as the apprehension of the threat to a person's life style, whereas Horney regarded it as a consequence of a threat to an individual's self-image. Horney and others stressed conflict as the source of anxiety—a conflict, for example, between dependency needs and hostile impulses toward a parent. Masserman, along with Fromm, stressed man's existential anxieties—fear of death, of physical damage, of loneliness, and of relative insignificance. Masserman pointed out that, in the development of experimental neuroses, conflict need not be based on fear; positive but mutually exclusive goal-seeking patterns may be almost as significant in the production of behavioral disturbances as conflicts based on fear.

Horney took a much more optimistic view of the child's development than did Freud; she argued that the child has potentials for growth and self-realization and is not constantly trying to subdue his evil impulses, as Freud had suggested. Both Horney and

Freud considered the anxiety created by stress or danger to be related to the maturational level of the child. In the beginning, when the child is biologically and psychologically most helpless and dependent, the danger is the loss of the person on whom he depends. Later the danger is the loss of that person's love. Still later it is castration anxiety, followed during latency by the fear of punishment (guilt), and eventually by the fear of not living up to one's own expectations (shame). Horney placed special emphasis on shame anxiety.

Rado regarded fear and anxiety as synonymous terms. The infant is born with certain emergency emotional equipment, including fear and rage. The prototype of the fear reaction is the startle response when the child's nervous system is overwhelmed by excessive stimuli. Rado traced the development of emergency emotions in increasing complexity, emphasizing the effect of the development of conscience on guilty fear, the most important of the emergency emotions. In his view, guilty fear is the primary cause of most behavioral dysfunctions. The constitutional readiness for an emergency response is strikingly demonstrated by the experimental proof that the fetus can be conditioned during the last 2 months of gestation. From these experiments, it is clear that the psychophysiological state of the mother may exert a significant influence on the behavioral pattern of the normal fetus.

A contemporary formulation. The basic etiological feature of almost all psychoneurotic reactions is a disturbed parent-child relationship. The emergency emotions of fear and rage are built into the organism genetically. Frustration of the child's needs for love, food, warmth, exploration, and motility cause him to respond with his emergency equipment—fear and rage. At first, this is expressed in an undifferentiated cry for help; later, cries of pain, fear, rage, and, still later, wounded pride can be distinguished by a sensitive mother.

The dependency of the human infant on his mother for survival and gratifications is longer than that of any other animal. The sense of helplessness that this engenders becomes a potent factor in the anxiety reaction of adult life. The adult faced with tasks or situations that seem insurmountable revives the frightening sense of helplessness, which creates more anxiety, in a circular phenomenon.

The infant's absolute dependency upon his mother makes their relation the most critical factor in the development of psychopathological disorders. The harsh, unloving mother, the overprotective mother, and the mother who confuses her child by incompatible signals stir up excessive anxiety. The reservoir of anxiety, the heightened vulnerability to stress, and the types of miscarried reparative defenses used determine, in large measure, the person's type of psychopathological disorder and the degree of maladaptation and impairment of function later in life.

Some anxiety is normal and presumably necessary for growth, for every step forward is accompanied by anxiety. In this context, anxiety serves to initiate change, to augment curiosity, to push the child in the direction of mastery of himself, his body, and his environment. Whiting concluded from evidence collected from various cultures around the world that some emotional deprivation accompanied by anxiety is necessary for ego development. In anxiety reaction, however, anxiety is no longer a positive force; rather, it becomes the damage that the person is trying to avoid. The change from a constructive to a destructive force is largely the result of malignant influences in child rearing.

The most important of all these influences, psychodynamically, is the excessive and distorted development of conscience. The child's ideas of right and wrong develop through countless interactions with his mother and other parental figures. A warm smile, a kiss, a pat, kind words indicate approval and reinforcement of the child's behavior, whereas a raised eyebrow, a frown, slightly increased vocal pitch, or the more severe storm of abuse or spanking indicate disapproval and repudiation of the provoking behavior. Overemphasis on disapproval and punishment, especially when coupled with excessively high expectations on the part of the parent, gradually develops a strict, overscrupulous, perhaps even harsh conscience in the child. The alerting signal that evokes unrealistic self-condemnation is guilty fear or guilty anxiety—the automatic feeling that “I have done something wrong; punishment is inescapable.”

Of all the sources of anxiety, the most prominent clinically is guilt. Since the expectation of punishment is a part of the emotion, anxiety normally accompanies guilt. If the feeling of wrongdoing is accompanied instead only by fear of detection, the conscience is not fully developed and sociopathic traits, without much anxiety, result. The child with too strict a conscience becomes frightened of sexual and aggressive (even normal self-assertive) impulses because of the fear of punishment, the ultimate of which is abandonment. The stage is then set for later attacks of anxiety in interpersonal situations in which self-assertion is needed or in which rage or sexual demands become too intense. Repression and dissociation of drives that may provoke retaliation lead to smoldering resentment and to crippling of affectionate or affiliative impulses, for these are also perceived as dangerous. Tensions build up, the nervous system is excessively stimulated, and some of the somatic disturbances already mentioned may appear.

The most significant and specific affiliative drive resulting in guilty anxiety is the one directed toward the parent of the opposite sex. In all likelihood, the oedipal drive is not simply an instinctive drive but is at least partly learned, stimulated by the parent of the opposite sex. In any case, the desire for love, affection, and a feeling of security from this parent is often sex-

ualized and becomes guilt-laden, resulting in what Freud called “castration anxiety” but what Rado, perhaps more properly, termed “genital diminution fears.” These fears assume great significance in clinical practice because they are often etiologically related to anxiety attacks. Genital diminution fears are also engendered by parental threats regarding masturbation and sex play with other children and by the child's frequent misinterpretation of sexual intercourse as an act of violence.

In addition to threats that emanate from these disturbed family relations, threats from modern complex society are manifold. The old crutches of religious belief and family solidarity are disappearing, and modern man is left to hobble along, increasingly isolated from the extended family and significant group relations, sources of emotional support and identification in previous generations. In an age of increasing mechanization, automation, and dehumanization, the search for the meaning of existence and the struggle to overcome alienation preoccupies and causes anxiety in many. For some, the quest for power and possessions goes on, often accompanied by a gnawing sense of failure or of guilt over success. Competitive conflicts may be sexualized and may bring, in their wake, anxieties over gender role and sexual performance.

Sex. The prevalence of psychiatric disorders, including anxiety reactions, differs according to sex. Women are more apt to have anxiety reactions than are men, but their level of impairment is only slightly higher than that for men. Anxieties about menstruation, pregnancy, and the menopause are extremely common. In addition, modern society has created role conflicts for women. No longer are they content to be “feeders, breeders, and follow the leaders.” Society assigns different values and symbols to the sexes in their search for recognition, security, sexual satisfaction, love, and expression of hostility. Sociological change may also affect the sexes differently.

Conflicts over roles assigned by society or achieved by individual effort are not restricted to women. The man is still required to be a *man*, whereas his mother and later his wife may, in various ways, try to emasculate him—only to complain later about his passivity and lack of assertion. An anecdote perhaps describes this situation better than a thousand words of scientific analysis could.

In the kingdom of heaven were to be found two gates. Above each gate was a sign. One sign read, “Here enter passive, dependent men.” In front of this sign was a long line that stretched as far as the eye could see. At the other gate was a sign that read, “Here enter self-assertive, masculine men.” In front of this gate was a solitary man—a very slight, somewhat effeminate, passive male who looked like Casper Milquetoast. St. Peter approached him and said, “I'm surprised to see you in front of this gate; why are you here?” The man replied, “My wife told me to come here.”

In a passive, dependent, and compliant man, efforts at self-assertion may provoke anxiety, for he often

fails to differentiate normal self-assertion from aggression motivated by a wish to attack another person. This difficulty in distinguishing between the two—indeed, the frequent inability to distinguish degrees of assertive behavior—has as its basis an unconscious wish to remove or destroy all competitors. The enormity of the unconscious crime results in severe inhibition. This competitive failure is evident not only at work but in a variety of social encounters, particularly in heterosexual behavior. Even abortive efforts at initiating or maintaining contact with women, to gain sexual satisfaction, may engender severe anxiety. Heterosexual failures may cripple masculine pride and, in turn, provoke homosexual panic—which is usually based not, as is popularly thought, on latent homosexual tendencies but on the inappropriate fantasy, “I am not a man; therefore, I must be a woman and will be used as a woman by superior and more powerful men.”

In both sexes conflicts and confusion over gender identity and role may be potent sources of recurrent anxiety attacks.

Age. Anxiety is prevalent in childhood and adolescence. Indeed, it inevitably accompanies growing up. But, even when pathological, it does not usually lead to anxiety reactions in either childhood or adolescence. In childhood, chronic anxiety leads to habit disturbances, such as nail biting, thumb sucking, and enuresis; to disorders in conduct; or to such neurotic traits as tics, habit spasms, and phobias. Anxiety attacks, as such, are less common than in adult life. Common causes of childhood anxiety listed by Meares include threats to dependency on the mothering figure, latent hostility in the mother, disharmony between parents, inconsistent discipline, emotional insecurity in parents, birth of a sibling, minor mental and physical handicaps, unwise punishment, and threat of castration.

In adolescence, anxiety leads either to severe inhibition or to overactivity, infrequently to anxiety reactions. Common causes of adolescent anxiety include feelings of inadequacy in groups and in new social situations; meeting members of the opposite sex; concern over masturbation and nocturnal emissions; fears of genital abnormality or sexual inadequacy; and lack of self-confidence in performance, whether sexual, social, athletic, or intellectual.

Although society's attention has been focused on the damaging consequences of adolescent rebellion (delinquency, truancy, drug addiction, promiscuity), less attention has been paid to the many teen-agers who respond to anxiety with shyness, awkwardness, social withdrawal, and isolation. These reactions are motivated by anxiety, but they do not, in themselves, constitute anxiety reactions.

Generally, as age increases between 20 and 70 years, the chances of having a psychiatric disorder increase. For men there is a plateau between 40 and 60 years and then a sharp increase in incidence of psychiatric illness between 60 and 70 years. Psychiatric disorders

in women increase until 50 years of age and then, as in men, increase again after 60. For both men and women, psychiatric disorders decrease after the age of 70.

The period between 20 and 40 years has been interpreted by Leighton et al. as the period of struggle. Women continue to show anxiety reactions and depression during the menopausal period, up to the age of 50 years. Between 60 and 70 years, people have to come to terms with their failures, old age, and eventual death, and so anxiety and depression again increase during this decade. The decrease in psychiatric disturbance after 70 is due to the ability of most old people to adapt to life and death, to lower their aspirations and strivings, and to tolerate frustration better.

As Erikson said, the young adult has two primary developmental tasks: occupational identification and the capacity for intimacy. Anxiety is a regular accompaniment of the growing capacity to work and to love, but anxiety may be abnormal and result in either anxiety reactions or neurotic syndromes of bound anxiety.

As the young adult grows older, he becomes increasingly occupied with what Erikson has called “generativity versus self-absorption.” Even in productive, creative persons, pathological anxiety may result from inappropriate levels of aspiration and the attempt to achieve impossible goals—what Horney calls the “search for glory.” Persons who consider themselves failures, either because of real lack of generativity or because they have not realized their aspirations, become absorbed in themselves and less concerned with people in the world around them. Their resultant oversusceptibility to environmental stress often leads to depression and anxiety reactions.

In the 6th and 7th decades of life, anxiety is often the result of repressed resentment and rage. The anger is usually directed toward persons on whom the patient is dependent, such as children, siblings, spouse, or employer. The fear of being abandoned, the fear of loneliness, arises in opposition to feelings of rage, and anxiety attacks may supplant the inhibited angry feelings. The continual decrease in effective interaction with the environment, especially in persons with some brain damage, may be extremely frustrating, and small tasks, routine in the past, may create anxiety.

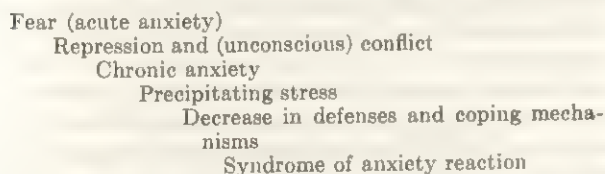
Sociocultural disintegration. The Leighton research team found evidence of a positive correlation between psychoneurotic and psychophysiological symptoms and sociocultural disintegration, but they found no correlation between psychotic symptoms and sociocultural disintegration. Sociocultural disintegration is characterized by high frequency of broken homes, in the sense of the malfunctioning family; few and weak associations in religion, work, and recreation; few and weak community leaders; few patterns of recreation; high frequency of hostility; high frequency of crime

and delinquency; and weak and fragmented network of communications.

The decline of emotional support previously provided by close family ties, together with the complexity of modern living, has made social structure an increasingly important etiological factor in mental illness. A social structure that is psychologically integrated gives support to people in crisis, whereas one that shows evidence of disintegration increases the emotional burdens of people at critical times in their lives. As a result, anxiety reactions, along with the other psychoneuroses, become more prevalent.

Precipitating factors. Some of the chronic factors in the development of anxiety reaction have already been mentioned. Almost invariably, however, there is a single precipitating factor. For this reason, the physician should inquire closely about events immediately preceding development of the attack of anxiety for which the patient is seeking help. Discovery of the conscious and unconscious factors precipitating the last attack of anxiety may help alleviate the patient's discomfort; moreover, the precipitating factors are almost invariably linked psychodynamically to chronic ones, such as repressed rage or the impulse to act out sexually.

In every patient with anxiety reaction, the physician can retrospectively observe the breaking down of defenses and coping mechanisms. Usually this occurs gradually, but sometimes it is an abrupt process related to the precipitating stress. A very common, but probably not invariable, sequence of events leading to anxiety reaction can be illustrated diagrammatically:



In this formulation, fear leads to repression, whereas chronic anxiety results from conflict, all or part of which is usually outside awareness. This is one way of resolving, at a psychodynamic level, the issue of fear versus anxiety, and the psychological explanation of the origin of chronic anxiety remains consistent with the analysis of the physiological differences discussed earlier.

Clinical description

History. The patient with anxiety reaction presents a history of chronic anxiety with acute exacerbations, but this label is an abstraction, an interpretation based on a large variety of symptoms. The chief complaints may be one or more of dozens of symptoms: "I feel tense." "I have trouble falling asleep." "I feel something awful is going to happen to me." "I worry all the time." "I'm afraid to remain alone." "I have bad dreams." "I have palpitations." "When-

ever I'm in a new group, I have butterflies in my stomach." "When I go out on a date, I get nauseated." "I get dizzy and feel I'm going to faint." Although the onset may seem sudden, a careful history will disclose evidences of chronic anxiety. Habit or conduct disturbances in childhood and disturbances in social or group relations in adolescence are extremely common.

General symptoms. Pain may be in any part of the body but is usually described as headache, especially a sensation of a tight band around the head; epigastric pain; or back pain. Giddiness or dizziness may result from hyperventilation; if this symptom is prominent, the patient probably has pins and needles (paresthesias) of the hands and feet. Other symptoms include bizarre feelings in the head, such as swelling or bursting; a sensation of floating in space and other disturbances of the body image and the relation of the body to space; fatigability, seemingly disproportionate to physical exertion; and sweating, especially of the palms, unrelated to high environmental temperature.

In addition, the patient's general attitude reflects helplessness and apprehension. The smallest obstacle may be insurmountable: The next day is the harbinger of death; the next visitor, the bearer of bad news; the next event, the beginning of catastrophe. Overly concerned with what others think of him, the patient is constantly trying to make a favorable impression but is never satisfied with his performance. Uncertain of himself, he may belittle and degrade others in a misguided effort to raise his own self-esteem, all the while castigating himself for his failures. Although the patient with anxiety reaction may exhibit considerable drive, it usually has a compulsive quality and is accompanied by misgivings regarding his competence to perform the task. His activities have a driven quality that robs performance of much of its zest and success of its pleasure.

A sense of tension is almost always pervasive. Unable to relax, the patient may complain of constant restlessness, the inability to sustain any endeavor, even an ostensibly pleasurable pursuit. The tension often interferes with sleep. Difficulty in falling asleep is common, as is fitful sleep accompanied by unpleasant, sometimes terrifying dreams.

Somatic symptoms vary, but each person has his particular combination. As the presenting complaints, they may complicate differential diagnosis. Although anxiety reaction is characterized by chronicity, acute attacks of fear and milder attacks of anxiety may be periodically superimposed on the chronic state of apprehension, overalertness, irritability, tenseness, timidity, uncertainty, and excessive dependency.

Acute anxiety is frequently initiated by symbolic stimuli, which owe their force to the meaning attached to them by the patient. One patient had an intense attack of anxiety on being presented with a picture of her recently deceased husband. A married man had a panic reaction in church the morning after a chance encounter and pleasurable sexual reunion with an old

girl friend. A teen-aged boy had an attack of acute anxiety followed by paralysis of one leg after having seen a movie in which a young man fell from a roof. In general, crowded public places, such as theaters, churches, department stores, and football stadiums, seem to provoke acute anxiety reactions, although panic reactions during sleep or while falling asleep are also common.

Although brief, an acute anxiety attack can be terrifying to the patient. Feelings of impending death or of mental disintegration are common. Understanding the cause of the attack can bring enormous reassurance to the patient.

Motor system. Headache, neck and back pain, easy fatigability, and weakness are common. Tension in any group of muscles may produce tremor and painful movement. Restlessness may be prominent, and clumsiness in making finer movements and an unsteady, quavering voice may be obvious.

Alimentary system. Anorexia, indigestion, nausea, vomiting, distention, flatulence, foul taste in the mouth, constipation, diarrhea, belching, emptiness, or butterflies in the stomach may be noted alone or in various combinations.

Respiratory system. Shortness of breath and constriction in the chest may cause discomfort.

Cardiovascular system. Pain in the chest may be accompanied by palpitations, throbbing sensations, or sensations of heat and flushing of the face.

Genitourinary system. Urinary frequency or urgency may be troublesome. Occasionally, interest in sex decreases, and impotence, menstrual irregularity, and dysfunction may occur.

Central nervous system. Insomnia, lack of concentration, irritability, nightmares, forgetfulness, and hypersensitivity to normal bodily processes (pulse, heart beat) may be serious complaints.

Examination of the patient. The patient with an anxiety reaction is fidgety and restless. He often sits on the edge of his chair. He may twist and turn something in his hands, cross and recross his legs, pull up his socks, rearrange his clothes, light and half-smoke cigarette after cigarette. If a patient is sitting with his legs crossed when discussing a particularly charged topic, his suspended foot may dorsiflex. Similar cues to emotion-laden topics may be flushing of the face or occasionally sudden pallor, sharp intake of breath, twitching of facial muscles around the eyes or mouth, sudden movement of the eyes from right to left, quavering of the voice, or scratching or rubbing movement of the hands. Every person has a telltale way of showing anxiety, and the alert observer should be able to detect the patient's particular signal of distress and then watch for it in subsequent interviews.

The facies and general manner of the patient reflect apprehension, worry, and undue concern. In manner and in words, he may plead for help; he may hang on every word of the doctor or, conversely, be

so preoccupied with his own thoughts and feelings that he pays little attention to the physician.

Anxiety has various effects on speech patterns. Pressure of speech may be manifested by rapid, staccato, machine gun-like quality, but slow, halting speech with episodes of blocking are also common, especially if depression is mixed with anxiety. The patient's conversation may be filled with concerns over bodily functions, hypochondriacal fantasies, thoughts of impending doom, or mental disorganization, or it may be dominated by expressions of helplessness in the face of seeming disaster. He may flit from one subject to another, either from inability to concentrate or from a need to tell the doctor everything at once. Throughout the interview, his face may express the unspoken question, "Can you help me?"

Gross distortions of perception or of thought processes are uncommon in anxiety reaction. When they are present, the physician should think of an agitated depression of psychotic proportions or of schizophrenia.

Physical examination may reveal slight tachycardia, usually not more than 100 beats per minute; rapid breathing; flushed face and neck; moist, cold palms; finger tremor; and brisk tendon reflexes.

Differential diagnosis

Agitated depression. It is important to differentiate anxiety reaction from agitated depression, in which suicidal risk is serious. The patient in whom severe anxiety develops in middle or later life should be suspected of having an agitated involutional psychotic depression. In the absence of paranoid ideation, it may be difficult to make this differential diagnosis, for the patient with an agitated depression may be more agitated than depressed. The physician has to judge the degree of depression, one index of which is the extent of self-depreciation, a cardinal feature of an involutional depression. In depression, the outside world is seen as depriving, the self is viewed as worthless, and the future is hopeless. (In anxiety reaction, the outside world is threatening rather than depriving, the self is judged inadequate rather than worthless, and the future is uncertain rather than completely hopeless.)

Early schizophrenia. Anxiety may be a significant feature of early schizophrenia. Differentiation rests on finding the other symptoms of schizophrenia, such as autism, a previous schizoid life pattern, serious disturbances in perception and thought processes, and excessive ambivalence in interpersonal relations.

Early chronic brain syndrome. Especially in insidious onset of cerebral arteriosclerotic disease, anxiety may be prominent. Anxiety created by increasing failure to carry out tasks, by frustration from ineffective interaction with environment, by threats to security, or by decrease in independent action may become intense. Differentiation is based on the symptoms of chronic brain syndrome, such as loss of recent

memory, impaired judgment, disorientation, especially for time, and the physical signs of arteriosclerosis.

Hyperthyroidism. The most important medical syndrome that symptomatically mimics anxiety reaction is hyperthyroidism. An apprehensive appearance, moist palms, tachycardia with palpitations, and diarrhea may easily be attributed to anxiety. Furthermore, onset of hyperthyroidism is often associated with a stressful life event, such as loss of a family member or loss of a job. A chronically anxious patient may also have elevated systolic blood pressure, a slightly enlarged thyroid, and some lag of the upper lid. When in doubt, the physician should rely on protein-bound iodine-131 measurements.

Other systemic diseases. Anxiety reaction with prominent somatic symptoms may resemble a variety of syndromes. Prominent gastrointestinal symptoms may simulate an early peptic ulcer; cardiovascular symptoms may suggest paroxysmal tachycardia or coronary disease with angina; respiratory symptoms may appear to be due to bronchial asthma; the fatigue of generalized muscle tension may make a physician think of Addison's disease; and the tremulousness of anxiety may even mimic hyperinsulism.

Prognosis. As in other psychiatric disorders, the prognosis in anxiety reaction depends on a set of interrelated factors: the previous personality of the patient, more particularly his ego strength; the acuteness or chronicity of symptoms; the life circumstances of the patient, particularly the nature of stresses impinging on him and the quality of emotional support available to him; the meaning of his symptoms as a system of defense against conflict (the primary gain) and their use as a means of manipulating others in his environment (the secondary gain); and, finally, his motivation to get well.

Previous personality. The most reliable way to evaluate a person's character is to study his past performance. Despite ever increasing numbers of skillfully created personality tests, the best method of judging a person's capacity to handle a job or a specific task is his past record of achievement. This is also the best test of the patient's ability to overcome a psychiatric disorder. If the patient has previously performed well at school, at work, and in social relations, his prognosis *even without treatment* is better than that for the patient with a history of limited capacity for successful achievement.

The psychiatrist tries to estimate the patient's ego strength on the basis of his current and past performance—that is, his ability to test external reality, harmonize his drives with societal demands, integrate his feelings with his reason, feel and express love, relate intimately to others, work in a sustained and possibly even a creative but noncompulsive fashion, use his defenses and coping mechanisms flexibly in actively adapting to his environment, and, in general, derive reasonable pleasure from family life and daily

pursuits. Type and duration of treatment and, therefore, prognosis depend on evaluation of these factors.

Acuteness versus chronicity. Other variables involved in predicting the outcome being constant, the more acute the anxiety reaction, the better the prognosis. Another variable that may affect the outcome is early treatment, especially before the defenses have hardened and become resistant to change or before symptoms become increasingly elaborated and are used to elicit sympathy, release from responsibilities, or other secondary gains. The more chronic the illness, the more the patient despairs of securing relief; in itself, hope has a beneficial effect on the symptoms of anxiety.

Life circumstances. The stresses that precipitated or produced the anxiety reaction can be viewed in two contrasting ways. If the stresses related to the genesis of the illness are relatively slight, the patient may be able to overcome them more readily than if they are severe. On the other hand, if the stresses are slight, the patient's ego strength is weaker than that of the patient in whom a neurotic reaction develops only after prolonged, severe stress.

The life circumstances at the time of treatment may play a vital role in prognosis. The attitude of the family—sabotaging or cooperative, ridiculing or encouraging—is extremely important. Financial and occupational situations may also aid or interfere with the physician's therapeutic efforts.

Meaning of symptoms. If symptoms are used symbolically to compromise an inner conflict, they are more resistant to change than are nonspecific symptoms of dysfunction of the autonomic nervous system. The symbolic use of symptoms is exemplified by the nausea preceding each date of the girl who, although she has strong sexual urges, cannot "stomach" the idea of sex and may still have unconscious oral impregnation fantasies. An example of a nonspecific symptom, on the other hand, is the nausea, without definite unconscious ideation, that regularly follows a variety of stressful events. To the degree that symptoms are used to manipulate other persons, to gain love, attention, sympathy, money, or relief from responsibility, the prognosis is proportionately poor.

Motivation. The quality and intensity of the patient's desire to get well affect the prognosis and, ultimately, the outcome of treatment. The patient is involved emotionally with the doctor in various ways, but the term "transference," commonly used to describe this involvement, is too generic to be useful in psychotherapy. Transference is usually broken down into positive and negative transference, but these terms, again, tell one little about the real nature of the emotional involvement with the doctor. In addition to the strength of the desire to get well, opposed by the primary and secondary gains of the illness, the patient's emotional relationship with the doctor depends on his level of self-reliance.

Rado has characterized these levels as magic-craving, parent-seeking, self-reliant, and aspiring, as shown in Table II. He summed up his scheme in this statement: "The crucial difference between adult (realistic) and childlike (regressive) treatment behavior is that at the adult levels the patient realizes that *he* must learn to do things *for himself* (just as he has to when he wants to learn a language, play the piano, or acquire some other skill), whereas at the infantile levels he cherishes the idea that *the physician* will do things *for him*—if need be, in some magical way."

During treatment, in response to various changing factors, the patient may shift from one level of therapeutic motivation to another. The aim of treatment is to raise the patient's motivation to the highest level possible for him, but in any case the treatment selected

TABLE II
Levels of Motivation in Treatment Behavior^a

Level	Description	Clinical Example
Adult, realistic Aspiring	This level is available only in the adult patient who is capable and desirous of self-advancement by extensive learning and maturation.	"I am delighted to cooperate with the doctor. This is my opportunity to learn how to make full use of all my potential resources for adaptive growth."
Self-reliant	This level is available in the average adult patient who knows or is capable of learning the simple adaptive patterns of daily life.	"I am ready to cooperate with the doctor. I must learn how to help myself and do things for myself."
Childlike, regressive Parent-seeking level	When the adult patient feels like a helpless child, he seeks parental help and, therefore, parentifies the physician.	"I don't know what the doctor expects of me. I couldn't do it anyway. He should cure me by his efforts."
Magic-craving level	The completely discouraged adult patient retreats to the hope that the parentified physician will do miracles for him.	"The doctor must not only cure me, he must do everything for me—by magic."

^a Courtesy of Sandor Rado. Adapted from Rado, S. Achieving self-reliant treatment behavior: Therapeutic motivations and therapeutic techniques. In *Psychoanalysis of Behavior*, vol. 2, p. 114. Grune & Stratton, New York, 1962.

and the techniques used within the particular strategy of therapy depend to a great extent on the motivational level of the patient. In general, the greater the self-reliance of the patient, the better the prognosis and the wider the range of treatment possible.

Treatment. It is hard to imagine a psychiatric disorder or indeed any medical disorder more subject to the influence of the physician and to the vicissitudes of the doctor-patient relationship than anxiety reaction. In the face of pervasive anxiety or acute, intense panic, the physician's calm encouragement and reassurance can have strong curative powers. A number of factors in Wolberg's "helping process"—placebo effect, magical expectations, catharsis, suggestion, and transference—are inevitably set in motion by the relation of the patient and the doctor. These can be aided or hindered by the appropriate or inappropriate actions of the therapist.

The patient consults a therapist with the expectation that the doctor will cure him or at least relieve his distress. The influence of this hopeful expectation (positive placebo effect) is often in itself therapeutic, especially in decreasing anxiety. In addition, most patients ascribe to the physician magical curative powers that enhance these expectations. In this setting he experiences his feelings and discharges affect, and this cathartic effect in many instances reduces anxiety even more. Under the influence of thiopental (Pentothal sodium) or amobarbital (sodium Amytal), hypnosis, carbon dioxide, or even lysergic acid diethylamide (LSD), the cathartic effect can be specifically enhanced in selected patients. Emotional arousal also seems to be a prerequisite for attitudinal changes.

The physician's words or attitudes have significant powers of persuasion acting through a process, dimly perceived and not altogether understood, called suggestion. Probably many results attributed to interpretation and the attainment of insight are due instead to suggestion. Much nonverbal, unconscious suggestion pervades doctor-patient encounters; suggestion is sometimes used directly and deliberately.

When the patient's past attitudes to significant people are displaced or transferred to the therapist, the relationship becomes endowed with a powerful tool for helping or obstructing therapeutic efforts. Unless transference begins to serve as a therapeutic obstacle, it is left alone by the therapist. In more formal psychotherapy, transference may be manipulated in the service of insight, catharsis, or even deconditioning.

Modifying stress. If the stresses creating the chronic or acute anxiety can be modified, the anxiety reaction can also be modified. Techniques of altering stress vary from advice to the patient—to leave town, take a vacation, separate from a spouse—to family therapy, in which members of the family are brought in for treatment separately or conjointly, to direct manipulation of the environment, often with the help of a social worker, by employing a housekeeper, plac-

ing a disturbed child in a treatment center, or regulating the schedule of work and play.

Taking sides in the internal conflict. Rarely does the therapist take sides in intensive psychotherapy, but this technique may be effective in briefer forms of psychotherapy. The therapist aligns himself with one side of the inner conflict, either the repressing or the repressed side and, through his added persuasive strength, breaks the deadlock leading to anxiety. This method must, of course, be used cautiously and only when the therapist understands clearly both the psychodynamics and the effects of the patient's changed behavior. In practice, the therapist usually aligns himself with the side of the conflict that prevents self-damaging behavior.

Medication. In anxiety states the tranquilizers, especially the minor tranquilizers, have been of great therapeutic aid since their advent in the 1950's. Before that, the barbiturates and other sedatives and hypnotics were in general use and, to a lesser extent, still are today. Among the barbiturates still used fairly commonly are amobarbital (sodium Amytal), secobarbital (Seconal), and butabarbital (Butisol sodium). The danger of barbiturate habituation is decreasing their popularity, and barbiturates have been largely superseded by tranquilizers. These have been used as a primary method of therapy, especially by nonpsychiatric physicians, or as adjunctive therapy along with psychotherapy, particularly by psychiatrists. Evidence suggests that the minor tranquilizers can help make the patient more amenable to psychotherapy, provided the drugs are not used to aid avoidance and denial of emotionally charged topics.

A wide variety of tranquilizers is available. Among the more popular ones in the treatment of anxiety reactions are the minor tranquilizers—meprobamate (Miltown, Equanil) and chlorthalidazine (Librium). The phenothiazines—including chlorpromazine (Thorazine), thioridazine (Mellaril), promazine (Sparine), prochlorperazine (Compazine), and trifluoperazine (Stelazine)—are usually used in treating the anxieties associated with schizophrenia or, in selected instances, agitated depression. In anxieties accompanied by mild depression, a combination of benactyzine, an antidepressant, and meprobamate (Deprol) or of amitriptyline hydrochloride (Elavil) and meprobamate is often effective.

In using medication for anxiety reactions, physicians should remember that positive placebo reactions come within 5 or 10 per cent of favorable results with minor tranquilizers. In treatment of psychoses, however, the difference between results with the major tranquilizers and those with positive placebo effects is significantly greater.

Education. In all types of psychotherapy, some education or instruction takes place, but it may be used deliberately and selectively in regulating the habits or attitudes of certain patients. If the patient is pushing himself to the brink of exhaustion by

working long hours, regulating the working day and increasing the amount of rest and relaxation may be extremely helpful. Direct counsel must be used judiciously, for the patient's neurosis may prevent him from taking advantage of changes that would obviously benefit him. In addition to changes in type or amount of work, modifications in living arrangements or religious and social life, for example, may be beneficial.

Deconditioning. Many anxieties are the result of conditioning—the association of the conditioned stimulus that becomes a stress with an unconditioned stimulus, usually on the basis of the sensory context surrounding the unconditioned stimulus. The unconditioned stimulus may be largely responsible for the pervasive anxiety that forms the background for sharper increments of anxiety, experienced as acute attacks. Time, shape, color, or functional associations may link the unconditioned and conditioned stimuli. In one patient, for example, the unconditioned stimulus was the hearse carrying her brother to his grave; thereafter, the conditioned stimuli were black cars, especially limousines, funerals, or anything reminding her of funerals, such as certain types of floral arrangements.

In deconditioning, an attempt is made to loosen the associative links between the conditioned stimuli and the unconditioned ones by systematically decreasing anxiety, starting with the least stressful and working up to the most stressful stimuli. Deconditioning techniques based on learning theory also make use of muscle relaxation, either through drugs or hypnosis or in the waking state, with decrease of the proprioceptive feedback from the muscles that keep the nervous system tuned and excessively alerted to incoming stimuli.

Insight and understanding. Most forms of psychotherapy, from brief to psychoanalytic, try to give the patient insight into his basic strivings, conflicts, defenses, and the meaning of his symptoms. The hope is that this new orientation and perspective may lead to changes in behavior that will better adapt the patient to his life situation. In brief therapy (perhaps 15 to 20 sessions), greater reliance is placed on emotional support during crises; the emphasis is on current problems, the patient's resources and coping mechanisms being allowed to regain strength and to bring him into better adaptive balance with his environment. In brief therapy, sectors of the patient's life are selected for modification, depending on which need changing the most and which can be modified during therapy. In more intensive therapy, reliance is greater on free association to promote the reconstruction of personality.

Anxiety reactions can usually be managed with brief psychotherapy; indeed, it is usually the treatment of choice. When the anxiety reaction is chronic and when deep-seated problems in identity, work, or love are also involved, psychoanalysis is recom-

mended, provided the patient has good ego strength and introspective ability and is psychologically minded. Probably not more than 10 per cent of patients with anxiety reactions are suitable candidates for this form of treatment.

Practice. Regardless of the form of treatment, the patient must practice new forms of behavior. Unless his changes in attitude are translated into behavior and are constantly practiced until they become automatic, as in learning any new skill, such as golf, tennis, dancing, or typing, treatment will have little value. A great deal of evidence supports the view that, if a person changes his behavior (perhaps by external pressures) before he changes his attitude, his attitudes will also change, until they are in line with his new behavior. In either case, the goal is to modify behavior and to maintain the new behavioral patterns by practice until they become automatic. In this fashion the patient can modify his environment or change his responses so that old stressful stimuli no longer evoke anxiety and discomfort.

Suggested Cross References

More detailed information regarding the concept of anxiety as viewed according to various theoretical positions may be found in Area C, on current theories of personality and psychopathology. Further discussions regarding the physiology of anxiety are presented in Sections 2.5 to 2.9 on neuroanatomy and neurophysiology, in which the central brain mechanisms involved in affect are reviewed, and in Malmö's section on the physiological concomitants of emotion (Section 29.4). Social and cultural determinants of anxiety are also discussed by Wallace in his section on anthropology (Section 4.1) and by Silverman in his section on sociology (Section 4.2). The various psychiatric disorders mentioned in connection with the differential diagnosis of anxiety reactions are presented more fully in the chapter on schizophrenia (Chapter 15), in Ford's section on involutional depressive reaction (Section 17.3), and in the chapters on the organic brain disorders (Chapters 18 to 21). For a discussion of the medical diseases that may present with anxiety and are involved in the differential diagnosis of anxiety reaction, see Victor Lief's section on the medical examination (Section 12.4). For more detailed descriptions of the various psychiatric treatment modalities mentioned in this section, such as psychotherapy and drug therapy, see Area G, on psychiatric treatment.

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23.2 CONVERSION REACTION

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History and Definition

"I seldom failed," wrote Axel Munthe in *The Story of San Michele*, "to attend Professor Charcot's famous *Leçons du Mardi* in the Salpêtrière, just then chiefly devoted to his *grande hystérie* and to hypnotism. The huge amphitheatre was filled to the last place with a multicolored audience drawn from tout Paris, authors, journalists, leading actors and actresses, fashionable demimondaines, all full of morbid curiosity to witness the startling phenomena of hypnotism almost forgotten since the days of Mesmer and Braid...."

"To me who for years had been devoting my spare time to study hypnotism these stage performances of the Salpêtrière before the public of tout Paris were nothing but an absurd farce, a hopeless muddle of truth and cheating. Some of these subjects were no doubt real somnambulists faithfully carrying out in a waking state the various suggestions made to them

during sleep—post-hypnotic suggestions. Many of them were mere frauds, knowing quite well what they were expected to do, delighted to perform their various tricks in public, cheating both doctors and audience with the amazing cunning of the *hystériques*. They were always ready to ‘*piquer une attaque*’ of Charcot’s classical *grande hystérie*, *arc-en-ciel* and all, or to exhibit his famous three stages of hypnotism: *lethargy*, *catalepsy*, *somnambulism*, all invented by the Master and hardly ever observed outside the *Salpêtrière*. Some of them smelt with delight a bottle of ammonia when told it was rose water, others would eat a piece of charcoal when presented to them as chocolate. Another would crawl on all fours on the floor, barking furiously, when told she was a dog, flap her arms as if trying to fly when turned into a pigeon, lift her skirts with a shriek of terror when a glove was thrown at her feet with a suggestion of being a snake. Another would walk with a top hat in her arms rocking it to and fro and kissing it tenderly when she was told it was her baby. Hypnotized right and left, dozens of times a day, by doctors and students, many of these unfortunate girls spent their days in a state of semi-trance; their brains bewildered by all sorts of absurd suggestions, half conscious and certainly not responsible for their doings, sooner or later doomed to end their days in the *salles des agités* if not in a lunatic asylum.”

It is fitting that Charcot should introduce the subject of conversion reaction—or hysteria, as he and his contemporaries called it—for it was he and his colleagues at the *Salpêtrière* in Paris, during the latter half of the 19th century, who first focused medical attention on hysteria in a thorough and systematic fashion. Charcot was not, of course, the first to recognize or describe hysterical symptoms. These had been known for centuries, although the explanation of them had varied through the ages in a series of shifting theoretical concepts that mirrors the intellectual history of mankind.

Early history. The ancient Greeks, and the Romans who borrowed from them, were aware of hysterical phenomena, which they considered a disorder of women and attributable to abnormal movements of the uterus. The term *hysteria* itself is a legacy of this physical theory, derived from the Greek *ὑστέρα* (*hys-tera*), uterus.

In the Middle Ages, when scientific interest shifted away from the physical universe to matters spiritual, the theoretical concepts explaining mental disorders changed accordingly. Hysterical and other neurotic symptoms were thought to be the result of possession by evil, external, immaterial forces—the demons and devils and their willing human victims, the witches, that fill the pages of the *Malleus Maleficarum*. Written by two Dominican monks, Heinrich Kramer and James Sprenger, as a guide for inquisitors in the diagnosis and treatment of witches, this is one of the great textbooks of psychopathology of its time, and in its numerous case histories one can read accurate descriptions of clinical syndromes that are familiar today.

When the swing of the pendulum brought a return of interest in physical phenomena, clinical medicine followed suit, and attention was focused on the nature of symptoms and, beginning in the 18th century, on their relation to physical pathology. It soon became

apparent, however, that patients often presented symptoms that appeared to represent known physical illnesses but for which no pathological lesions could be found. It was Sydenham in the late 17th century who emphasized that these hysterical phenomena could mimic almost all known physical diseases, but he offered no explanation of the mechanism of hysterical symptom formation. Hysteria was a familiar disorder to the clinicians of the ensuing 2 centuries, particularly as a stumbling block to accurate diagnosis, but it was not until Charcot began his studies that any real attempt was made to understand the syndrome.

Charcot. If Charcot’s theories and even some of his observations have proved to be misleading in the light of subsequent knowledge and if his management of patients, as Munthe suggests, was not always entirely therapeutic, the beginning of the whole contemporary movement of psychodynamic psychiatry nevertheless rests with him. The interest he showed in the entire range of hysterical manifestations and their relation to hypnosis focused attention on these phenomena and attracted many able young men to the *Salpêtrière*. Among these were Pierre Janet and Sigmund Freud, each of whom devoted himself to the study of hysteria and contributed to the theoretical formulations concerning it.

Janet. For Janet, *dissociation* of consciousness was the key concept. In the normal individual, according to Janet, his ideas and mental functions are organized into an integrated whole that constitutes the personality, and each of these ideas and functions is ordinarily available to recall at will by the personal consciousness. What characterizes hysteria is what Janet called a “retraction of the field of personal consciousness and a tendency to the dissociation and emancipation of the systems of ideas and functions that constitute personality.” The dissociated systems of ideas and functions, although no longer available to the personal consciousness, nonetheless continue to be active and, operating autonomously, create the symptoms of hysteria that appear to the personal consciousness to arise mysteriously beyond its voluntary control.

Freud. In his early work with hysteria, Freud, too, accepted the notion of dissociation, but his interest was initially focused more on the genesis of the hysterical symptoms themselves than on the nature of the mental state that underlay their production. His studies in France had introduced him to Charcot and his school, which considered hysteria to be primarily a neurological disorder. His travels also took him to Nancy, where Liebeault and Bernheim were demonstrating the almost magical effect of hypnosis in removing hysterical symptoms. The observations of the Nancy school gave strong evidence for the psychological nature of hysteria, and Bernheim and his colleagues set themselves in theoretical opposition to Charcot and his followers.

Freud's early enthusiasm for the therapeutic use of hypnosis, which stemmed from his experience in Nancy, was reinforced by the accidental observations of Breuer in Vienna. Breuer discovered in the course of hypnotizing a hysterical young woman that, when the patient was allowed to talk spontaneously under hypnosis, she described hitherto unconscious memories of emotionally traumatic events that were directly related to the production of the hysterical symptom. Moreover, the recovery of these previously unconscious memories and the *simultaneous expression of the affect associated with them* resulted in the disappearance of the symptoms. Freud confirmed in his own clinical practice the effectiveness of this cathartic method of treatment and proposed a theory to explain the formation of the symptom: the affect associated with the traumatic episode was not discharged in an external emotional expression at the time of the trauma; instead, it was *converted* into a somatic hysterical symptom that symbolically represented the traumatic incident or some aspect of it. The memory of the trauma, deprived by conversion of the affective charge, was no longer of importance to the patient and dropped out of consciousness. For Freud, the mechanism of conversion was the central feature of hysteria and became the starting point of all his later theoretical formulations concerning neurotic symptom formation.

Although Janet and investigators in the United States like Morton Prince and Boris Sidis continued to explore the process of dissociation during the early years of this century, Freud's increasingly elaborate theoretical formulations gradually gained the ascendancy in the minds of psychiatrists interested in the psychological approach to emotional disorders. Attention slowly shifted away from clinical diagnostic categories to the psychodynamic mechanisms that underlay symptoms and that provided, at least partially, an etiological explanation of their formation.

Classification and definition. In addition to their traditional concern with the psychoses, psychiatrists became increasingly interested in the psychoneuroses, psychosomatic phenomena, disturbances in behavior, and disorders of character. These factors influenced the terms used to designate various psychiatric syndromes, and thus, in earlier editions of the *Standard Classified Nomenclature of Diseases*, "hysteria" became "conversion hysteria." A further evolution of the term occurred in the American Psychiatric Association's *Standard Nomenclature of Diseases and Operations*, a major revision of the classification of psychiatric disorders that arose as a result of experience with psychiatric casualties in World War II; "conversion hysteria" became "conversion reaction," which is now distinguished from "dissociative reaction." In the latter diagnosis, Janet's term has been revived to refer to phenomena such as amnesias and fugue states, which were previously considered to be mental manifestations of conversion hysteria, and the

term "conversion reaction" is restricted to a more limited set of symptoms manifested as localized disorders of bodily function.

In the *Standard Nomenclature*, conversion reaction is defined as a syndrome in which "instead of being experienced consciously... the impulse causing the anxiety is 'converted' into functional symptoms in organs or parts of the body, usually those that are mainly under voluntary control. The symptoms serve to lessen conscious (felt) anxiety and ordinarily are symbolic of the underlying mental conflict.... They are to be differentiated from psychophysiologic autonomic and visceral disorders."

The following discussion is restricted to those phenomena contained in the official definition of conversion reaction. However, the adjective "hysterical" is occasionally employed when it is appropriate, since there is no good adjectival form of "conversion reaction," and repeatedly resorting to circumlocutions would become clumsy and boring.

Epidemiology

It is difficult to speak with precision about the epidemiology of the conversion reaction, since the statistical data that underlie epidemiological considerations are neither complete nor accurate. It is important, therefore, to view generalizations about the epidemiology of the conversion reaction with reservations and with the recognition that more systematic observations may require a revision of current ideas.

It is often stated that the conversion reaction is less frequently seen in contemporary psychiatric practice than it was 60 or 70 years ago. If by conversion reaction one means the classically described major sensorimotor symptoms of paralyses, anesthetics, convulsions, etc., there are possibly some grounds for the statement. Perhaps the most convincing confirmatory evidence comes from the comparative experience with psychiatric casualties in World War I and World War II. Granted that a battlefield is different from a civilian environment and that grossly traumatic situations are a more prominent causal factor in wartime psychiatric casualties, nonetheless there appeared to be significantly fewer military patients with certain forms of conversion reactions (e.g., tremors, gait disturbances, and convulsions) in World War II than in World War I. On the other hand, the psychophysiological reactions appeared to have increased in number in World War II. Even these generalizations are called into question by the possibility that changing diagnostic practices and theoretical constructs have influenced the statistics on which they are based. For example, the concept of psychophysiological processes (i.e., psychosomatic medicine) did not really gain currency until the period between the two wars and may have led military physicians to detect more of these in the second war.

However, even if the major motor and sensory disturbances have diminished in number, this does not

necessarily mean that the conversion reaction as such is any less frequent. It is possible that there has merely been a shift from the predominance of one type of conversion reaction to another, the total number remaining the same. Indeed, evidence from contemporary clinical experience suggests that pain and the simulation of bodily disease are the predominant forms of conversion now manifested by patients. But once again, these impressions cannot be said to be on solid ground; the total incidence of hysterical pain in the population at large, for example, is certainly not known, since the condition is probably frequently not recognized as such by the physician whom the patient consults. The increasing number of such patients seen by psychiatrists in a general hospital population may represent merely an increased awareness of the condition as a consequence of the heightened sophistication in the staff of a hospital that maintains a psychiatric service. Furthermore, it is difficult to make comparisons between the contemporary scene and that of 80 years ago. The incidence of hysterical pain for the earlier period is not known, and the seeming prevalence of the major sensorimotor symptoms may simply reflect the interest of clinicians of that day in a dramatic disorder, which they reported in their scientific writing to the exclusion of other, less interesting forms of the condition.

Another aspect of the epidemiology of the conversion is the tendency of the symptoms to spread from one individual to another. This phenomenon is rarely mentioned by contemporary observers. One may occasionally see on a psychiatric ward one patient developing the same conversion symptom initially manifested by another. Or, during an epidemic of poliomyelitis, one may find an associated small epidemic of conversion symptoms resembling those of poliomyelitis, with all the diagnostic problems that necessarily result. But for descriptions of the spread of symptoms on a grand scale, one must turn to history. Religious houses particularly appear to have been subject to these disturbances. Paul Richer in *Etudes Cliniques sur la Grande Hystérie* has described a number of such epidemics occurring in the 17th, 18th, and 19th centuries, and Aldous Huxley's *The Devils of Loudun* vividly portrays a famous disturbance in an Ursuline convent.

Pathology

There is little to be said about the pathology of the conversion reaction. There are no known neuropathological lesions underlying the symptoms, and the pathology that is associated with the condition is purely secondary to the hysterical paralyses and contractures. If these are of long duration, muscle atrophy, stiffening, and limitation of motion of the joints of the affected limb or limbs may occur as a result of the prolonged disuse.

Etiology

Early theories

Charcot. Although there had been a number of suggestions about the etiology of the conversion reaction during the earlier decades of the 19th century, it was Charcot and his colleagues who first attempted a systematic and extensive study of the nature and cause of hysteria. Charcot was a neurologist and was under the sway of the growing body of knowledge about pathological anatomy. It is not surprising, therefore, that he attributed the symptoms of the disorder to a hereditary degenerative process of the nervous system, despite the fact that such a process was not to be detected either grossly or microscopically. Although Charcot championed a physical etiology of hysteria, he was not unaware of the influence of psychological factors on the symptoms, which his experiments with hypnosis showed to be important. Charcot knew and repeatedly demonstrated that under hypnosis the symptoms of hysteria could be produced or removed at the will of the hypnotist. Furthermore, he recognized the psychological implications of the observation that patients can respond to and act on ideas introduced into their train of thoughts. But Charcot maintained that this responsiveness to ideas and the very capacity for being hypnotized occurred only in patients with hereditary hysterical degenerative disease of the nervous system. For Charcot, hypnotizability was a sign of illness, and he insisted that normal people could not be hypnotized.

Bernheim. Bernheim, who was more interested in the cure of patients with hysteria than in the scientific study of the disorder itself, made extensive use of hypnotism as a technique of treatment. In the course of his work, he made careful investigations into the nature of hypnosis itself and gained wide experience with the variety of phenomena that occur in the hypnotic state. He thought of hypnosis primarily in psychological terms and proposed that the phenomenon basic to it was suggestibility. Furthermore, his observations indicated that suggestibility and hypnotizability were normal personality functions that appeared in many people without any taint of nervous or mental disease. This contradiction of Charcot's assertion that hypnotizability was strictly pathological sired a bitter feud between the schools of Nancy and the Salpêtrière, and it was only after years of acrimonious debate that Bernheim's concepts were generally accepted.

Janet. Pierre Janet, although a pupil of Charcot's at the Salpêtrière, was an independent thinker and made many contributions to the body of theory and observations concerning hysteria. Like Charcot, he believed that hypnotizability was pathognomonic of hysteria and the ultimate and basic cause of the disorder was a hereditary degeneration of the brain. Despite

this underlying orientation, he was very much concerned with understanding the psychology of hysteria and elucidating the psychic mechanisms involved in symptom formation.

Bernheim, both from his clinical observations and from his experiments with hypnosis, in particular posthypnotic suggestion, had developed the notion of automatisms—automatic acts, the origin of which is unconscious and which take place without the conscious will of the actor being involved. Janet paid particular attention to phenomena of this sort, especially as they were observed in major hysterical alterations of consciousness, such as amnesias, somnambulisms, and multiple personalities. He proposed the concept of dissociation, in which specific networks of ideas are lost to conscious attention and volition but, although unconscious, continue to produce the sensory and motor affects that appear as the symptoms of hysteria.

Thus far Janet's theory of symptom formation was entirely a psychological one. It was only when he proposed an explanation of the process of dissociation itself that he reverted to physical concepts. The dissociation occurred, he stated, when there is a lowering of the mental energy binding together all the mental contents into an integrated personality structure, and certain groups of associations fall away by inertia and are lost to the central personality organization. This lowering of mental energy, said Janet, was the result of hereditary degeneration of the nervous system.

Freud. Freud, like Charcot, began his professional life as a neurologist. He made his first systematic attempt to explain neurotic symptoms an exercise in neurophysiology. He soon abandoned the effort, and the monograph in which he set forth his ideas, *A Project for a Scientific Psychology*, was not published until more than a decade after his death. His first public paper on psychiatric illness was "On Hysteria," written with Josef Breuer. This paper later became the first chapter in the monograph, *Studies on Hysteria*, which gave the details of their early clinical observations as well as their first theoretical formulations. The language and concepts are all psychological, and from that time on, consciously at least, Freud gave up any attempt to correlate psychological functions with neurophysiological processes.

In Freud's earliest psychiatric papers (1894 and 1895), one finds an explanation of the etiology of hysterical symptoms that became the cornerstone of the whole theoretical structure that subsequently arose. His formulation of the mechanism of conversion has been mentioned earlier—that affects associated with a psychic trauma were not expressed emotionally at the time of the trauma but were, instead, converted into physical symptoms. This provided an explanation of the mechanism immediately underlying conversion symptom formation. But there was a further observation to be accounted for—the affects

and ideas associated with them were split off from consciousness. In other words, the affects were dissociated from the main stream of consciousness and were not accessible for discharge over the normal channels of emotional expression, thus making them subject to the subsequent mechanism of conversion.

Freud and Breuer were not satisfied with the theory set forth by Janet that hereditary degenerative processes underlay dissociation. Instead, they proposed two possible alternate mechanisms by which dissociation could occur. (1) Breuer suggested that at the time of a psychically traumatic event the patient was in a temporary hypnoid state of altered consciousness. When full consciousness returned, the memories of the traumatic event and the associated affects experienced during the hypnoid state remained separated from the main body of associations constituting the normal personality. (2) Freud postulated a different mechanism: because the ideas and associated affects were morally and ethically unacceptable to the individual, they were split off from the main stream of consciousness for the purpose of sparing the individual the pain of recognizing his less honorable tendencies. In each of these instances, ideas and their related affects were dissociated, the affects were blocked from normal channels of emotional discharge, and the emotional energy thus dammed up was transmuted into physical processes by the mechanism of conversion, leading to the formation of symptoms.

Freud referred to "hypnoid hysteria" when the first mechanism of dissociation was at work, and "defense hysteria" in the case of the second. As his clinical observations multiplied, however, he discovered that hypnoid hysteria rarely, if ever, occurred in the cases he saw, and he came to recognize that defensive psychological maneuvers could result in neurotic conditions other than hysteria. What led specifically to hysterical symptoms was a disposition to conversion. If this was absent, other psychological mechanisms were employed to produce phobias, obsessions, and compulsions. Furthermore, he became aware that the unacceptable, painful affect that initiated the defensive dissociation in hysterical symptoms was invariably sexual. A further study of his cases showed him that the sexual trauma always occurred in the patient's childhood; every hysterical woman he investigated gave a history of having been sexually molested by an adult, usually her father.

By combining the various observations that had come to him piecemeal, Freud proposed in 1896 an integrated and specific theory of the etiology of hysteria: a passive sexual seduction in childhood is the specific determinant of hysteria underlying the disposition to conversion. The individual is sensitized by this childhood experience to the sexual feelings and situations arising after puberty, for these arouse the frightening affects and memory traces of the earlier sexual trauma, repression occurs as a defense, and

the sexual affect is converted into the somatic symptom.

However, further observations conflicted with this formulation and caused Freud to make a radical alteration in his theories. It slowly became apparent to him, both from his own self-analysis and from more extensive investigations of his patients' lives, that the alleged sexual seductions in childhood were not facts but merely the patients' fantasies, presented as if they had been actual experiences. It was only gradually that the significance of these observations became apparent to Freud and led him to the discovery that sexuality does not first occur in the human being only after the changes in puberty but is present as a strong and important biological drive in early childhood. The early objects of this sexual drive, moreover, are the parents of the child, leading to the now well studied and well documented Oedipus complex.

Current theory. The theory of the etiology of hysteria was reformulated in the light of these new discoveries: a fixation in early psychosexual development at the level of the Oedipus complex, with a failure to relinquish the incestuous tie to the loved parent, leads to a conflict in adult life over the sexual drive (or libido) because it retains its forbidden incestuous quality. The drive is, therefore, subjected to the defensive psychological maneuver of repression. The energy deriving from the drive is converted into the hysterical symptom, which not only protects the patient from a conscious awareness of the drive but at the same time often provides a symbolic expression of it. In this new formulation, hysteria is conceived of as a specific clinical entity arising from specific sexual conflicts originating in the oedipal period of psychosexual development.

Further clinical observations soon led to a further elaboration of the theory. It was often very difficult for patients with conversion reactions to relinquish their symptoms. This was partly because to do so would subject the patient to experiencing the mental discomfort associated with being aware of the forbidden impulse, which had been a central motivation for the formation of the symptom in the first place. But there were other secondary but important motivations for retaining the symptom once it had resulted from the basic process of conversion. The symptom itself could bring certain advantages to the patient. It defined her as a sick and disabled person, and the people in her environment acted accordingly. Attention, sympathy, and help were focused on her because she was ill, and she was not required, while an invalid, to carry out the duties and responsibilities expected of a healthy adult. Such advantages gratified the dependency needs of the patient and, because of the secondary gains resulting from the gratification, tended to reinforce the perpetuation of conversion symptoms, which had been produced in the first place

by quite different psychological factors—the conflict over oedipal sexuality.

These formulations soon became the standard psychodynamic explanation of the conversion reaction. Even now, the term "conversion" implies to many psychiatrists a psychogenic physical symptom arising from conflicts over sexuality that have their origin in the oedipal phase of psychosexual development. There is no doubt that the conversion reaction may arise on this basis alone or that such conflicts may play a part, along with other psychological factors, in producing conversion symptoms. There is, however, a growing trend in contemporary thinking to expand the concept of conversion and include a wider range of psychological events.

Expanded concepts of conversion reaction

Mixed syndromes. Conversion symptoms do not always occur in a circumscribed clinical syndrome. On the contrary, in the mixed psychoneuroses, the conversion symptom is only one of a repertoire of clinical manifestations that may include phobias, obsessions, compulsions, psychoneurotic depression, etc., in which, according to psychoanalytic theory, the psychogenetic factors are primarily preoedipal and pregenital. A particularly striking instance of this mixture is seen in the transient conversion symptoms sometimes manifested by patients with schizophrenia.

Variety of personality types. The conversion reaction is not invariably associated with the genital hysterical character. On the contrary, it is found in combination with a variety of personality types (e.g., the passive-aggressive, the schizoid, and the paranoid personality) in which, according to Freudian theory, pregenital conflicts play a predominant role.

Were these the only observations requiring an explanation, it might be argued that in these mixed clinical syndromes, the psychogenic factors were also mixed—that is, that the conversion symptoms were produced by elements arising from oedipal genital conflicts and that the other symptoms arose from earlier preoedipal, pregenital conflicts existing simultaneously in the patient. This explanation preserves the theoretical notion that conversion symptoms are specifically associated with oedipal genital sexual drives. It is, unfortunately, not supported by more recent observations, as Rangell has pointed out, which indicated that preoedipal sexual drives and the aggressive drive may be processed by the mechanism of conversion and expressed symbolically in physical symptoms.

A man of 30 developed a low back pain following a back injury and underwent a laminectomy for the removal of an L-4-5 disk. After surgery he continued to have moderate pain, diagnosed as arachnoiditis. Despite this, he managed to keep on with a full life of work and activities. Finally, at his family's urging, he agreed to further surgery. After the operation, he became totally bedridden and incapacitated—not because of pain but because of an extensive weakness of his entire spinal and neck musculature that prevented him from walking or even

sitting. The weakness was clearly hysterical in nature. Investigation under sodium Amytal narcosis uncovered the fact that the patient had been utterly opposed to further surgery and had deeply resented his family's pressure, to which he had finally felt he must submit. As he described all this under narcosis, he began to express bitter anger at his family. Speaking of at last agreeing to the operation, he said, "So I finally decided if I had to cut my throat, I *would* cut my throat—and here I am; the family needed a lesson." When fully conscious both before and after the Amytal interview, the patient consciously felt and exhibited no anger whatsoever toward those who had forced him into surgery. This had been translated by conversion into the physical symptom of muscular weakness, which, without his being aware of its meaning or the feelings it expressed, gave him the means for revenge against his family.

Gratification of dependency needs. It has long been known that hysterical symptoms may result from a frightening physical accident that produced no bodily injuries. "Railway spine," the name attached to the hysterical sensorimotor phenomena seen in people who had been involved in a railway mishap, was a well described entity in the 19th century. During World War I, much interest and attention was focused on the traumatic neuroses, in which conversion symptoms were frequently manifested. It became apparent that the primary motivation for these symptoms was self-preservation rather than oedipal genital drives; that is, the symptoms enabled the patient to escape a dangerous situation, to be relieved of onerous responsibilities, and to receive protection, help, and attention.

The increasing preoccupation of psychiatrists over the past 2 or 3 decades with the psychological aspects of bodily disease has revealed that these oral narcissistic drives are central etiological factors in many patients with conversion symptoms, especially when the conversion process results in pain or in the prolongation or exacerbation of bodily symptoms originally resulting from a local physical lesion. In such patients, the symptoms are motivated by and provide gratification for strong, unconscious dependency needs. These needs are a source of conflict for the patient, since they run counter to the image of himself as a strong, self-sufficient person, which he must preserve in order to maintain his self-esteem. Since his symptoms appear to the patient to be the result of a bodily illness that has afflicted him without his consent or participation, he can allow himself to become an incapacitated invalid, dependent on others for help and attention. Continuing to believe that he wants to be strong, self-sufficient, and independent, he remains unaware of his underlying dependency needs and can blame his entire predicament on an accidental, ego-alien sickness that is not his fault.

The fact that compensation for industrial and other injuries is often an important factor in producing or prolonging these conversion symptoms is not a justification for establishing a separate category of compensation neurosis. The monetary award is only one of a number of circumstances that provide gratification for the patient's dependency needs. His needs are

also gratified by the sympathy, concern, and tangible help of relatives, friends, physicians, and others concerned with taking care of him. Furthermore, response from people in his environment is not the only, or even the principal, cause of his symptoms and of his demands for dependency gratification through the language of bodily disturbances. The inner psychodynamic conflict over his dependency needs is an equally important part of the problem. It is only through a combination of all these causal factors that the conversion reaction finally results.

Reaction to environmental stresses. The inhuman and all too frequently unbearable pressures that World War I heaped on the men that fought it not only led to changes in the conception of human drives but forced students of human behavior to consider the environmental stresses with which human beings have to cope. By various and devious routes, theorists like Kardiner and Hartmann have approached an adaptational concept of human behavior and psychological function. At the same time, learning theorists such as Dollard and Miller and psychiatrists such as Cameron, influenced by the principles of learning theory, have attempted to adapt the generalizations derived from experimental psychology to an explanation of human psychopathology. For the latter theorists, psychiatric symptoms are not only pathological adaptations to external stimuli but learned responses. The learning is reinforced and facilitated by the reduction of the intensity of an inner painful psychological drive that follows the response.

In the case of a hysterical paralysis, for example, the initial episode of paralysis results in a reduction of the painful drive of fear or anxiety. The psychological relief thus obtained *reinforces* the hysterical response that has produced it and predisposes to a repetition of the same palliative response each time the anxiety occurs. In this way a pattern of behavior is evolved that may become chronic.

These theoretical conceptions have added an important dimension to understanding the mechanism of the production of hysterical and other symptoms by focusing attention on the importance of the environment and on the complexities of the organism's adaptational responses to it. They have also provided a basis for the contemporary experiments in behavior therapy. At the same time, there is a danger that a too exclusive interest in the phenomena of learning and adaptation may overshadow the recognition of the importance of unconscious psychic forces and lead to a neglect of the basic biological drives and the hereditary factors involved in the development of both drives and ego functions.

Psychophysiological reactions. Another factor that has had an influence in bringing about changes in the concept of the conversion reaction has been the interest, over the past 3 decades, in the psychophysiological reactions, more commonly referred to as psychosomatic disorders. As has been noted earlier,

the American Psychiatric Association *Standard Nomenclature* states that conversion reactions "are to be differentiated from psychophysiologic autonomic and visceral disorders." This differentiation is generally made on the basis of two criteria: (1) Conversion symptoms affect and are mediated by the voluntary sensorimotor system, whereas psychophysiological reactions are the result of autonomic nervous system discharge. (2) The conversion symptom expresses *symbolically* an idea or memory that is unconscious. In the psychophysiological reaction, no such symbolism is found. The autonomic response is merely the physiological correlate of an unconscious affect or drive, which leads to dysfunction in various organ systems and may, if the dysfunction continues long enough, result in actual lesions in the organ involved.

A number of contemporary investigators, such as Ziegler, have challenged the validity of making such a sharp distinction. Their arguments are based on at least three observations. (1) Certain symptoms (such as nausea, vomiting, and fainting) that have always been considered part of the classical syndrome of conversion hysteria are mediated in part, at least, over the autonomic nervous system. (2) Psychophysiological reactions may, like conversion reactions, be nonverbal, symbolic communications expressed in body language. (3) In psychophysiological reactions as well as in conversion symptoms, an affect or drive that is rendered unconscious by repression appears to be converted into a somatic symptom. It is also relevant to note here the observation that, under hypnosis, suggestions can influence functions mediated by the autonomic nervous system, indicating that, anatomically and physiologically, the cleavage between the autonomic and voluntary nervous systems is not an absolutely sharp one.

Among current investigators, positions range all the way from the distinct differentiation proposed in the American Psychiatric Association nomenclature to those who hold that all somatic processes correlated with repressed affects are brought about by the mechanism of conversion. In between these opinions are the inevitable shades of gray. A part of the disagreement rests on differences in the definition of syndromes, the causes of which are as yet poorly understood. Obviously these issues cannot be settled without further investigation and knowledge. It is perhaps not so important what terms a person chooses to use as that he defines them accurately.

Symptom as communication. Another and more recent approach to the conversion reaction is based on the study of communication in the interpersonal situation. In this framework, the conversion symptom is looked on as a nonverbal communication in body language that has, as its basic purpose, the intent to coerce another person to some action, such as helping or paying attention to the individual who is communicating. Szasz, who has explored this concept to

its furthest reaches, doubts that the conversion reaction is really an illness at all. He proposed that it is more in the nature of a game played by the participants in conformity with certain rules of communication that determine the form of the reaction. He suggested, furthermore, that the traditional medical model may not be the most appropriate conceptual framework in which to study the conversion reaction (and other syndromes); it may, indeed, blind investigators to the true nature of the phenomena they are observing.

Interesting and provocative as some of these more recent propositions have been, they appear to be based primarily on the symbolic and communicative aspects of the conversion reaction and on its function as a means of expressing dependency needs, either as secondary gain or as arising from a primarily oral organization of the personality structure. As such, they are concepts derived from a limited view of conversion symptoms and cannot be considered as theories that will ultimately or basically explain all the clinical observations.

Reappraisal of conversion reaction. In recent years, there has been a recrudescence of interest in the mechanism of conversion reaction and a beginning reappraisal of its nature. The concept of conversion was one of Freud's earliest psychological theoretical formulations, and it arose at a time when he was trying to explain why some neurotic patients developed hysterical sensorimotor symptoms and others fell prey to obsessions or phobias. He recognized that behind all these clinical manifestations there was a splitting off from consciousness—a dissociation—of painful affects and their associated ideas. The theoretical problem was to explain the subsequent choice of symptoms once the basic process of dissociation had occurred. It was to solve this problem that Freud postulated two further secondary mechanisms: (1) In hysteria the affect is *converted* into physical symptoms and discharged over this pathway. (2) In phobias and obsessions, the affect remains in the psychological realm but becomes detached from the unbearable idea that originally provoked it and is *displaced* to a neutral, unimportant, and innocuous idea, which then provides an avenue for the expression and discharge of the affect.

In this formulation, the concept of conversion carries the idea that it is a special pathological process in which psychic energy is transmuted into a physical neuronal discharge leading to the sensorimotor symptoms. Freud was himself puzzled by the nature of the mechanism and spoke of "the mysterious leap from the mental to the physical" that characterized hysteria. One might, however, ask whether conversion is such a unique process, whether it is a mechanism specific to the formation of hysterical symptoms, and whether, indeed, it is any more mysterious than or different from the translation of any idea into a volitional motor act. A normal woman in coitus

under the influence of consciously felt sexual desire will voluntarily and happily perform the bodily movements appropriate to the sexual act. A hysterical woman, without any conscious experience of sexual feelings and wishes, will have a hysterical convulsion in which she exhibits all the movements of coitus without being at all aware of their significance. What distinguishes the two women is not a difference in the way their sexual desire (a mental phenomenon) leads to the physical movements of coitus (a bodily phenomenon). The difference is that, in the hysterical woman, the process takes place in a dissociated state outside of her conscious awareness. The problem of how the mental phenomenon of volition is related to its corresponding physical bodily movement has been a puzzle to philosophers since Descartes. Conversion is simply this same process taking place in a state dissociated from conscious awareness.

If conversion proves not to be a unique mechanism specific to hysterical symptoms, attention is focused once again on dissociation as the basic psychopathological mechanism, not only for hysteria but for all psychoneurotic syndromes. The question of symptom choice becomes the problem of explaining not why a dissociated impulse or affect is expressed in a physical, bodily manifestation—which is the normal outcome of unblocked, uncontrolled affects and impulses—but rather why these mental events do not show their physical correlates but are shifted (displaced) to other mental phenomena in the form of phobias and obsessions.

All of this has a bearing on the term “conversion reaction” applied by the American Psychiatric Association *Standard Nomenclature* to some of the symptoms previously included under hysteria. Unlike the terms “phobic reaction” and “obsessive-compulsive reaction,” which refer specifically to observable clinical phenomena, conversion reaction refers to a hypothetical psychopathological mechanism. It is, furthermore, distinguished from dissociative reaction, which is treated in the *Standard Nomenclature* as a separate entity.

The wisdom and validity of the use of the label “conversion reaction” to designate a clinical syndrome of symptoms distinct from dissociative phenomena is open to question. What are called conversion symptoms are frequently found in conjunction with dissociative phenomena. It is possible that dissociation is the basic mechanism behind all the clinical phenomena now separately categorized as dissociation and conversion reactions, which are only different manifestations of the basic process. *The effect of the process of dissociation itself* is seen in such clinical symptoms as amnesias; *the effect of the dissociated mental contents* is seen in somatic processes, which range from highly complicated patterns of behavior (as in the multiple personalities) to partial, fragmented, symbolic representations of the dissociated mental contents (such as the sensorimotor phenomena referred to through-

out as conversion symptoms). By advocating the term conversion reaction, the *Standard Nomenclature* focuses on a hypothetical construct that may eventually require revision. At the same time, it diverts attention from the concept of dissociation, which may have more general applicability than the area assigned to it in the nomenclature and which certainly warrants far more scientific study and clarification than it receives in current psychiatric investigation.

Clinical Description

Although it occurs in males, especially when financial compensation is a factor, the conversion reaction is predominantly a disorder of females. Not enough is known of its natural history to speak dogmatically about its course; it frequently begins in adolescence or early adulthood, but the symptoms may appear for the first time during middle age or even in the later decades of life. The manifestations may be sporadic and episodic, often arising at times of emotional distress resulting from external crises; the site and nature of the symptoms may vary within the same person from time to time, often with a surprising fluidity, or a single symptom may become rigidly fixed and persist intractably for years.

Physical characteristics. As Sydenham knew, the manifestations of the conversion reaction are protean and may mimic most of the known bodily diseases. They can be divided into four major categories: motor disturbances, sensory disturbances, conversion symptoms simulating physical illness, and conversion symptoms complicating physical illness.

Motor disturbances. There are two kinds of motor disturbances: abnormal movements and paralyses.

Abnormal movements. The abnormal movements may take many forms. Gross, rhythmical tremors of the head, arms, and legs are seen, sometimes present when the limb is at rest, sometimes when it is in use, and commonly worse when attention is called to the movement. A variety of choreiform tics and jerks may be observed; these are usually more organized and stereotyped than the movements of true neurogenic chorea.

Convulsive movements of the entire body are sometimes found; unlike true neurogenic epilepsy, hysterical seizures are characterized not by rhythmical clonic movements of the extremities but by a wild, disorganized, seemingly unpatterned thrashing and writhing of the body. The patient appears to be completely out of control, her bedclothes are thrown into complete disarray, her arms and legs bang about with abandon, but she rarely hurts herself, bites her tongue, or voids. Such seizures may last many minutes and are accompanied by what appears to be complete unresponsiveness. Careful observation, however, will reveal that, in fact, the patient does react to stimuli; she often resists movements of her limbs forced by the examiner; though her eyes are closed, the lids

often flutter, and she vigorously resists attempts to open them. When the patient recovers from her seizure and becomes responsive, she can often remember or can be made to remember what was going on around her during her convulsion. This is quite different from the complete amnesia of the patient with neurogenic epilepsy for the events occurring during the period of true physiological unconsciousness. The hysterical patient exhibits an altered state of consciousness, but it is a dissociative state rather than the unconsciousness accompanying gross disturbances of the brain function.

Astasia abasia is also seen. This is a dramatic disturbance of gait characterized by gross, irregular pseudoataxic jerky movements of the trunk, dancing, staggering, drunken steps, and a wild thrashing and waving of the hands and arms as the patient seems to try to keep her balance or clutches for the support of walls, furniture, or people. She rarely falls; but if she does, she avoids injury.

Paralysis. Paralysis and paresis most commonly affect the extremities as a monoplegia, a hemiplegia, or a paraplegia. The affected parts are flaccid in character or show the result of sustained contractures in antagonistic muscle groups. The paralysis does not conform to the pattern resulting from damage to the peripheral or central nervous system; rather, it follows a distribution conforming to the conventional idea of the part affected. The hand is paralyzed from the wrist down, the forearm from the elbow, and the whole arm from the shoulder down. If the problem is one of paresis, the weakness may be most severe at the proximal portion of the limb rather than distally—the opposite of what occurs in central nervous system disease. For example, in hysterical hemiplegia, the patient, when walking, drags the affected leg along limp behind her rather than swinging it through at the hip, as in neurogenic hemiplegia.

When the paralyzed or paretic part is examined carefully, it readily becomes apparent that there is no genuine deficit in muscle function. If the patient is asked to move the afflicted member, one may note a spasm of the antagonist muscles; this prevents motion. In passively flexing the paralyzed limb, the observer may find a contracture of the muscle groups opposing the movement. Reflexes remain within the range of normal, the plantar response is always flexor, and there is no reaction of degeneration on electrical stimulation.

A special and localized form of paralysis occurs in the muscles affecting the vocal cords, leading to hysterical aphonia. In this condition the patient is usually able to whisper with no difficulty but can make no vocalized sound whatsoever. Examination reveals normal movement of the lips, tongue, and pharynx and of the vocal cords during respiration.

Sensory disturbances. Hysterical disturbances of sensation, especially anesthetics, may go unnoticed

unless they are specifically looked for, since patients do not often complain of them.

Skin. The disturbances of skin sensation may occur in any location, shape, and pattern. Most commonly, the sensory disturbances are found in the extremities. When disorders of motor function occur—whether abnormal movements or paralyses—these are generally accompanied by diminished or totally absent sensation. All modalities are involved, and, as with the motor disorders, the distribution of the sensory disturbance follows a pattern determined by the patient's idea of the limb affected rather than by the neural structures innervating it. Thus, one finds the characteristic stocking and glove anesthesia of the feet and hands, which, as the term implies, is distributed over the area normally covered by those bits of apparel. If the whole arm or leg is involved, the line of demarcation from head to perineum is exactly in the midline; this differs from what is found in hemianesthesia resulting from neurological disease, where the extension of terminal sensory nerve fibers across the anatomical midline preserves a small margin of sensation on the affected side.

Sense organs. The special organs of sense may also exhibit a loss of function, the patient manifesting varying degrees of deafness and loss of vision. The disturbance may be unilateral or bilateral, and a peculiar feature of the visual disorder is a regular, concentric diminution of the visual field that, in its extreme form, leaves only central vision intact, the "gun barrel vision."

The exact nature of these disorders of sensation is not clear. Although the patient will allow herself to be subjected to painful stimuli (such as pin pricks, pinching, or deep pressure in the affected area) without appearing to feel or be aware of discomfort, there is often evidence in specific testing that sensation is not completely eradicated. Certain observations of this sort indicate that peripheral stimuli are being received, transmitted, registered centrally, and used in integrated actions but that at the highest levels of mental function the patient remains totally unaware of them. One can, for example, with the patient blindfolded touch normal and anesthetic areas in random order, instructing the patient to say "yes" when she feels the stimulus, "no" when she does not; many patients will regularly reply "no" each time the disturbed area is stimulated. In patients with one eye totally blind, diplopia can be produced by pressure on the affected eyeball. Patients with bilateral blindness manage nonetheless to walk about easily and surely without bumping or harming themselves. A young lady complaining of total blindness in both eyes asked for a glass of water. It was placed on her bedside stand, precariously balanced on the edge so that the slightest touch would send it crashing to the floor. When told to reach out for it, she stared vacantly ahead and with her hand felt all around the periphery of the glass. So accurate and delicate were her movements

that she exactly outlined the circumference of the glass without once touching it and then in disgust asked that it be handed to her since she could not find it.

Hallucinations. In addition to the diminution or absence of sensory function, there may be sensory hallucinations. Although uncommon, the most frequently affected modality is vision, and visual hallucinations (excluding the toxic deliria) are almost always hysterical. Characteristically, they are of complex scenes or fragments of action that appear repeatedly and with stereotyped repetition, often reproducing the scenes of a real past event of emotional significance to the patient.

Pain. A form of sensory disturbance that is of particular importance in the conversion reaction as it is seen in contemporary psychiatry is pain. Like much else connected with this neurotic syndrome, the exact nature of hysterical pain and the mechanism of its production are not clearly understood. Possibly it is based on a heightened awareness of the myriad little stimuli normally arising from all parts of the body that are ordinarily ignored but may be perceived and even felt as uncomfortable if one focuses one's attention on them. Whatever its origin, hysterical pain is common and may affect any part of the body.

A common site is the abdomen, which has led to frequent misdiagnoses and much unnecessary surgery. Typically, a first attack occurs during adolescence and leads to the removal of the appendix, which, on pathological section, proves to be normal. The subsequent recurrence of abdominal pain is interpreted as resulting from adhesions, an ovarian cyst, or cholecystitis. With each attack, another laparotomy is performed, leaving the patient in middle life devoid of her dispensable abdominal organs and with a scarred belly wall that has been called the "battle-ground" or "checkerboard abdomen."

It is not only the physician's ignorance of hysterical pain that leads to such a clinical course; the patient herself contributes to the problem. The pain of which she complains is often vague, diffuse, poorly described, and imprecisely localized, leading to difficulties in diagnosis. Furthermore, although she cannot describe its characteristics with precision, the patient nonetheless leaves no doubt about the suffering it is causing her, often elaborating on the acuteness of her anguish in such a heartfelt way that the sympathetic physician's wish to help is easily aroused. More than this, it is evident in some patients that their symptoms and behavior are a none-too-subtle demand for surgery, or, if this is not obvious, at least the patient raises no objection to operation after operation.

Because the conversion reaction manifested as pain is common, because it may be confused with pain arising from local lesions requiring surgery or other physical treatments, and because the nature of the symptom brings the patient, initially at least, to the nonpsychiatric physician, it is essential that the physi-

cian be aware of hysterical pain and of the uses to which the patient puts it in her demand for therapeutic action.

Conversion symptoms simulating physical illness. It is apparent from the preceding discussion that the symptoms of the conversion reaction may simulate bodily disease so cleverly that diagnosis is difficult to establish. In a special form of the conversion reaction that is closely related to the problems with pain already considered, an identification with the symptoms of the illness of a person with whom the patient has a close relationship is a key mechanism. This identification is commonly with a person who has recently died, and it is often accompanied by the signs and symptoms of a pathological grief reaction. Here, too, pain is a common complaint, but many different kinds of somatic symptoms may arise in this fashion. A young man, for example, consulted his physician for severe precordial chest pains, which, he was convinced, were evidence that he had a fatal heart disease. Careful and repeated physical, laboratory, and electrocardiographic examinations disclosed no indication of cardiac difficulty, but a careful history revealed that the patient's father had died suddenly of a second episode of myocardial infarction several months before. Neither at the time nor since had the patient experienced any conscious grief for his father; instead, he developed symptoms like those of his father's fatal illness and, to his own amazement, adopted a number of his father's characteristic behavior patterns.

Identifications leading to symptoms may occur for other reasons. Freud's patient Dora, for example, developed a hysterical cough through identification with the same symptom in an older woman she felt to be a rival. On occasion, one may find rhythmical, hard abdominal pains in a man whose wife is in labor. This identification with a feminine object and function has its institutional counterpart in the *couvade* of many primitive peoples.

Conversion symptoms complicating physical illness. The symptoms of physical illness may be protracted or complicated by symptoms resulting from a conversion reaction. Pain that begins as a result of a local disease process may be prolonged as a hysterical symptom long after the physical lesion has healed. Occasionally one sees patients who, after a true epileptic seizure, continue to have hysterical seizures that closely imitate the initial spells. More perplexing and more difficult to evaluate are those patients who manifest symptoms resulting from a local bodily lesion but in whom the severity of the complaints and the magnitude of the disability are far greater than what would be expected from the nature and extent of the local lesion alone.

The diagnostic problem here is not one of deciding between a conversion reaction and a physical disorder but of trying to decide how important the psychological factors are in delaying a patient's return to an active, gainful life. Patients who fall into this category

are among the most difficult that physicians have to deal with, because of both the complexity of the clinical ingredients and the refractoriness of such patients to programs of treatment and rehabilitation. Patients in this category of conversion reaction provide good illustrations of somatic compliance, a common mechanism that enters into the formation of conversion symptoms. As the term implies, conversion symptoms tend to appear in locations and organ systems that are or have previously been the site of symptom-producing lesions, the existence of the physical disorder apparently facilitating the subsequent appearance of the conversion symptoms in the same location.

Behavioral characteristics. The patient with a conversion reaction does not show major abnormalities in her mental status. She is alert, completely oriented, and in good rapport with the examiner. Her mood may be variable, but she is not profoundly depressed or retarded on the one hand or elated and hyperactive on the other. Her thought content is not grossly abnormal, nor is there evidence of a primary process thought disorder. If she manifests hallucinations, she is aware that they are hallucinations, no matter how vivid and real the sensory images may be to her. In short, the patient's mental status reveals no indications of a psychosis or of a gross physiological disturbance of brain function.

La belle indifférence. The most characteristic behavioral feature in patients with a conversion reaction is what the French authors of the 19th century called *la belle indifférence*. Despite what appear to be the most extensive and crippling disturbances in function, the patient is herself completely unconcerned and, indeed, may not spontaneously mention such disturbances, which often results in their being overlooked unless specifically searched for. The phenomenon of *la belle indifférence* is strikingly demonstrated in a patient described by Pierre Janet in *The Major Symptoms of Hysteria*:

A young girl of about twenty had met with a rather serious accident. She fell through a glass door, and a piece of glass cut into her right wrist just below the thenar eminence. The hemorrhage was stopped, and the wound had united fairly well, when, a few days after the accident, the young woman presented herself for treatment. She experienced a certain numbness in her right hand, but no paralysis was present. She complained particularly of a persistent insensibility, most inconvenient, in the palm of her hand; this slight anesthesia about the fingers was in fact complete at the level of the thenar eminence. The case was evidently one of more or less complete severing of the median nerve, and especially of its superficial branches. But while accepting the observation of the patient, we made a singular discovery. She was a hysterical, and on her entire left side she was completely anesthetic, of which fact she had not said a word. The physician joked to her about it: 'How is it, miss, that you come here complaining about an insensibility that affects but a small portion of the palm of your right hand, while you do not even notice the much larger insensibility of the whole of your left side?' The poor girl looked surprised and ashamed. To our mind she might have replied to her doctor with much more assurance, and said: 'Be that as you think, sir, I came here to tell you what ails me; it is the in-

sensibility of the palm of my right hand that troubles me, and that of my left side has never given me any trouble. You are the doctor; explain it as you like.'

Janet's patient not only provides a vivid example of *la belle indifférence* but also demonstrates an important characteristic of it as well: The lack of concern applies to the conversion symptom or symptoms alone—it is not a general indifference or absence of anxiety. On the contrary, as in Janet's example, where the patient retained the capacity to be very much concerned about the neurological sequelae of an accident, hysterical patients often experience diffuse anxiety and other painful affects concomitant with the presence of conversion symptoms about which they remain indifferent.

The hysterical personality. Although hysterical patients do not show the major abnormalities of mood, thought, and behavior listed in the formal mental status examination check list, they often tend to exhibit subtler forms of behavior patterns that comprise what is called the hysterical personality. These are generally to be observed during the taking of the history and the initial examination. Although there may be some overlapping of the areas of behavior designated by the adjectives applied to the hysterical personality, they may be described as behaving in all or many of the following ways.

Dramatic. The patient tells her history and describes her symptoms, especially when it is pain, in vivid, colorful language. She is often discursive and circumstantial in her account, recounting how her symptoms have affected her life and relationships with people rather than giving a description of their nature, character, location, onset, and duration—all of which she tends to overlook. Her description of previous encounters with doctors is interlarded with recitations of what she said to the doctor and what he said to her.

Exhibitionistic. Hysterical patients are often overly made up and overdressed for the occasion, whether it is a visit to the doctor's office or a stay in a hospital bed. They tend to be revealing of their bodies and during physical examinations will expose more of themselves than is necessary for the part being examined.

Narcissistic. They show a predominant preoccupation with themselves and their own concerns and interests to the exclusion of those of others. They require and seek open and direct admiration and praise from other people.

Emotional. In tone and intensity of voice, by gestures, and in their language, hysterical patients freely express the whole gamut of emotions in an often bewildering array and at times in such a histrionic fashion that they give the impression of playacting and of not really being capable of experiencing lasting, real, or profound emotions.

Seductive. Such patients are often coy, flirtatious, and seductive. This impression is gained partly from

the quality of exhibitionism mentioned earlier and is reinforced by the patient's facial expression, movements, gestures, verbal innuendos, and even openly seductive invitations to sexual activity. Paradoxically, such patients are in actuality often sexually frigid.

Dependent. Although it may not always be evident in one's initial observation of the patient, it frequently becomes apparent, as the doctor-patient relationship develops, that she is overly dependent, needing not only the gifts of praise and admiration, mentioned as a part of her narcissism, but more direct evidence of help, such as advice and medications, which she demands with increasing insistence. She is, moreover, capable of anger, at times reaching the proportion of violent temper tantrums, if she feels that her needs are not being properly satisfied.

Manipulative. Finally, the patient is very skilled in getting what she wants from other people by using a variety of artful maneuvers, such as threats to produce a fit of temper, attempts at suicide that are aimed at influencing others rather than being basically self-destructive, or behavior that otherwise plays on the guilt of others.

The condition of the hysterical personality is far more extensive than that of the conversion reaction and is predominantly a pattern of behavior found in women. When it is observed in men, it is usually in association with passive, feminine, homosexual character traits. Earlier observers were of the opinion that patients with conversion symptoms almost invariably showed the traits of the hysterical personality, although the reverse was not the case, but more recent observations indicate that this conjunction is by no means invariable. Conversion reactions, especially in men, may occur in patients exhibiting a wide variety of personality patterns, even in schizophrenics.

Diagnosis

From this review of the symptoms and signs of the conversion reaction, it is apparent that it is not always easy to establish the diagnosis. Generally speaking, the phenomena of abnormal movements, paralyses, and anesthetics present few diagnostic problems, since the examiner readily elicits the characteristics that are pathognomonic of the condition. It is when one is dealing with pain and other symptoms simulating bodily disease—whether these result entirely from the process of conversion or represent emotional complications of physical disease—that difficulties arise.

It is an unsound, though tempting, practice to consider any symptom the product of a conversion reaction when all physical causes have been ruled out by the absence of physical findings and normal results in laboratory and X-ray examinations. The diagnosis thus arrived at is more indicative of the physician's ignorance than of the mechanism of conversion. The

diagnosis of conversion reaction must rest on a history and observations positively indicating its existence.

That pain or other local symptoms are wholly or in part the manifestation of a conversion reaction is strongly suggested by a presence of all or many of the following additional factors: (1) a history of other symptoms (past or concurrent) that clearly have the characteristics of a conversion reaction, such as paralyses and anesthetics; (2) a history of other overtly psychoneurotic symptoms, such as anxiety, depression, obsessions, and phobias; (3) a past history of multiple illness, possibly resulting in surgery, for which no clear cut physical origin has been found; (4) a history of sexual disturbances, with frigidity and a distaste for sexuality playing a prominent role; (5) the manifestation of the behavioral characteristics of the hysterical personality; (6) the presence of *la belle indifférence*; (7) the recent death of a person important to the patient or of other disturbances in personal relationships temporally related to the onset of the symptoms.

In establishing the diagnosis, one's approach to the patient is of central importance. Confronting her with direct questions requiring direct answers will frequently elicit no information or will yield misinformation. The patient is often quite unaware of the relation of difficult environmental situations to the appearance of her symptoms. She may not even be conscious of the fact that she is emotionally upset by what is happening in her life. Only by allowing the patient to talk in her own way about her illness and by using the more non-directive forms of interviewing techniques will the physician be able to elicit associations from the patient that will give him clues to the presence of problems indicating that the mechanism of conversion is playing a part in the formation of symptoms. And it is only by permitting the patient to talk spontaneously, at length, and without controlling interventions and interruptions by the physician that he will be able to observe convincing evidence of the behavior patterns that characterize the hysterical personality.

Finally, psychological tests may add confirmatory observations to the clinical findings. Projective tests, such as the Rorschach or the Thematic Apperception Test (T.A.T.), which are essentially special forms of the clinical interview, mirror the observations made in less structured clinical settings. As compared with patients suffering from other neurotic syndromes, those with conversion reactions give test responses that are freer and more imaginative, accompanied by a more labile affect and a tendency toward impulsiveness. Using the Minnesota Multiphasic Personality Inventory, a specific profile has been derived that correlates to a statistically significant degree with clinically diagnosed conditions involving somatization, including psychosomatic disorders as well as conversion reaction, but the test results do not separate out the conversion reaction as an entity distinct from all other syndromes.

Differential diagnosis

Central nervous system disease. The earliest manifestations of central nervous system disease may be confused with the conversion reaction. A transitory disturbance of vision in one eye or a passing weakness of an arm or leg that heralds the onset of multiple sclerosis, leaving no definite neurological sequelae or signs, may lead the unwary to dismiss the complaints as conversion symptoms. The problem is compounded by the fact that conversion phenomena may be of short duration and that female patients with early multiple sclerosis may exhibit behavior characteristic of the hysterical personality. In such cases, it is important to follow the patient carefully for subsequent episodes in which the emergence of neurological signs, or the lack of these, along with emerging positive indications of a conversion process aids in making a definite diagnosis.

Schizophrenia. The fact that hysterical patients sometimes present with hallucinations leads to a diagnostic confusion with schizophrenia. In general, schizophrenic hallucinations are auditory and are often bizarre and vague in content and form. Hysterical hallucinations, on the other hand, are usually visual and represent complex, elaborate scenes that are repeated in a stereotyped fashion. The hysterical patient does not show the gross disturbances of thought and affect that characterize schizophrenia. It must be remembered, however, that the schizophrenic patient may develop conversion symptoms. In such cases, the diagnosis is determined by the thought and affective disturbances rather than by the presence of a conversion symptom.

Malingering. A distinction that is sometimes particularly difficult to make is that between conversion reaction and malingering. The tendency of many hysterical patients to be histrionic and to use their symptoms as a vehicle of communication and coercion of others plus the often obvious secondary gain to be derived from symptoms conspire to convince the observer that the patient is consciously simulating illness to obtain her own ends. Patients with true, conscious malingering appear to be rare; in general, there are more inconsistencies in their histories as they are repeated to various people, and the patient consciously simulating a disease often deliberately produces physical signs and findings, which is a rare pattern of behavior in hysterical patients. Finally, as one works with hysterical patients, one finds increasing evidence of the use of the mechanism of repression, leading to minor dissociative phenomena.

Prognosis

Like so much else connected with the conversion reaction and the other psychoneuroses, good observations leading to valid generalizations about the prognosis in both treated and untreated patients are hard to find. From general clinical experience one knows

that some patients may develop transitory conversion symptoms that clear without any treatment at all, whereas others have clinical manifestations that remain fixed and totally intractable to therapeutic measures for years. Little is known about the natural history of the conversion reaction. The rare systematic studies of prognosis, such as that by Slater, indicate that, although 50 per cent of patients will have lost their symptoms at the end of a year from the time they are first seen, 30 per cent will still have symptoms at the end of 5 years, and 20 per cent will retain them for 15 years or longer. The exact rate of recurrence is unknown, but clinical experience indicates—as the name conversion reaction implies—that symptoms tend to come and go in response to environmental stresses.

Probably the most important factors in determining the prognosis have little to do with the nature of the manifest symptoms; rather, they are concerned with the patient's personality traits and psychological conflicts. Factors that make for a good prognosis, especially when skilled psychotherapy is available, are: (1) a psychological conflict that centers primarily around genital, oedipal sexuality; (2) evidence of stability in relationships, as indicated by generally good relationships with family and friends and a stable work history, when the latter is applicable; (3) the ability to relate to the physician and to develop a therapeutic alliance; (4) the capacity to feel and to express emotions without developing incapacitating anxiety or depression; (5) the ability to have psychological distance from consciously experienced emotion; (6) the capacity for introspection; and (7) symptoms that are fairly well circumscribed and related to definite environmental stresses.

Management

As in determining prognosis, the choice of therapy rests not on the nature of the symptoms but on the personality structure. The factors pointing to a good prognosis, listed above, are also the indicators of which patients will do well with treatment methods that aim to develop insight. The difficulty in assessing the relative value of treatment techniques is notorious. Clinical experience suggests that psychoanalysis, as the most extensive and profound of the therapeutic measures, is most likely to make permanent changes for the better in both the symptoms and the personality structure of patients who need techniques involving insight. Good and lasting results, however, may be effected with less protracted methods, and success has been reported with the techniques of hypnoanalysis. It should be mentioned here that the removal of symptoms by hypnotic suggestion has little value. Either the symptoms return after a brief period or others appear in their stead; at the same time, such symptom removal may lead to the development of distressing anxiety or depression.

Psychoanalysis. In the history of the development of modern psychotherapy, the conversion reaction holds a central place, for it was with patients exhibiting this disorder that techniques of psychoanalysis that form the basis of much modern practice were first evolved. Indeed, it was believed for years that psychoanalysis or intensive long term dynamic psychotherapy derived from analysis was the specific treatment of choice for the conversion reaction. As knowledge of the psychological factors at work in conversion symptoms has increased and as the concept of the disorder has broadened, the therapeutic approach has also been modified. It is now apparent that only a portion of the total number of patients with conversion phenomena are candidates for psychoanalysis or modified techniques based on achieving insight. The remainder require some form of supportive psychotherapy.

Supportive therapy. Those patients who are not candidates for one of the insight psychotherapies are generally suffering from narcissistic character problems in addition to their conversion symptoms, with predominantly pregenital conflicts, particularly those centering around dependency needs. For such patients, supportive therapy is indicated. This may be a one-to-one relationship; it may be provided in a group therapy setting; or there may be a combination of both therapeutic approaches. Environmental manipulation is often an important and helpful measure and includes working with the patient's immediate family and other people close to him. Through such supportive techniques, a patient's symptoms may diminish markedly or even disappear, and he may begin to function more effectively in his daily life, maintaining the improvement as long as the supportive relationship remains intact.

Physical treatment. A number of physical treatment measures have been attempted and advocated, such as electroconvulsive therapy, various forms of leukotomies, and carbon dioxide inhalation; but there is little or no evidence to indicate that they have any lasting or basic effect on the disorder. More recently, conditioning therapy has been employed. This is an interesting approach, but it is too soon to know how effective it will prove to be; it remains still a technique for experimental investigation. Drug therapy is sometimes a useful adjunct to psychotherapy, especially if disabling anxiety is present, but there is no direct pharmacological effect of any of the drugs in current use on the conversion symptom itself.

Prevention. Finally, a word must be said about the group of patients who develop conversion symptoms that complicate a physical bodily illness and lead to a psychogenic prolongation of the patient's disability. It is of interest to note that such individuals—no matter how incapacitated, infantile, demanding, and dependent they may be after they develop symptoms—have frequently been exceptionally hard-working, conscientious, self-sufficient, and independent people before their illness. Psychological observations reveal

that their behavior pattern before the onset of their illness represented, in part, at least, a reaction formation that kept underlying dependency needs out of the patient's awareness and under control. In many ways, surface behavior patterns had enabled the patient to lead an effective and socially useful life while he was well. At the same time, however, his personality organization made him vulnerable to serious psychological complications should he develop a physical illness. When he becomes sick or is injured, a psychological regression tends to occur. The dependency needs emerge in the patient's overt behavior, using the symptoms as a vehicle of expression. A new psychological equilibrium is established, and even though the physical lesion initially underlying the symptoms of the illness is healed or much improved, the symptoms remain in full force as a means of gratifying the dependency needs that have been grafted into them. Psychological invalidism has now replaced a physical illness.

It usually requires a period of time for this shift in equilibrium to take place, and the behavior of the people in the patient's environment can often play a large part in determining whether the shift that leads to the appearance of conversion symptoms will occur. If the professional personnel caring for the patient and his family force him into passivity and dependency by being overly solicitous and overly helpful, by unnecessarily restricting his activities, and by emphasizing the disability caused by his symptoms, they can often bring about or hasten the march to chronic psychological invalidism. If, however, from the start of the illness, they allow the patient as much freedom of action, autonomy, and independent self-sufficiency as the nature of the illness will permit; if they emphasize the positive capabilities that still remain to the patient despite his sickness; if, from the beginning, they help him focus his attention ahead to a return to self-sufficiency and encourage him constantly to increased independence as his physical disorder improves, then there is a good chance the patient will avoid a major and catastrophic regression. Once the equilibrium has shifted to produce psychological invalidism, it is often impossible to effect a change, and the condition becomes chronic. Prevention is essential if such conversion reactions are to be avoided, and prevention requires that the physician be aware that they occur and that he institute the measures appropriate to blocking their development.

Suggested Cross References

A more detailed discussion of psychoanalytic theoretical constructs, such as the psychosexual stages of development and the Oedipus complex, may be found in Mack and Semrad's chapter on classical psychoanalytic theory (Chapter 6), in Area C, on current theories of personality and psychopathology. In that same area, alternate viewpoints regarding personality development and family dynamics are presented in

the sections that deal with some of the other psychological schools of thought (Chapters 7 to 9). For additional comments regarding the relationship between conversion reactions and psychophysiological disorders, see Section 31.1. Kapp discusses psychogenic pain in Section 30.12. Further information regarding psychoanalysis and psychotherapy may be found in Stewart and Levine's section (Section 34.1) in Area G, on psychiatric treatment.

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thesia), the dissociated experience of feelings without appropriate external or internal stimuli (as in hallucinations, *déjà vu*, and feelings of unreality), and certain episodes of unusual behavior seemingly beyond conscious control are appropriately classified as dissociative phenomena within the framework of modern dynamic psychopathology.

Pierre Janet introduced the concept of dissociation, and ever since there have been historical connections between dissociative reactions and conversion reactions under the general label of hysteria. There were also important historical relationships between dissociation and hypnotism, which played a key role in the evolution of contemporary psychodynamic concepts. The phenomenology of hypnosis and the classical psychopathology of hysteria must be held clearly in mind while considering dissociation, because all are undoubtedly manifestations of the same fundamental psychophysiological mechanisms. Additional connections will be found in considerations of epilepsy, which involves some similar problems of consciousness; of anxiety, which may provoke the increased exercise of dissociation as a psychodynamic defense mechanism in any given case regardless of diagnosis; and of schizophrenia, in which disturbances of association constitute an important and usually early component of symptomatology.

The basic theory of dissociation originated with Charcot's teaching in 1872 that the stream of consciousness breaks up into diverse elements in cases of hysteria. Janet's famous inquiries in 1889 into clinical instances of somnambulism and fugue, with their attendant amnesia, and his conception of dissociation of consciousness which went with it, were extended by the contributions of Morton Prince. Following a classic study of multiple personality in 1905, Prince went on to develop the concept of *coconsciousness* as comprising "conscious states that we are not aware of, simply because they are not in the focus of attention but in the fringe of the content of consciousness. The term would also include pathologically split off and independently acting coconscious ideas or systems of ideas such as occur in hysteria, reaching their apogee in conscious (multiple) personalities and in automatic writings."

Disagreements arose between Prince and Sigmund Freud, primarily in terms of defining the mechanisms whereby ideas could be held outside of awareness. As Freud put it,

Morton Prince...has objected to my explanation of the forgetting of dreams on the ground that the forgetting is only a special case of the amnesia attaching to dissociated mental states, that it is impossible to extend my explanation of this special amnesia to other types and that my explanation is consequently devoid of value even for its immediate purpose. His readers are thus reminded that in the course of all his descriptions of these dissociated states he has never attempted to discover a dynamic explanation of such phenomena. If he had, he would inevitably have found that repression (or, more precisely, the resistance created by it) is the cause both

23.3 DISSOCIATIVE REACTION

LOUIS JOLYON WEST, M.D.

History

The four classical dissociative reactions are fugue, amnesia, somnambulism, and multiple personality. However, the dissociation from awareness of sensations (as in conversion reactions and hypnotic anes-

of the dissociations and of the amnesia attaching to their psychical content.

Elsewhere Freud seemed to deal with some of the phenomenology of what Prince considered coconscious by employing the term "preconscious" for those latent ideas of relatively little strength. If they became sufficiently strong, they should have penetrated into consciousness; and if they did not so penetrate regardless of how strong they had become, they were considered to have been rendered more truly *unconscious* by the forces of repression. At that point the modern psychopathologist might consider such mental content, if it constituted a substantial component of personality function or content or experience, as dissociated. The resulting clinical symptomatic picture would be called a dissociative reaction.

Definition

The current edition of the American Psychiatric Association's *Diagnostic and Statistical Manual, Mental Disorders* gives the following description:

Dissociative reaction. This reaction represents a type of gross personality disorganization, the basis of which is a neurotic disturbance, although the diffuse dissociation seen in some cases may occasionally appear psychotic. The personality disorganization may result in aimless running or 'freezing.' The repressed impulse giving rise to the anxiety may be discharged by, or deflected into, various symptomatic expressions, such as depersonalization, dissociated personality, stupor, fugue, amnesia, dream state, somnambulism, etc. The diagnosis will specify symptomatic manifestations.

This definition is obviously a descriptive sketch of certain clinically observed behavioral manifestations commonly termed dissociative. Unfortunately it is neither complete nor clear. The reference to the repressed impulse being "discharged by, or deflected into, various symptomatic expressions..." is hardly an explication of dissociation as a mechanism of defense. To bring some order into an area that has long been confused, the following discussion of underlying biological and psychological considerations has been prepared, and a new classification of dissociative reactions has been derived from it.

Psychophysiological basis of dissociation. Although there are traditional definitions of dissociation as a mental mechanism, it has not been a lucid concept: it has tended to merge with repression or conversion or both. The formulation presented herewith considers dissociation in terms of information processing. If this is accepted, then a number of terms (dissociation, suppression, repression, coconscious, etc.) can be characterized as special instances of a general psychophysiological adaptive mechanism for dealing with information.

This master mechanism (or group of mechanisms) of the central nervous system is responsible simultaneously and continuously for (1) scanning and screening incoming information; (2) processing both new and old information in such a way as to modu-

late the state and content of conscious awareness; (3) integrating or associating new information with previously stored information; and (4) controlling information output in the form of behavioral responses.

In the past 10 years an increasing fund of data concerning the physiology of awareness has made it possible to conceptualize the clinical dissociative reactions as pathological exercises of these normal functions. Whatever one may choose to call the mechanisms involved (perhaps "integrative" would be an appropriate term), they subserve the requirements for scanning and screening information, modulating the sphere of awareness moment by moment, controlling the processes of associative thought, and relating mentation to action.

The student of brain function as information processing will wish to familiarize himself in a general way with the contributions of cybernetics. The extent to which electronic computers can be used as models for human brain activity has probably been overemphasized, but this nevertheless can be an instructive approach. If the basic differences between digital computers and analogue computers are first comprehended, the model (highly simplified) presented in Table I may then be useful to keep in mind.

Only a minute portion of total available information—from the external environment, from within the body, and from the brain's own enormous stores—can be held in awareness at any given time. Concentration, reality testing, and simple survival require the exercise of scanning and screening mechanisms to keep the searchlight of awareness focused on selected areas of psychic content and to keep everything else out of awareness. Because hypnosis has long been utilized as a laboratory technique to study this process, its relationship to dissociation is worthy of some consideration here.

Hypnosis has been defined by Weitzenhoffer as a "dissociation of awareness from the majority of sensory and even strictly neural events that are taking place." This definition implies an appreciation of the combined functions of focus and exclusion or of a balance between excitation and inhibition, which is shared by the psychoanalytic theories of hypnosis on the one hand and by Pavlovian theories on the other. But such a dissociation of awareness characterizes not only hypnosis but all the classical dissociative reactions as well. It also covers the more recently defined clinical dissociative phenomena, as well as dreams, hypnagogic states, sleep paralysis, highway hypnosis, trances and ecstasies in mystical and religious rites, fascination or fixation in flyers, daydreaming, and many other mental phenomena, including the exercise of normal concentration at all levels of intensity. In fact, the "majority of sensory and... neural events" are always excluded from consciousness at any given time in a normal person.

Apparently an optimal variety and intensity of sensory input are required to maintain the exercise

of the integrative mechanisms in relation to current external reality. In prolonged monotony, or in artificially produced sensory isolation, the diminished input of sensory information in the presence of continued alertness permits an increasing awareness of the brain's previously recorded perceptions. These, being released into consciousness and woven into scenes or invested with form and symbolic meaning by psychodynamic forces, are then perceived as images or hallucinations. During those periods of sleep in which cortical arousal increases (marked by rapid eye movements and emergent stage I electroencephalogram) paradoxically without increase in appreciation of environmental stimuli, a basically similar release phenomenon occurs, and dreaming takes place.

Hallucinations—the dissociated emergence of stored sensory information into awareness—thus occur normally during dreaming sleep. They can also occur during waking conditions when a similar disparity exists between cortical arousal and effective sensory input. Some examples include (1) fatigue of the sensory systems, as in sleep deprivation; (2) the blocking or poisoning of the sensory systems by certain drugs, such as lysergic acid diethylamide (LSD), which distort perception while simultaneously stimulating the diencephalic centers regulating arousal; (3) the differential chemical effect on sensory arousal systems in the person going into and coming out of gas anesthesia; (4) “jamming the circuits” of environmental contact as in panic reactions in combat or other severe stimulation from the environment causing information input overload; and (5) psychologically motivated dissociation, that is, the deliberate withdrawal from or narrowing of focus on the external sensory environment in the hypnotic subject or the mystic. Less deliberately the same thing can happen to the pilot fixated on his altimeter, the entranced driver on a superhighway who drives off the real road onto a hallucinated lane, the patient in a fugue state, or the hallucinating schizophrenic patient.

In these examples, the information-processing paradigm permits the establishment of a logical relationship among hallucinations occurring under a variety of conditions, including dissociated states.

Neurophysiological substrate. Does the brain possess a system that permits an infinitely variable integration or modulation of incoming information on the one hand and awareness on the other? A structural basis for this function is known to exist. In 1942 Morison and Dempsey described a nonspecific thalamocortical projection system. This was followed in 1949 by the classic paper of Moruzzi and Magoun, defining some of the functions of the ascending reticular activating system. At about the same time Jasper noted the relationship of the thalamic reticular formation to the previously described thalamocortical projection system. Further discussions by Magoun, Liv-

TABLE I
Information Processing in the Human Brain

Constant integration of and feedback between these two ongoing information-processing activities is a necessary component of normal personality functioning. Superego activity would exemplify this. So too would the constant expression of appropriate affect, the attachment of accurate meaning to new experiences, and the undistorted recall of past events in their total significance to the individual.

Primarily Analogue Information Processing	Primarily Digital Information Processing
1. Paleocortical structures and connections (limbic system, visceral brain)	1. Neocortical structures and connections (cerebral hemispheres)
2. Largely preconscious or unconscious	2. More available to consciousness
3. Emotions, feelings, affective state	3. Reality testing, ideas, systematic thought
4. Intuitive—“all or none”	4. Rational—“shades of gray”
5. Nonverbal	5. Verbal
6. Illogical, hard to modify	6. Logical, subject to modification
7. Provides emotional meaning and flavor	7. Provides objective meaning and prediction
8. “Primary process thinking” (Freud)	8. “Secondary process thinking” (Freud)
9. Largely affected by id influences	9. Largely affected by ego functions

ington, Lindsley, MacLean, Hernandez-Peón, and others clarified many of the regulating functions subserved by the ascending reticular activating system. It soon became apparent that the integrating effects of this extraordinary network involve not only sensory information and arousal or alertness but also emotions, memories, and transactions between neocortical and paleocortical structures.

Reticular activating system. At the present time it seems fair to say that the ascending reticular activating system integrates and modulates the relationship between incoming sensory information and awareness. Together with the diffuse thalamocortical projection system, it permits both general arousal and attention to discrete stimuli. Furthermore, feedback systems from the cortex, both stimulatory and inhibitory, have recently been described. Finally, the reticular system now proves to be both ascending and descending, activating and inhibiting, integrating and isolating. The differential functioning that is presently known to be possible within the total activity of the reticular formation—whereby stimulation, inhibition, arousal, and depression can be reciprocally exercised simultaneously in different areas—makes it possible to comprehend the anatomic basis for the screening and scanning functions that must exist.

Since the first papers on the ascending reticular activating system in the unanesthetized brain began to come from Magoun's laboratories, much sub-

sequent information has been compiled about the activities and interrelationships of the reticular formation to clarify how it subserves the reality-testing functions of the ego. When there occurs a marked narrowing of the focus of awareness on a particular aspect of reality, to the exclusion of much of the rest, as in the initiation of the hypnotic trance, then sensory data (verbal suggestions) taken in through an open channel (rapport) become effective because they are not subjected to ordinary reality testing.

The reticular system will maintain arousal while simultaneously inhibiting appreciation of an unusual proportion of reality under two natural circumstances that can be demonstrated in normal hypnotic subjects. The first circumstance is one in which attention is fixed by a narrow range of stimuli, monotonously presented. The relatively gradual but definitely progressive decrease in reactivity to other stimuli under these circumstances can be demonstrated behaviorally in man as well as in lower animals under certain conditions. The second circumstance under which the reticular activating system functions in this manner is in the presence of information input overload. When arousal is already high—because of strong emotion or vigorous stimulation or both simultaneously via several sensory modalities—feedback mechanisms cause the functional nonacceptance of nearly all additional incoming information, regardless of its significance under ordinary conditions of adaptation.

The experienced hypnotist recognizes these two psychophysiological situations as the most probable concomitants for the two characteristic clinical conditions in which hypnosis may be easily induced: the gentle, monotonous, object-focused laboratory technique on the one hand; and the emotion-laden, high stimulus input stage technique on the other. The first is near the hypnagogic point with a low level of arousal but an even lower level of effective input; the second is under conditions of great arousal and impaired information processing because of input overload's figuratively jamming the circuits. Such circumstances are also likely to permit the emergence of spontaneously occurring dissociative phenomena, for example, a mystical experience during reverie in a monotonous environment under the first set of conditions; a sense of unreality and partial amnesia for events occurring while participating in a riot under the second set of conditions.

Between these two extremes, at the point of maximum conscious influence on reticular formation activity through postural factors, choice of surroundings, etc., deliberate exclusion of external stimuli may be achieved through intense concentration. It is probably in this way that trained hypnotic subjects and mystics enter the trance state deliberately.

Since the normally operative associative and integrative functions subserved by the ascending reticular activity system are probably fundamental to hyp-

nosis, the continuity of hypnotic and dissociative states with normal states of concentration is easily seen. A normal state of concentration can blend into the dissociative phenomena that sometimes accompany hypnagogic reverie or day-dreaming on one extreme and agitated arousal on the other. Thus it is not surprising that older reports of normal waking electroencephalographic (EEG) tracings of patients in hypnotic and dissociated trance states have been modified by the more recent discovery of both hyperarousal patterns and sleeplike patterns on the EEG under certain conditions of hypnosis and in the midst of dissociative reactions in patients. Since it is not only the absolute state of arousal of the individual but also the relationship between level of arousal and effective information input that is significant in defining the state of consciousness at any given time, one can comprehend the manifestation of dissociative phenomena under a variety of electroencephalographic conditions. One can also understand differences in autonomic responses to stimuli, and in subjective appreciation of stimuli, by individuals in states of dissociation.

The foregoing frame of reference should permit a better understanding of the relationship between the actions of various drugs and the induction or resolution of dissociated states. No drug can be evaluated for its effects in relation to dissociation without our first considering the psychophysiological state of the subject at the time. Some subjects, being just right for the induction of hypnosis, enter a trance easily, without the use of drugs. A drug administered under these circumstances—for example, thiopental (sodium Pentothal) given intravenously to a soldier with an acute dissociative reaction in combat—may appear to be quite effective in producing an abreaction and bringing the patient into contact (narcosynthesis) when in actuality hypnosis is an important component of the maneuver.

The patient who is chronically anxious may be rendered distinctly more accessible to hypnosis by the use of a drug that decreases central autonomic reactivity while maintaining a good cortical arousal pattern. This is borne out by the fact that phenothiazine derivatives can be helpful in such cases, whereas phenobarbital, which depresses arousal, is usually not helpful. On the other hand, in a very tense patient, with manifestations chiefly in the musculoskeletal system, a barbiturate or meprobamate may be helpful in inducing hypnosis. Although such stimulants as amphetamine and methylphenidate have seemed to make hypnosis more difficult in certain patients, they may help, when combined with short-acting barbiturates, to ease the induction of hypnosis in certain agitated, depressed persons.

If hypnosis is seen as a controlled dissociated state, or as a special state of concentration maintained through the integrative mechanisms mediated by the reticular system, it might be expected that drugs that cause spontaneous, pathological, dissociative phenomena to appear would at the same time render difficult or impossible the maintenance of a hypnotic trance. This is likely to be true, for example, with LSD. The subject under its influence may be more or less suggestible, but hypnotic rapport is likely to be tenuous. On the other hand, suggestions made prior to the administration of LSD appear greatly to influence the subjective response to the drug. Indeed, suggestions of benefit may be responsible for much of the therapeutic or psychedelic effect it produces in certain cases.

Psychodynamics. In the clinical dissociative reactions, the mechanism whereby information is patho-

logically deflected from the main psychic organization involves forces that are basically meaningful and understandable in psychodynamic terms. In other words, the process of dissociation occurs in the service of defending the ego against material that is perceived as dangerous on a conscious or (more often) an unconscious level. This usually comes about in a time of particular crisis. Maturational shortcomings, emotional conflicts, and stressful life situation are then superimposed upon each other to create a trap or impasse that cannot be resolved by the patient because of overwhelming anxiety inherent in the available possible solutions. The resolution brought about by the dissociative reaction, handicapping or crippling through it may be, nevertheless produces a change for the better (i.e., more comfortable) at some level in the psychological economy of the individual. Thus the symptom may resist treatment until the special concatenation of forces that produced it can be altered.

Symptoms. To unravel the psychodynamic puzzle that underlies each case of dissociative reaction—in other words, to comprehend the pathogenesis of the illness—it is helpful for the physician to ask himself three questions about the symptom itself.

Primary and secondary gains. What does the patient gain by his symptom? The primary gain will usually be best formulated in terms of anxiety reduction. This anxiety is not ordinary conscious fear; it is based upon inner conflicts about which the patient is quite unaware. Thus in a case of amnesic flight from a combat situation (described below under "Fugue"), the soldier's conflict arose out of unconscious homosexual feelings toward a comrade, coupled with death wishes toward him as a source of deeply threatening stimulation. When the comrade was killed in action, the soldier was stricken with guilt at having magically brought about the secretly desired murder, which also served as a sacrifice whereby he himself was spared from death. For this a terrible retribution would be visited upon him unless he could escape it. Under conditions where ego function was impaired by fatigue, sleep loss, conscious rational fear of the enemy, and depression over the loss of his friend, the episode of dissociated wandering behavior (fugue) occurred. This contained elements of a search for the lost object and also took the patient away from a situation in which (at the level of unconscious, primary process thinking) it seemed that his own violent destructive impulses would bring death to those he loved.

The secondary gain is frequently obvious to the clinician (e.g., the soldier's actual escape from the dangerous front lines) but may be obscure. Often it can be formulated in terms of attention getting, avoidance of an unpleasant situation, satisfaction of passive needs, financial benefits (no matter how slight, cf. compensation neurosis), face saving, or the

perpetuation of newfound gratifications in the sick role.

Symbolism. What does this particular symptom symbolize or represent? This may have meaning of a different sort. The soldier chose a symptom that could be seen as a journey in search of something or someone lost and also in flight from the intolerable. But why did he not fall into a trance? Or develop blindness? Or have an "accidental" self-inflicted injury? Inquiry along these lines will always prove to be instructive.

Timing. Why does the symptom appear now? Important clues to pathogenesis always turn up in answer to this query. Significant prognostic implications are also found here. The nature of precipitating factors must be delineated psychodynamically from predisposing factors. For example, military psychiatry's well known "3-day schizophrenia" (which is perhaps better defined as a dissociative reaction in the form of a frenzy or delirium) characteristically occurs only *after* the soldier has been removed from combat and is on his way home; cases studied while returning by slow boat from combat in Korea revealed clearly the dynamic significance of real and fantasied problems to be faced back home as precipitating factors. Such factors are obviously of quite different significance from those of symptomatically similar breakdowns called "combat exhaustion" at the front.

Predisposing personality characteristics. The development of dissociative symptomatology takes place in the presence of predisposing personality characteristics that lend form to the symptomatology. These characteristics will be understood in each individual only through consideration of biological, developmental, interpersonal, and sociocultural factors involved in his character formation, his ego structure, the effectiveness of his other mental mechanisms, and the over-all assessment of his personal liabilities and assets.

Generally speaking, however, the premorbid personality of patients clinically diagnosed as suffering from dissociative reactions will reveal emotional immaturity, self-centeredness, an historical likelihood of episodic emotional disturbances in childhood or adolescence, and a remarkable lack of solidly gratifying or mutually supportive interpersonal relationships. Criteria may be present which make it possible to classify such predisposed individuals as possessing schizoid, passive-dependent, or inadequate personalities. Others may meet the criteria for so-called hysterical or compulsive characters, who develop dissociative syndromes upon becoming psychologically decompensated under stress from within, without, or both.

Basic conflict. The foregoing information, regarding symptomatology on the one hand and predisposition on the other, represents a converging double path-

way to the central issue or psychodynamic core of the illness: namely, the basic unconscious conflict that is generating sufficient anxiety to require the emergency misapplication of information-processing mechanisms (i.e., dissociation) in the service of psychic homeostasis. The nature of such conflicts is discussed elsewhere in detail. However, factors to be considered must include the characteristics of unacceptable or repressed impulses involved, the state of their repression, and the experiential basis upon which they are so dreadfully unacceptable or dangerous to the individual. In addition the clinician will want to understand situational factors that are intensifying the conflict by stimulating the strength of the repressed impulse, or by weakening the present state of defense against it, or by generating a new but related conflict that will upset the existing state of equilibrium.

Summary. With the foregoing orientation, it is reasonable to define dissociation as a psychophysiological process whereby information—incoming, stored, or outgoing—is actively deflected from integration with its usual or expected associations.

A dissociative reaction can then be defined as a state of experience or behavior wherein dissociation produces a discernible alteration in a person's thoughts, feelings, or actions, so that for a period of time certain information is not associated or integrated with other information as it normally or logically would be.

Such an experience may or may not be considered psychopathological. If it is, arbitrary clinical criteria decide whether it will be diagnosed in terms of its own characteristics (in which case it will be called a dissociative reaction) or whether it will be characterized as part of the symptomatology of another syndrome, such as schizophrenia or hysteria, in which it is involved.

Clinical Description

The comprehensive model of dissociation discussed above can be used to classify a variety of human experiences, roughly progressing in each category from phenomena common in everyday life to those seen in severe psychiatric illnesses (see the outline below). The items marked with an asterisk (*) in the outline below are discussed as clinical dissociative reactions in the text. The others either are not best defined as illnesses, or are dealt with elsewhere under the discussion of psychodynamics or as significant aspects of other clinical entities such as conversion reaction or schizophrenia.

I. Dissociation of incoming information

A. From part of the environment

1. Selective inattention
2. Hypnotic anesthesia
3. Hysterical anesthesia (usually involving a limited area of the body or one sensory modality)
4. Anesthesias in the psychoses (often associated with self-mutilation)

B. From the environment as a whole

1. Concentration, day-dreaming, brown study, reverie
2. Distraction or highly focused attention (for example, analgesia of injured athlete or wounded soldier while caught up in the excitement of the moment; pain threshold of normal subjects can be elevated 40 per cent by simple distraction)
3. Hypnotic trance (open channel or rapport with hypnotist is usually retained; if rapport is lost, hypnosis may become a dissociative trance state)
- *4. Dissociative trance states (psychogenic stupor, twilight state, dream state)
- *5. Other trancelike states (highway hypnosis, fixation or fascination in flyers, self-induced trances by mystics and fakirs, trances in religious ecstasy or frenzy)
- *6. Somnambulistic trance

II. Dissociation of certain portions of stored information (memory and/or sensibility) from the remainder

A. Suppression (information is deliberately put out of awareness)

B. Repression (stored information that should be possible to call to awareness cannot be recalled)

C. Dreams and hallucinations (stored portions of information, being processed in a preconscious stream, emerge into awareness and are experienced as though they were incoming information)

*D. Estrangements and paramnesias (feelings of unreality or estrangement, derealization, depersonalization, *déjà vu*, *déjà entendu*, *déjà fait*, *déjà pensé*, cosmic consciousness, *Weltschmerz*, etc.)

*E. Amnesia (psychogenic)

*F. Multiple personality

III. Dissociation of output—actions or behavior (often accompanied by elements of I and II)

A. Inhibition or blocking of output: briefly, under stress ("freezing"); of a motor function (conversion reactions of paralysis, aphonia, etc.); of the entire body (catatonia); in episodes (catalepsy); in attacks (cataplexy).

*B. Parapraxes, psychogenic tics, motor automatisms

*C. Automatic writing

*D. Ganser syndrome

*E. Dissociated experiences related to sleep (for example, sleep paralysis, sleep-talking, sleep-walking, enuresis in adults, somnolentia, sleep hallucinations)

*F. Fugue

*G. Frenzied or violent states of dissociated behavior (amok, berserk, latah, arctic hysteria, pathological intoxication, dissociative delirium, hysterical fit)

Dissociative trance states. These have been called twilight states, dream states, psychogenic stupors, etc. In general, they are characterized by marked unresponsiveness to the environment, a considerable degree of immobility, and an apparent total focus of attention on something deep within the self or far out in the cosmos. The trance may last for an hour or for days. It is characterized by relatively sudden onset (usually in a life situation involving considerable stress), a dazed or dreamlike quality, and total or partial amnesia on being restored to contact with the environment. There are various degrees of both

immobility and detachment. In some cases the patient may go through the motions of daily routine but seem to be much detached, hazy, vague, preoccupied, or apathetic. When the condition immediately follows some traumatic event, the patient is often described as shocked or stunned.

An 18-year-old girl at a sorority party was hypnotized by an amateur, who told her to cut off her hair with an imaginary pair of scissors. Facing the mirror, she went so far as to raise her hand to her head. Then she suddenly began to weep and struggle. She was helped to a chair, where she soon subsided into a trance, staring off into the distance and ignoring the frightened hypnotist's pleas to wake up. She was taken to the student health service, where a small amount of intravenous sodium amobarbital (Amytal) was injected. An abreaction occurred in which a childhood experience, involving punishment for cutting her own hair, was partially relived. More amobarbital was given, sufficient to induce sleep. Upon awakening, she was amnesic for the entire period. She was rehypnotized by a psychiatrist who took pains to dispel any untoward suggestive residues, following which she completely recovered and experienced no further difficulty.

A 24-year-old graduate student in philosophy was working long and hard on research for his thesis, which involved a complex and abstract combination of mathematical and philosophical propositions. Although he seemed somewhat preoccupied and withdrawn, nothing remarkable was noted until one evening his roommate discovered him staring out the window. He did not respond to questions or physical prodding, including well meant face slapping and a glass of cold water poured over his head. He could be made to get up and walk around, but he would not disrobe for bed. His roommate was able to lead him to a coffee shop, where he sat for a while and eventually sipped a little coffee, but he was still mute and dazed. The condition lasted for about 48 hours. Subsequently, there was vague recall of portions of this experience, in which the patient reported elaborate dreamlike fantasies and thoughts but only the most tenuous awareness of interactions with the environment.

Other trancelike states. In a variety of environmental circumstances, individuals with a relatively normal psychic life may be drawn into dissociative reactions with trancelike characteristics. Usually the induction of such states involves prolonged and unusual concentration on a task, an object, or a situation; the rest of the environment is either blandly monotonous or so distracting as to require being screened out of awareness by prolonged concentration. The characteristics of such trances are infinitely variable, depending on social, cultural, and individual circumstances.

Highway hypnosis. This condition is responsible for many accidents, some of them fatal, and is well known to experts in highway safety. Accidents caused by highway hypnosis can be distinguished from those that come about when someone actually dozes at the wheel. (The latter situation produces a characteristic pattern of weaving on and off the road, skid marks when the brakes are finally applied abruptly after the victim is jolted awake, etc.) In highway hypnosis the individual becomes entranced and loses track of the passage of time and even of place. He may retain sufficient contact with the environment to drive

safely, only to discover when he emerges from his reverie that he has gone perhaps 30 miles past his destination, driving right through the town without having realized it. In more profound cases, the trance state may lead to immobilization at the wheel, or the road ahead may be a hallucinated straight one where the real one curves, in which case the driver may steer straight to his doom. Highway hypnosis is likely to occur on long, monotonous stretches of modern turnpikes, where there are few challenges requiring the motorist to pay significant attention to what he's about.

Fixation or fascination. This is a related trance-like condition, not uncommon in people who work where they are forced to focus on a given object for prolonged periods of time or with great concentration under stress. It is of particular interest in aviation medicine because of the great danger to pilots who become entranced. The flier may fix his attention on one instrument in the panel while flying at night or in deep fog; he may lose track of time, distance, fuel, or the requirement to turn back before heading too far out to sea. Fighter pilots in training have become fixated in the process of aiming at a target and been unable to pull away, crashing straight into it.

In some instances under conditions of prolonged monotony, hallucinations may occur. One airman saw little green men with rucksacks on their backs marching across the instrument panel. Many pilots have experienced kinesthetic hallucinations under conditions of prolonged, monotonous flight. At such times, there is the sudden and unshakable sense that the aircraft has markedly altered course, that it is diving, that it is upside down, or that it is otherwise out of control. In such cases, old "seat of the pants" pilots have been known to ignore the evidence of the instrument panel in order to take disastrous "corrective" action. More than one flier has prepared to bail out of an aircraft that he felt was out of control when in fact it was flying straight and level. These kinesthetic hallucinations have sometimes been incorrectly termed vertigo by flight surgeons. They are easily distinguished from true vertigo by history alone.

Self-induced trances. For thousands of years men have apparently been aware of the possibility of inducing trance states in themselves, with or without the use of drugs. Characteristically, the Eastern mystic achieves the desired effect by undertaking a posture (such as the lotus position) that promotes immobility, and by concentrating, either inwardly behind closed lids or outwardly on some object such as a pool of ink, a ball of crystal, or a religious icon. In time, depending on the degree of skill acquired and the expectation and prior preparation of the individual, there is a complete withdrawal of awareness of the environment and a sense of transportation into another mental sphere. A state of ecstasy or beatitude

may be experienced if the trance brings with it a sought for sense of oneness with the universe or closeness to the deity.

Such trances may be entered into by people who are in motion, particularly if they are engaged in some monotonous activity—rhythmical clapping at a revival meeting, ritual dancing in a tribal ceremony—in which case the typical loss of contact with the environment occurs, the movements take on an automatic quality, and often some type of climax, with or without sexual overtones, is experienced. Characteristically, the individual who emerges from such a state recalls little or nothing of what went on around him during it but may give a vivid report of his subjective dreamlike or ecstatic experience.

Somnambulistic trance. Children frequently walk in their sleep, usually to the bathroom or in what appears to be some nonspecific searching behavior. However, it now seems likely that a differentiation should be made between sleep-walking behavior (discussed below as a dissociative experience related to sleep) and somnambulistic trance. In the latter, the patient carries out an elaborate series of actions having great psychological significance while he is in a trance so deep that the bystander deems him to be out of contact with the environment in the same way that a sleeping person is. Shakespeare's *Lady Macbeth*, whose eyes were open though their sense was shut, did not see her watchful lady in waiting and anxious physician, but nightly relived in detail the murder of Duncan and verbalized her own guilty musings.

The classic cases of somnambulism studied by Janet were characterized by elaborate nocturnal dissociated states in which highly complex activities of great meaning to the individual were repeated almost identically in episode after episode. It now appears most useful to define such dissociative reactions as somnambulistic trances, probably representing a relatively well organized or encapsulated partial abreaction of a significant experience, rather than the physical acting out of a dream. From a physiological standpoint, dreams probably cannot be acted out, because most human dreams are accompanied by profound generalized inhibition of the voluntary musculature (even though specific small groups like the extraocular muscles may be active).

A 30-year-old male sergeant in the Army had been experiencing a number of marital problems while living off-post. He finally left his wife and children and moved into the barracks. One of the major conflicts in the marriage stemmed from his preoccupation with his automobile and his insistence on tinkering with it during his free time rather than providing companionship for his family. After the separation on a number of occasions he got up during the night in the barracks, went to his foot locker, took out some tools and proceeded to dismantle his bunk as though it were an automobile. Usually he would stack the parts neatly in a corner, find an empty bunk. Each operation took about an hour. During these periods he seemed asleep or totally out of contact with the environment, although his eyes were half open. On one or two occasions, when

irritated barracks mates attempted to interfere or waken him, he lashed out at them in a strenuous and frightening way, so that subsequently they left him alone. On being ordered to consult the psychiatrist about his behavior, he told of the episodes as they had been described to him, but he denied any memory of them and was quite sheepish and embarrassed about what had been taking place.

Estrangements and paramnesias. Estrangement is a sense of detachment, disengagement, or loss of usual connection with places, persons, situations, or concepts. The usual or expected relationship is not sensed; a strange feeling—or lack of feeling—takes its place. Estrangement and paramnesia are closely related. Paramnesias are distortions of memory which are often accompanied by strange feelings of such intensity that they would be considered hallucinations of sensibility. Paramnesia is often experienced in dreams, and the paramnesic patient may be unsure whether certain things really happened to him or whether he merely dreamed they happened. Estrangements and paramnesias are frequent complaints among epileptics and early schizophrenics, and in chronic anxiety syndromes.

Feelings of unreality. These mild estrangements are not uncommon when, during some life crisis, an individual suddenly feels that a process in which he is involved is somehow unreal, strange, or not truly happening. This may be accompanied by an auto-scopic sensation (as though one were standing outside oneself and watching what is going on) or by a feeling that events are taking place in some automatic fashion without volition or control on anyone's part, or that the entire experience is a dream from which one will shortly awaken. Such estrangements are commonly brief and related to considerable degrees of stress. If prolonged, they tend to shift into derealization or depersonalization.

Derealization. This is a sense that one's surroundings have changed and that the real environment is in some significant way no longer what it used to be. The change may seem threatening to a greater or lesser degree. It may involve only the immediate situation, or it may be on a global basis. It may compromise interpersonal relationships, physical surroundings, or both. Often the patient will agree that there are no objective facts to substantiate his sense of environmental estrangement, yet he cannot shake off the feeling. In some instances the sensation is only fleeting or, if prolonged, relatively mild. At other times it is very marked and persistent, in which case it may progress into delusional thinking (especially of being influenced).

Depersonalization. In this state there is a sense of estrangement from one's self. This is usually experienced as a loss of identity or of one's own reality. The physical body may seem altered or be experienced as though it belonged to somebody else. There may be a sense of transmutation of one's corporal substance, so that it seems to be made of a different material than before—much heavier, much lighter, or

of a different texture—the parts perhaps uncoordinated or peculiar in relationship to each other. The sense of timing may be affected, so that motion seems mechanical or unpredictable. A sense of altered somatic sensibility may play a role so that the world is seen as though one's eyes had telescopes for lenses, or touch muted as though one were wrapped in cotton.

In other cases the emphasis is not so much on the physical self as on the identity or self-image. Here the sense of change is more difficult for the patient to define. He feels altered, modified, transformed, or sometimes (like the man becoming a cockroach in the early stages of Franz Kafka's *Metamorphosis*) as though he were in the process of changing into something different, unknown, and usually undesirable.

Déjà vu. This might be termed an illusory or hallucinatory sensation of familiarity. It is experienced by the individual who comes into a place or situation that objectively is strange or new to him, but who suddenly feels the powerful and distinct impression that he has been there before or has had the identical experience some time in the past. *Déjà vu* may be evoked by meeting a person, as in the well known song "Where or When." Generally it is experienced in relation to the visual impression of a total situation. Marcel Proust's masterpiece, *Remembrance of Things Past*, emphasized the way that some isolated perception, perhaps scarcely appreciated (an aroma, a breath of wind, a fragment of a song), could bring a whole experience rushing back. Freud believed that *déjà vu* is essentially a dissociative phenomenon, but the association transpires without the individual being aware of the stimulus. Thus the resultant recollection (repressed) is at an unconscious level, and all one consciously experiences is the sense of familiarity that would normally have been associated with it but is here dissociated. Another way of considering the phenomenon is that repression of the Proustian recollection is only partial, the digital portion being held unconscious while the analogue component breaks through and is experienced alone.

Déjà entendu is a variant of the above, particularly related to the impression that what one is hearing at the moment has been heard before. It is usually evoked by spoken words.

Déjà fait is another variant, having to do with the specific sense that what is happening to one has happened before.

Déjà pensé is a particularly interesting phenomenon in which one is certain that one has already thought of a matter or had an idea, or possessed a specific bit of knowledge, which is in fact new. This not uncommon paramnesia may be responsible for the widespread belief in prescience—that is, the ability to know ahead of time that something is going to happen. Frequently it develops that an individual is convinced he has had a prescient experience because,

when a certain event transpired, he had the distinct feeling that he already knew it would take place.

Déjà raconté is still another variant in which the individual feels that he has been told before of an experience from the remote past when he is, in fact, hearing it recounted for the first time.

Déjà voulu is a slightly different manifestation in which the individual feels that something he now desires is exactly the same desire that he felt at some previous time.

Jamais vu. The opposite of *déjà vu* is sometimes called *jamais vu*. Here someone looks on a familiar sight only to find to his astonishment that it seems strange, as though he had never seen it before. This is probably best considered an estrangement related to derealization.

Cosmic consciousness or illumination. Not all spontaneous dissociative experiences are unpleasant. With no apparent cause, one may experience a sense of fabulous joy and well-being, in which all the emotions that go with delightful discovery, profound insight, and a sense of immortality are rolled into one. Various drugs may precipitate such reactions; LSD is only one example. Related to states of ecstasy or dissociation involving religious experience of other varieties as described by William James, cosmic consciousness is of special interest to psychiatry because it was defined by a prominent 19th century psychiatrist, Dr. Richard M. Bucke, in a remarkable book, *Cosmic Consciousness*. Since its publication in 1901 this work has undergone some 22 editions, the latest in 1964. Bucke's great experience occurred in 1872, when he was 35 years old, while he was walking home after a halcyon evening's discussion of poetry with some friends. He was thinking of nothing special when suddenly he felt an overwhelming state of happiness, comprehension, universal understanding, and love, accompanied by a sense of being enveloped or illuminated by an extraordinary rosy light. In his magnum opus, Bucke presented evidence of similar experiences in the lives of a number of people, including Gautama, Socrates, St. Paul, Francis Bacon, Pascal, Spinoza, and Blake, as well as many of his own contemporaries, particularly his idol, Walt Whitman. Needless to say, Bucke did not define the experience as a dissociative reaction. His whole subsequent life was affected by it; he considered it to be a phenomenon of both religious and Darwinian evolutionary significance.

Weltschmerz. This may occur—and often does to college students and young adults—with the same sense of sudden cosmic awareness as Bucke's illumination, but the emotional accompaniment is one of exquisite sadness, futility, a sense of the incredible smallness of man in the universe, the inevitable existential pain of the world, and the suffering inherent in the human condition.

Amnesia. A circumscribed or catathymic amnesia for the events that transpired during the attack is

typical of the classical major dissociative reactions. However, the patient who is diagnosed primarily as a case of amnesia usually gives *present* loss of memory and often of identity as a chief complaint. Characteristically, he is discovered in a daze, unable to account for himself, to tell where he came from, or sometimes even to give his own name.

A 34-year-old civilian air traffic control specialist with considerable experience in directing landings under direct vision was transferred from the tower to the radar control room to work on blind ground-controlled approach procedures monitored by radar. He was made very anxious by this situation, in which he felt an excessive degree of responsibility, and had many unexpressed doubts about the effectiveness of the equipment, the methods, and himself. Shortly thereafter a fatal aircraft accident occurred while he was on duty and responsible for the landing procedure. Preliminary investigation suggested that pilot error was to blame. However, a formal hearing was scheduled, in which the patient was to give testimony. Two days later he most uncharacteristically failed to report to work, although his wife said he had left home as usual, seeming only a little preoccupied. After 24 hours he turned up at the city hospital under the guidance of a policeman. He seemed dazed and confused and was unable to identify himself. He described a total loss of memory. Investigation revealed that on the way to work he had been involved in a very minor traffic accident, in which he bumped into the car ahead of him. Both automobiles were traveling slowly at the time, and the patient had exchanged the usual information although there was no visible damage to either vehicle or driver. Apparently he then placed his wallet in the glove compartment of his car and wandered off from it in a state of amnesia, which gripped him for about 72 hours. Upon recovering, following an Amytal interview in the hospital, he was unable to account for anything that happened during the 3-day interval; the last thing he recalled was the traffic accident.

Multiple personality. In reviewing the clinically documented cases of multiple personality, Abse was recently able to identify some 200 accounts. New cases are always turning up and have a particular fascination because of their dramatic characteristics. Fiction is replete with spectacular examples of more than one personality inhabiting the same body. Perhaps the best known is Robert Louis Stevenson's *Dr. Jekyll and Mr. Hyde*. A whimsical counterpart was Mark Twain's *Pudd'nhead Wilson*, a character derived from an even funnier version, *The Remarkable Twins*, in which the hero actually has two heads with distinct personalities that alternate in their control of the individual's total behavior. A recent case history, *The Three Faces of Eve*, was made into a successful motion picture.

Clinically there is a considerable degree of variation from one patient with multiple personality to another. In cases of *dual* or *alternating personality*, two relatively distinct personality systems seem to exist in the same individual, autonomous from each other. Their dominance over the behavioral pattern alternates in time for periods ranging from hours to years. While the first personality predominates there is no awareness of the existence of the second; there is amnesia for any previous period in which the second personality was temporarily in control; the two per-

sonalities are always quite different from each other. As a rule, the original personality tends to be somewhat shy, inhibited, timid, and conscience-ridden; the second one, which usually emerges for the first time at a significant moment in the individual's life, is likely to be bolder, more outgoing, and much less inhibited. Usually he has amnesia for the life of the original personality, or evolves a fictional previous history of his own.

In other cases of multiple personality the original or dominant ego is somewhat more mature, although still substantially handicapped in some area of emotional development. The additional or subordinate personalities, two or even three of which may appear successively in the course of treatment, are usually aware of the first or "host" personality and have comments to make about him. But the original personality remains unaware of his intrapsychic stowaways and is amnesic for events that take place during the period that a subordinate personality has been in control.

Clearly, the psychopathology in multiple personality can shade over into other dissociative categories. The diagnosis will depend on the predominant characteristics of the reaction. Amnesia is by definition an established part of the condition. In fact, every case of massive amnesia is in some ways a case of dual personality, but amnesia will be the basic complaint. If one of the personalities decides to escape from the situation in which the previous personality has been living, his flight may partake of some of the typical qualities of a fugue. In the patient with a fugue, the episode of amnesia is obviously related to the flight and the necessity for it. In typical cases of multiple personality the alternate or subordinate identities carry out their activities in the same community, there is no flight, and current amnesia is not a complaint.

James was a highly conscientious, religious, shy, quiet, well-mannered bookkeeper, last seen by the janitor of his office building when he departed after working (typically) until 10 o'clock at night. When he did not appear for several days his wife, having checked with several relatives, informed the police. However, in spite of the usual search, no trace was found of James.

Two years later in the same city a friend of the family noticed a laborer riding on a bus and identified him as the missing person. She spoke to him, and he seemed surprised that she knew his last name; he gave his first name as Jim. She told him that his parents and wife were looking for him; he was amused and assured her that he had no relatives in town. However, she persisted, so together they went to the police station, where identification was made on the basis of fingerprints. The man was referred to the Veterans Administration hospital for study. Jim gave a history (quite vague up until 2 years before) that was similar in some ways and quite different in other ways from that of James. During the previous two years Jim had earned his living as a construction worker. He had also been a miner, a cowboy, and had performed other kinds of manual labor. He was rugged, sexually aggressive and promiscuous, generally good-natured, a free spender, and an atheist. His reappearance in his home town had, he insisted, been only by accident because he had heard there was work available there.

Contact was made with James, the original personality, through hypnosis; the dynamic circumstances surrounding the take-over by Jim were then identified. James had felt frustrated, trapped, defeated, hopelessly tied down by forces and commitments with which he could not cope. His choice of occupation had been forced on him by a dominating mother. His wife had voiced numerous complaints about him, including reflections on his manhood, and had flaunted her extramarital activities before him. The demands of his employer he felt were excessive, and yet he had no way of refusing to meet them. James' last memory was of a sense of mounting panic and despair on the night of the disappearance.

Here is a rather typical example of dual personality in which elements of fugue played a role at the onset. In a characteristic way Jim gradually built up a confabulated past in which he came to believe. In other cases men have developed an elaborate new life and a very convincing past history, have settled in a new place, and have sometimes started a new family without legally disposing of the old, for which they have no memory. Such cases periodically come to light; neither the old wife nor the new can believe that the man they know is capable of bigamy. Unlike the heroes of "The Remarkable Mr. Pennypacker" and "Captain's Paradise," the patient with dual personality appears to have no awareness that he has led what might be termed a double life. Almost never does one of the subdominant identities of the rapidly shifting variety of multiple personality undertake to marry or make other legal commitments, although sexual acting out, gambling, and minor antisocial acts are not uncommon.

Beatrice was a single, 32-year-old school teacher who lived alone and was considered to be prim, proper, colorless, and a premature old maid. She sought psychotherapy because of blackouts and headaches associated with them. For some time it was difficult to clarify what these episodes actually constituted. However, psychotherapy of a relatively nondirective type was initiated. One day, half way through a rather dreary interview, in which the patient tonelessly described her unwavering admiration for her strong-minded, dominating mother, she suddenly sat up in the chair, turned a bright glance on the doctor, laughed flirtatiously, and said, "Doc, how long are you going to put up with such a square?" This was Trixie. On a number of occasions when Beatrice retired early with a sick headache, Trixie had bounded out of bed an hour later, dressed in high style, and gone out on the town. She drank, picked up men in bars, frequented dance halls, and attended racy movies. She was contemptuous of Beatrice, who remained unaware of Trixie's existence through months of therapy.

A third personality, Bea, began to emerge after about a year. Bea and Trixie knew about Beatrice and each other. They struggled for control for a while. Finally Bea, a relatively mature type with some of the better characteristics of both of the others, predominated. Gradually the others faded out of the picture. The patient and therapist agreed that Beatrice was no great loss; however, they both had moments when they missed the naughty but vivacious Trixie.

Parapraxes, psychogenic tics and motor automatisms. A parapraxis is a dissociated action that serves no useful purpose. Parapraxes often occur outside of awareness and are related to the seemingly more conscious but uncontrollable twitches and spasms of

psychogenic tics, and also to the apparently voluntary but tenacious habitual motor automatisms.

Freud's discerning inspection of many specific examples of parapraxes in everyday life—such as a slip of the tongue or pen, a small accident, or the misplacing of an article, without the individual being aware of the idea associated with the action—contributed significantly to the evolution of his understanding of unconscious mental processes.

Most psychogenic tics are brief, recurrent, seemingly inappropriate and more or less uncontrollable movements, which range from the almost unnoticeable to the overtly grotesque. In the patient's life such movements were apparently once associated with an emotional experience at a crucial time, but now appear either as a substitute for the emotion (thus unconsciously manifesting it) or as its equivalent (thus warding it off). A tic or involuntary grimace which includes head turning, eye closing, and the raising of a shoulder may be the interminable repetition of a wince elicited by a face-slapping episode in childhood, now appearing as a dissociated movement the unconscious purpose of which is to diminish anxiety. Many types of psychogenic tics or habit spasms have been described and must be differentiated from those related to encephalitic or other neurological disorders. Torticollis, which may be more or less tic-like, is an example of borderline diagnostic problem of this type.

There are many other dissociated actions which serve no obvious purpose, which often occur without the individual's awareness and even contrary to his desire, and which (at least in a number of documented instances) contain manifestations of some encapsulated, repressed emotional conflict surrounding a traumatic episode or situation from earlier experience. Some of these are called "automatisms" and constitute rather elaborate and often constantly repeated movements (or verbalizations) over which the patient seemingly has no control. Severe instances may be seen in clinical schizophrenic or dissociative reactions. Milder forms are often called "motor habits" (ear pulling, hair twisting, eye winking, etc.) and are very common in less disturbed patients and in clinically normal people. Such motor habits can be controlled to a greater or lesser extent but tend to become worse when the individual is tense and anxious or when his attention is distracted from conscious efforts to control the movements.

Automatic writing. Of considerable historical interest, both in medicine and in fiction (for example, *The Beast with Five Fingers*) automatic writing is seldom seen in this day of typewriter and dictating machine. However, it is still useful to look for it. Frequently such behavior can be elicited in the examination of a patient in a dissociative trance state. He may be mute and seem to be out of contact with reality. However, if a pencil is put in his hand, with a piece of paper under it, he may begin to write. A

functioning component of his personality actually contacts the examiner and enables some sort of an interview to take place. This can sometimes be accomplished even with a patient in catatonic stupor. The automatic writing is not always responsive to influence from without. It may occur spontaneously and may seem quite irrational or indecipherable. Yet it can be of great value in unraveling the psychodynamic conundrum that constitutes the genesis of the patient's condition.

Ganser syndrome. Sometimes called "the nonsense syndrome," this is frequently seen among prisoners or other individuals who may at first seem to be faking or pretending to be mentally ill. The patient characteristically makes elaborately wrong but not totally irrelevant responses to whatever instructions he is given. Calculations may be all slightly off, for example, 2 plus 2 is 5, 3 plus 3 is 7, 15 plus 15 is 31. When asked in the clinic if he knows where he is, the patient says, "I'm in a ball park" and then adds, "but I ain't having a ball." In the neurological examination he says that his toe is being pulled up when it is actually being pulled down and vice versa; he calls the percussion hammer a saw, identifies the doctor as a nurse, etc.

Formerly considered to be an elaborate type of malingering, the Ganser syndrome is now generally recognized as a psychopathological entity. Even when the patient keeps a portion of his consciousness aware of an intent to deceive, he always turns out to be psychiatrically much sicker than he thought he was while "deceiving" the jailers or the doctors.

Dissociative experiences related to sleep

Sleep paralysis. This condition is characterized by total inability to move the body while in a state of relative mental alertness and orientation, on awakening from sleep. It usually lasts for only a brief period of time (seconds to minutes), but the patient feels as though it will never end. Here the total capacity for bodily movement is dissociated from the usual volitional controls. The extent to which psychophysiological factors involved in sleep and wakefulness may be involved in episodes of sleep paralysis is unclear. It may be that for some reason spontaneous waking occurs during fast wave (rapid eye movement or dreaming) sleep. Ordinarily, this is the time of sleep in which the most profound muscular relaxation of the entire body obtains; the mechanisms whereby this is effected may still be at work for a while after the onset of conscious awareness of surroundings by the sleeper.

Sleep paralysis is frequently but not necessarily associated with narcolepsy. There have not been systematic studies sufficient to gain any good idea of its incidence or of its degree of correlation with other dissociative symptoms in the same person. There may be more than one attack in a single night, or episodes may occur months or even years apart.

Dr. P. was a 35-year-old surgeon. One evening, while discussing the day's work in a social setting, a psychiatrist mentioned to him with pleasure that another case of sleep paralysis had been found for a series that was being collected. The surgeon expressed curiosity and inquired about the symptoms. When he learned what they were, he burst into tears. He then gave a story of having suffered from the condition for years. He thought it was a form of epilepsy and was desperately keeping it a secret for fear that he would have to give up surgery. Meanwhile he had been taking a combination of anti-convulsant drugs to ward off the possibility of a grand mal attack, and dextroamphetamine to maintain alertness for his work.

His episodes were fairly typical. He would awaken at night, become aware of his surroundings, and find himself unable to move. Lying in bed, he would desperately attempt to sit up or even turn over, to no avail. A sense of panic and entrapment would grow. Finally, it would reach a point that he was able to cry out. As soon as this happened, he would recover the ability to move.

Following this disclosure, an electroencephalogram was carried out, and the results proved to be normal. All medication was discontinued. Simple reassurances brought a major degree of relief, although the episodes continued to occur from time to time. Since he was resistant to the idea of psychotherapy, no effort was made to explore psychodynamic factors, which appeared to be related to rather significant unconscious passive strivings.

Sleep-talking and sleep-walking. Normal phenomena occurring during sleep in children may persist into adolescence and adulthood as a manifestation of a poorly understood lack of maturation of the nervous system. There is probably a difference between normally occurring sleep-talking, or gross bodily movements during sleep, and dissociated states that appear similar to them. In normal people, sleep-talking is mostly incomprehensible mumbling, with an occasional word or phrase that can be understood. It occurs not during dreams but during slow wave sleep, when the characteristic rapid eye movements and rapid low voltage EEG of dreaming are definitely not present. Sleep-walking has been studied by Kales et al., in subjects (responders to an advertisement for sleep-walkers) whose electroencephalograms and electro-oculograms were monitored. Many elaborate nocturnal movements, including some that involved actually getting up out of bed and stumbling around, took place during a slow wave sleep. These were apparently nonpurposive wanderings, and the subjects seemed capable of endangering or injuring themselves by falling or bumping into objects.

These cases are obviously different in many ways from the somnambulistic trances of Janet, or the case described earlier. The former type of patient probably actually awakens and then enters a trance which is called somnambulistic because it is profound, self-limited, and nocturnal. They may lie in bed and carry on elaborate conversations for which they subsequently have no memory but which otherwise display all the characteristics of communication during hypnosis. If he walks, the patient in a somnambulistic trance arises in a clear cut episode from his bed. He is not like a child groping his way to the bathroom

and stumbling over objects, nor like those adults who seem to arise in some kind of a confused state during slow wave sleep when it is quite possible that they may fall, injure themselves, or engage in nonpurposive behavior. Unlike such sleep-walkers, the dissociated somnambulist launches into involved, complicated, and highly meaningful activity, which on numerous subsequent occasions can be observed to occur again and again in very much the same pattern.

Thus it appears that between normal sleep-talking and bodily movements on one hand, and clear cut trance behavior or dissociated somnambulism on the other, some varieties of sleep-walking and -talking exist as dissociative phenomena related to sleep in ways not yet fully understood (Kales et al.).

Enuresis. In young children, enuresis occurs during the deepest period of slow wave sleep, usually prior to, and perhaps in some way as a substitute for, the first dream of the night. The idea that such a child is somehow unconsciously electing to pour out his hostility toward his parents in this fashion is not borne out by the electroencephalographic facts. However, in cases where enuresis persists into adolescence there are conflicting data.

Some adolescents and young adults have been observed who become (bioelectrically speaking) awake but who lie quietly in bed as though in a trance, empty their bladders, and then return to physiological sleep. Such episodes usually occur after 5 or 6 hours of normal sleep. These cases may manifest various criteria to substantiate a diagnosis of dissociative reaction; if so, they can be treated successfully and even dramatically. They must be distinguished from those borderline cases where the bed wetting represents some type of maturational failure of the nervous system, urological disease, or perhaps even nocturnal seizures.

Somnolentia or sleep drunkenness. This condition in adults seems to be a dissociative persistent manifestation of night terrors in children. In somnolentia the patient seems to be neither asleep nor awake, is characteristically disoriented, and to a greater or lesser extent reacts to nightmarish mental content, sometimes becoming frenzied or violent.

Sleep hallucinations. In addition to the hallucinatory experiences of normal dreams there are other circumstances in which hallucinations occur in relation to sleep. Some of these are common in normal people and are generally called hypnagogic hallucinations; they are usually visual but may be auditory or kinesthetic; they may occur while falling asleep (in the hypnagogic state) or while awakening (in the hypnopompic state). Usually these hallucinations are experienced very briefly during a momentary transitional period between sleep and wakefulness. However they may endure for a longer period or come during the night, constituting definite episodes in which the patient struggles to terminate the hallu-

cinosis by "waking up" but cannot do so. Such attacks of sleep hallucinations are very similar in some ways to sleep paralysis. They are subjectively quite different from dreams, in that the patient is partially aware of his real surroundings, like Dickens' Scrooge during his conversation with Marley's ghost.

Fugue. The element that characterizes fugue most clearly is flight, usually entered into rather abruptly. From a stressful life situation, the individual wanders off, perhaps in a daze or confused mental state, often with a complete amnesia, sometimes without care for his person or for his surroundings. In more elaborate fugue states, where the element of acute trauma is not as great a precipitating factor, the patient may function for days or weeks in a seemingly normal way. However, the thing that characterizes him during this period is that he is traveling. He may come to himself spontaneously with no awareness of how he got where he is.

A 19-year-old infantryman was found wandering across the countryside far from the battlefield by the military police. He appeared to be dazed and could not identify himself or his organization. It developed that he had been on the front line under fire for approximately 10 days. One afternoon, in the midst of a bombardment, when every sensible soldier was crouched in a foxhole or dugout, the patient suddenly jumped out of his trench and began to walk away, heedless of the shouts of his comrades or of the shrapnel flying through the air.

Seen at the division hospital, he was found to be suffering from no physical injury. A sodium Pentothal interview produced a marked abreaction, in which the significant element was not so much fear of death as it was guilt over the death of a comrade who had gone on a patrol in the patient's place. After 72 hours of constant, heavy sedation, he awakened to express a sense of surprise at his surroundings and a desire to rejoin his unit. He was amnesic for the fugue. After another 2 days of observation he was permitted to return to his outfit, and he served without incident throughout the rest of the campaign.

Jack Smith, a seedy looking dishwasher in an Oklahoma hamburger joint, surprised his employer and customers by walking out of the kitchen and saying, in cultivated tones, "Where am I and what am I doing here?" Seemingly a drifter, he had wandered in several days before and had been employed out of pity. He identified himself as Ronald Worthington M., a Methodist minister from Massachusetts. He had no recollection of how he had made his way to Oklahoma, nor could he recall anything that had transpired during the previous 6 weeks.

A psychiatric study revealed a variety of personal and professional conflicts in his life immediately prior to the onset of the fugue. He had apparently hitchhiked halfway across the country, stopping from time to time to work at odd jobs as Jack (the name of a handyman who had worked for his grandfather 30 years before). He gained a little preliminary insight into the nature of his reaction and undertook to obtain definitive psychotherapy upon returning with mixed feelings to his congregation, his wife, and his mother-in-law.

Frenzied or violent states of dissociated behavior. These occur as acute dissociative reactions under a wide variety of circumstances and cultural settings. They are of sudden onset, brief duration, and abrupt termination with amnesia for most if not all of the

attack. The episodes contain elements of violent, frenzied, outlandish or wildly bizarre behavior. They must be differentiated from temporal lobe seizures.

Amok, berserk, latah. "Running amok" among the Malays is a state in which a previously normal person suddenly becomes violent, characteristically seizing a knife or some other weapon and raging through the village, attacking people at random until exhausted, overcome by force, or killed. In our own culture there are many situations in which individuals suddenly become violent, attacking others in a state of frenzy and great emotional display, for which the term "amuck" is used. Characteristically, the patient experiences amnesia for the episode, which frequently is found to be related to some immensely frustrating life situation in which he feels hopelessly trapped. Although such frenzies are not necessarily homicidal or suicidal, it is possible for an individual under these circumstances to injure others or himself.

Berserk or "going berserk" is a term often used synonymously with amuck as a state of violent rage or frenzy. It was originally applied to certain Nordic warriors (Barsarkers) who intoxicated themselves prior to battle by eating psychogenic mushrooms. Latah, a brief frenzied state among Malayan women, was compared by Wengroke with amok and with Arctic hysteria; all are culturally defined behavioral abnormalities that appear to meet our domestic criteria for acute dissociative reactions. There are undoubtedly many other varieties of dissociative behavior reaction, differing widely in relation to the particular culture of the patient.

Pathological intoxication. This is usually classified under alcoholism. However, many cases of pathological intoxication are probably acute dissociative reactions precipitated in predisposed persons by relatively small amounts of alcohol. Characteristically, the syndrome includes a rather abrupt onset, an impairment of consciousness, and a variety of psychopathological manifestations, including violent behavior. Such episodes are of uncertain duration, lasting from 1 to 36 hours, usually followed by sleep or stupor, following which there is typically an amnesia for the experience.

Dissociative delirium. This is a reaction similar to pathological intoxication but with typical symptoms of florid psychopathology, including hallucinations, wild emotional outpourings, and seemingly uncontrolled release of primary process material, with a certain amount of agitation, but not characterized by dangerous violence. It may occur as a pure dissociative reaction in response to emotional stress without any known biological precipitating factors; or some relatively minor change in brain function, such as the administration of a simple sedative in modest dosage, may play a role in bringing on the attack.

Hysterical fit. This old-fashioned term is still sometimes used to describe dissociative reactions in

which the patient is "seized" to act out, in an elaborate and dramatic fashion, some complex and prolonged fantasies, during which there is apparent loss of contact with the environment and a marked emotional display with a strong histrionic flavor. Such displays frequently include coital movements. It was perhaps on this basis that the reactions were classically described as hysterical fits or convulsions. Slight degrees of brain damage sometimes found in these patients are probably best viewed as contributing to the predisposition toward dissociative reaction, rather than as directly causative of the fits.

Diagnosis, Prognosis, and Treatment

The dissociative reactions are generally held to be primarily psychogenic in origin and psychoneurotic in character. However, there are areas in which they merge with certain types of seizure disorder, intoxication, behavior disorder, or psychosis. Differential diagnosis can be very difficult but should be possible in most instances.

The presence of brain damage does not mean that a bona fide dissociative or conversion reaction may not also be present and vice versa. Many clinicians believe that there is a substantially higher than chance relationship here, even though the nature of the brain disorder may vary widely, and the degree of impairment may range from gross to minimal. Temporary minor alterations in the state of the brain—such as those produced by fever, sodium amobarbital, other barbiturates, gas anesthesia, alcohol, or psychogenic drugs—may release the manifestations of dissociative phenomena where the propensity is strong. Even natural changes in brain function, such as those occurring in relation to the sleep cycle, may serve to permit dissociative behavior to emerge.

Since dissociative phenomena are likely to increase in the face of mounting anxiety, such symptoms frequently occur during the early stages of a schizophrenic illness. It is important that the differential diagnosis be made in such instances because the approach to treatment will be affected. Acute dissociative reactions may be difficult to distinguish from acute psychotic (catatonic or manic) syndromes. Yet careful observation of the psychopathology, a good history, and close observation of the patient over a period of time under treatment, will usually clarify the issue. Dissociative phenomena may be seen in a wide variety of diagnostic categories, ranging from epilepsy to schizophrenia. This should not prevent the clinician from making the diagnosis of psychoneurosis, dissociative reaction, when the clinical findings warrant it.

A note concerning medicolegal problems raised by certain dissociative reactions is in order. Is the undivorced remarried man with dual personality and amnesia a bigamist? Is the patient in a seemingly brief psychotic episode during a dissociative frenzy or pathological intoxication criminally responsible?

Is the soldier with fugue a deserter? Since dissociative reaction is classified as a psychoneurosis, the courts have often held such patients fully responsible. Each case will of course be tried on its merits. However, a good rule of thumb for the clinician called upon to give an opinion should be this: let the psychopathology at the time of the alleged offense determine the medicolegal opinion. Unquestionably some circumscribed psychotic reactions are dissociated, in the sense that they represent a break with a relatively integrated personality functioning before and after the episode. However, this leaves some important problems unsolved. A murderous episode of the type called "catathymic crisis" by Wertham may be all or partly dissociated. What is society to do with such a murderer, who has recovered his sanity before he even comes to trial? Is he guilty? Is he committable? And even the rule of thumb noted above is hard to apply usefully to the problem of the dual personality. Here is an area worthy of considerable attention by the forensic psychiatrist.

Prognosis of the dissociative reactions, like the other psychoneuroses, must be individualized in terms of motivation, age, intelligence, ego structure, characterological factors, duration of illness, secondary gains, etc. As a rule the prognosis for the acute attack or episode is good; the long term outlook is only fair and perhaps guarded.

The approach to treatment of the dissociative reactions is primarily that of a dynamically oriented psychotherapy that carefully takes into account the significance of unconscious factors, makes note of the predominating mental mechanisms at work, utilizes and to some degree analyzes transference and counter-transference factors in the doctor-patient relationship, and generally works toward the development of a greater degree of emotional maturity in the patient. Special techniques, such as hypnosis and narcoanalysis, can be employed if rapid relief of symptoms is desired.

By and large, the discussions of diagnosis, prognosis, and treatment in the chapter on conversion reaction apply equally well to dissociative reaction.

Suggested Cross References

For a discussion of the mental mechanism of dissociation on a psychodynamic level of description, the reader is referred to Mack and Semrad's section on psychoanalysis (Section 6.1). In addition, see Nemiah's section on the closely related disorder, conversion reaction (Section 23.2). Fundamental neurophysiological considerations may be found in Sections 2.5 to 2.9 on neuroanatomy and neurophysiology in Area B, on the basic behavioral sciences. That same area also contains sections on sensory deprivation, sleep and dreams, and hallucinogens (Sections 5.5, 2.4, and 5.4, respectively). Hypnosis is discussed in greater detail by Spiegel in Section 34.4, in Area G, on psychiatric treatment. Some of the disorders men-

tioned in this section, such as amok, berserk, and latah, are more fully described in Lehmann's section on unusual psychiatric disorders not included in American Psychiatric Association's nomenclature (Section 32.1). Enuresis is described by Pierce in Section 40.5, in Area H, on child psychiatry, and pathological intoxication by Chafetz in Section 27.3 on alcoholism.

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23.4 PHOBIC REACTION

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Definition

The diagnostic designation phobic reaction is reserved for those disorders in which a phobia is the predominant symptom and in which reality testing is generally intact. As a disorder in which there is neither gross distortion of external reality nor evidence of structural or organic change, the phobic reaction is technically classified under the heading of psychoneurotic disorders.

The disorder was formerly classified as anxiety

hysteria, and the current designation reflects much terminological confusion, resulting partly from the distinction between *symptom* and *syndrome*.

Complicating the issue is a general imprecision of language that pervades the field. For example, the expression "phobic reaction" is sometimes used in a less technical sense than that of a diagnostic designation to mean simply that the patient is reacting with—that is, that he has—a phobia. Adding to the confusion engendered by this unfortunate usage of the word "phobic" are such expressions as "phobic object," "phobic situation," "phobic companion," and "phobic fear." This use of the adjective may be misleading, since in the real sense it is the person who becomes phobic, not the object, situation, companion, or fear.

As a symptom, a phobia may occur in a variety of psychiatric syndromes, appearing in a hierarchy of many other symptoms. In fact, phobias are most frequently found to coexist with other clinical signs—hysterical, depressive, obsessive-compulsive, and paranoid. Although these signs differ in relative importance from one disorder to another, there may be less justification for conceiving of phobias as comprising an isolated diagnostic entity than is implied by the designation "phobic reaction." In fact, many authorities tend to avoid using phobic reaction as a diagnostic classification, viewing phobias rather as symptoms that are superimposed on or extensions of other, more basic personality configurations or reactions.

Although this section follows the *Standard Nomenclature* of the American Psychiatric Association, (A.P.A.), the discussion herein generally applies to any clinically manifest and pronounced phobia, whether or not close examination supports a diagnosis of phobic reaction in the strictest technical sense. In the phobias discussed, the patient usually realizes the irrationality of his fear but feels compelled to avoid those situations that expose him to intolerable feelings of anxiety.

History

Since phobias of mild intensity are rather frequent phenomena in fairly normal adults and often occur in young children, it seems reasonable to assume that prehistoric man, too, was at times the victim of phobias. One of the earliest case histories of a phobic patient is attributed to Hippocrates. Shakespeare appears to have been referring to phobic people in *The Merchant of Venice*, when he wrote, "Some, that are mad if they behold a cat." Nevertheless, it was not before the middle of the 19th century that the term "phobia" is reported to have appeared in the psychiatric literature. Prior to that time, irrational fears were given little specific attention and were generally subsumed as aspects of other disorders.

In 1872, Westphal published a report on three male patients with fears of open or public places, a condition which is labeled "agoraphobia." His monograph played an important role in isolating the specific

reaction that today is labeled "phobic." Among other early psychiatric contributions to the study of phobic reactions are the writings of Kraepelin, Hall and Janet. But nevertheless, present psychodynamic conceptions of phobic reactions stem from Freud's clinical study, "Analysis of a Phobia in a Five-Year-Old-Boy."

This 1909 classic case was of "Little Hans," who refused to go into the street for fear that a horse would bite him. Freud's interpretation, based primarily on the father's account of the boy's behavior, suggested an exceedingly complex structure behind the phobia, basic to which was an intense fear of punishment (castration) stemming from unconscious hostility toward the father and a competition with the father for the mother's attentions, which were imbued with strong sexual overtones. According to Freud, Hans, by displacing his fear and anxiety from his father to the horse, could thereby both avoid the object of his phobia and love his father.

Subsequently, important work has been contributed by Arieti, Deutsch, Fenichel, Lewin, Ovesey, and Rado.

Epidemiology

There are no adequate data available on the epidemiology of the phobic reaction. Sound epidemiological data on any psychic disorder are difficult to obtain. It is particularly difficult in such a disorder as the phobic reaction, where the distinction between symptom and syndrome has not been consistently maintained. In addition, some classificatory systems, unlike A.P.A. nomenclature, give no special designation to even pronounced phobias.

In a report on characteristics of diagnosed patients of out-patient psychiatric clinics in the United States, the National Institute of Mental Health has reported the data which is extracted in Table I. Although such data must be accepted with some reservations, they nevertheless support the general impression that phobic reactions and phobias are more frequent both in the young and in females, and that the diagnosis of phobic reaction is not frequently made in clinical practice. Other studies report approximately similar percentages for the frequency of phobic reactions in the adult psychoneurotic population.

Evidence suggests a much greater frequency of phobias as a discrete psychiatric complaint than as a syndrome. Some psychiatrists feel that irrational fears of some kind are probably present in most psychiatric patients. On the basis of a standardized interview schedule, Spitzer reported unpublished data indicating that about 20 per cent of patients from a variety of psychiatric institutions give evidence of some kind of phobia, a finding consistent with other estimates.

Although Spitzer's data confirmed impressions that there is no relationship between the frequency of phobias and social class, the varying range in different settings (9 to 28 per cent) suggests that other cultural differences may influence the incidence of phobias. For example, contrary to other symptoma-

tology, significantly fewer phobias were found in patients from a rural area of Kentucky than from New York City, representing differences that could not be accounted for on the basis of social class or degree of communication difficulty. If such differences are confirmed and clarified through the increasing interest in the epidemiology of all psychic disorders, they may elucidate further the psychogenesis of phobias and the phobic reaction.

Reports invariably stress the naiveté and emotional immaturity of phobic patients, but many reports have indicated that the patients are of generally average or above average intelligence. Hence, there is no evidence to suggest that intellectual deficit is related to the phobic reaction. Likewise, it does not appear at present that religion or racial background significantly affects the incidence of phobias.

Etiology

The phobic reaction is closely allied to other psychoneurotic disorders, particularly that of anxiety reaction, in that its chief characteristic is anxiety—the affective state characterized by feelings of apprehension, uncertainty, and helplessness. Diffuse anxiety is usually present preceding the first occasion on which anxiety becomes focused on a specific object or situation. Thus, anxiety is prevalent both in the overt manifestations and in the genesis of the phobic reaction.

Source of anxiety. Although theoretical concepts of the primal source of the anxiety vary, many authorities feel that birth is the prototype of all later traumatic and anxiety-producing situations. However, the disorders referred to as “anxiety,” “phobic,” and “conversion” reactions were traditionally viewed as defenses against genital, oedipal impulses, which do not become prominent in the young child until the ages of 3 to 5 years. Indeed, the precipitating incidents in these reactions often do appear to be generally sexual in nature, but more recent concepts of anxiety suggest that all anxiety reactions in some way signify a threat of loss of love and support, a threat originally associated with the mothering figure. Consistent with this view is the observation that patients suffering from these disorders invariably manifest strong dependency problems, suggesting that anxieties already existed in the mother-child relationship prior to the period at which genital and oedipal impulses first appeared.

Little Hans appeared to be very preoccupied with sex and to fear punishment (castration) by his father. But authorities who believe that the primal source of anxiety is the separation from the mother emphasize the dependency aspects of Hans' problem and suggest that, for the total sequence to have occurred, the mother-child relationship must have been disrupted prior to the emergence of the boy's sexual preoccupation. It is significant that it was the mother who first threatened Hans with castration when she found him touching his penis at age 3½. His relationship with his mother had also been jeopardized by the arrival of a baby sister, of whom he was

TABLE I

Phobic Patients of Out-Patient Psychiatric Clinics

The figures given refer to patients for whom services were terminated in 933 out-patient clinics in the United States during 1961.

	Males under 18	Females under 18	Males over 18	Females over 18
Total patients.....	38,463	18,869	33,046	44,966
Psychoneurotic disorders..	3,618	2,277	6,543	14,302
Phobic reactions.....	343	319	169	452
Percentage of total disorders	0.9	1.7	0.5	1.0
Percentage of psychoneurotic disorders....	9.5	14.0	2.6	3.2

jealous. As in other clinical studies of phobic reactions, the consistent appearance of strong motivations for dependency gratifications seems to militate against the adequacy of any theory that emphasizes solely the role of oedipal or sexual impulses.

A characteristic of any anxiety reaction from the psychodynamic viewpoint is that something in the present precipitates a response pattern that harks back to the time when the individual was relatively helpless. In this sense only, anxiety is irrational, since the response to the current precipitating situation becomes inappropriately or disproportionately intense by association with memories or conflicts of the past. A reaction is elicited by the present situation which reactivates childhood fears of loss of love, of separation, and of punishment, with accompanying feelings of helplessness.

Early anxiety experiences. The child has his first experience of anxiety in his initial attempts to deal with other people, in his attempts to handle his own impulses and feelings in relation to them. He may begin to feel he cannot survive when he becomes aware that his existence is dependent on the actions of someone over whom he may have relatively little control, and on whom he is dependent for love and support. It is postulated that the child at this time requires reassurance from the mothering person to alleviate the anxiety and fears about survival that, because of his helplessness, are realistic. To allay such anxiety and fear, the child comes in time to learn a set of rules of operation and various adaptive techniques that assure his survival by warding off the threat of either punishment or the loss of love from significant people in his life.

During the course of the infant's learning to adjust to his expanding awareness of the world about him, anxiety comes to have a very useful purpose as a reaction to something perceived, consciously or unconsciously, as a threat to the established sets of behavior he has developed. Such signal anxiety alerts the individual to initiate action that prevents his mode of operation from being disrupted. Within limits, signal anxiety is useful, since it serves as a

constant scanning mechanism to perceive threatening situations with great sensitivity.

Early childhood experiences may unduly perpetuate feelings of anxiety and helplessness. When support and security are not sufficient to allay the child's normal developing sense of insecurity and helplessness, misperceptions may lead to the distortion of all later relationships. Early fears of disapproval may be transferred from significant individuals, on whom the child is dependent for security, to their representatives in later life. Such distortion, as an expression of anxiety, gives rise to further anxiety.

Effects of anxiety. As a subjective feeling state, anxiety is exceedingly uncomfortable and often intolerable. With physiological manifestations similar to those of fear, it may arouse symptoms of a hyperactive sympathetic system that include perspiration, tremor, diarrhea, vomiting, and changes in pupillary response, heart beat, pulse rate, and respiration. Unlike fear, however, anxiety is experienced as an inexplicable pervasive feeling of impending disaster that is frequently described as, "I'm afraid but I don't know why," "I have a feeling that something is about to happen but I don't know what," "I feel as if I'm about to explode or burst," or "I feel I'm going to lose control." Implicit in these complaints is the feeling of uncertainty and helplessness that, in extreme form, may give rise to feelings of panic, dissolution of the self, and disorganized behavior.

Precipitating threat. The precipitating threat in an anxiety reaction usually arises in the patient's present relationships with other people. These relationships in some way jeopardize the set of operations that in the past have served to ward off punishment or the loss of love. The threat is frequently symbolic in nature, representing a danger not directly known to the patient. Unlike a fear reaction, in which the source of the danger is recognized and apparent, the feelings of apprehension that arise in an anxiety reaction often appear to be without adequate rationale or logical basis, particularly to the patient himself, whose sense of helplessness is thus intensified.

Any threat that jeopardizes the individual's established way of relating to others and that causes conflict in his own value system can give rise to anxiety. Superficially, it may appear that the kinds of situations that elicit such threats are legion, involving problems of disapproval, self-satisfaction, guilt, integrity, and self-sufficiency, which is the individual's need to maintain a certain image of himself. On closer inspection, these situations generally seem to have in common the emergence of unacceptable impulses related to sex or aggression, impulses that in childhood were met either by the threat of punishment or the loss of love.

Parenthetically, it might be noted that some authorities feel that sexual impulses have a more important role in phobic individuals of the hysterical personality type, who probably make up the majority

of individuals classified as having strictly phobic reactions in our present nosology. Concomitantly, these authorities assume that aggressive impulses have greater importance in individuals of the obsessive-compulsive or paranoid types, who may develop phobias in the context of a syndrome which is frequently classified as something other than phobic reaction in our present nosology. Certain phobias also seem more clearly related to one type of impulse than to another, although both are usually present to some degree. For example, fear of open places is usually revealed to be related to fear of sexual impulses, fear of knives to aggressive impulses. In either event, intensity of the anxiety does not appear to be related to the specificity of the impulse.

Repression. In individuals who are prone to anxiety attacks, unacceptable sexual and aggressive thoughts, feelings, and impulses are ordinarily excluded from conscious awareness through the process of repression. In repression, one simply fails to see, hear, or attend to threatening stimuli, whether they arise in terms of internal pressures (intolerable wishes, impulses, or ideas) or external threats (emanating more directly from other people). This process goes on unconsciously; the person is no more aware of repressing something than he is of forgetting something. Unlike material that is forgotten, however, repressed material continues to seek expression through derivative behavior that often takes the form of disruptive symptoms.

Repression is a ubiquitous defense in the sense that everyone expends some energy in keeping many unacceptable impulses and their derivatives out of conscious awareness. In some individuals, however, repression is found to be the primary and overriding aspect of defensive strategy. Although repression leaves the individual perennially immature, naive, and unreflective, it may work tolerably well in protecting the individual from experiencing excessive anxiety without resulting in gross distortion of reality. In certain situations, repression fails to serve this purpose, because of either the nature of the external threat or the nature of internal pressure arising from intolerable wishes. The failure of repression then gives rise to directly experienced anxiety and its physical manifestations.

Displacement and avoidance. The beginning of a phobia is usually an acute anxiety attack, indicating that some threatening impulse or feeling has been triggered by the environment. Because anxiety, like fear, precipitates a "fight or flight" reaction, the human organism attempts to develop defenses to protect itself. The first line of defense is invariably repression but this defense may fail to keep the threat sufficiently from awareness or the anxiety within tolerable limits. Displacement, the process by which an emotion or feeling is unconsciously transferred from its source to a more acceptable substitute, may then be added to

repression, a combination of defenses that leads to the development of a phobia.

By means of displacement, the individual combats his diffuse anxiety by binding it to a particular object or situation. The thinking behind this seems primitive indeed, but, as Arieti indicated, the process reflects a general principle operative in psychopathology: what cannot be sustained at an abstract level because it is so anxiety-provoking is concretized. In many instances, life is made more tolerable for the individual, since the specificity of the fear now makes it manageable through the process of avoidance.

Because he avoids the object or situation on which his anxiety has been focalized, the discomfort he experiences may be barely noticeable to himself or others. Sometimes he may be able to use avoidance in such a way that he himself remains fairly comfortable, but his relatives must assume the burden of his solution. In other instances, the necessity to use avoidance may lead the patient to great inconvenience and deprivation. However confining or restricting the phobia may become in life's experiences or opportunities, the individual has at least arrived at a solution that offers some escape from the intolerable effects of prolonged diffuse anxiety. Should displacement and avoidance fail to serve this purpose, leading to a recurrence of the original anxiety, the phobia may then be extended.

A woman had a subway phobia that began with an inability to ride an express train between two fairly distant locations. Gradually it developed that she would have to get off the train at each local stop, wait until her anxiety diminished, get on the next train, and get off again at the next stop until her destination was reached.

It may appear strange that the anxiety is displaced to objects of the nonhuman environment—to animals, objects, and things—rather than to other people, as in paranoid reactions. Contrasted with the paranoid's defenses, the defense of the phobic person may seem primitive in its apparent similarity to the child's animistic perception of the world as threatening and overwhelming. But the displacement represented in the phobia permits the maintenance of a degree of interpersonal relatedness generally not found in the paranoid. The assumption of the helpfulness and inherent goodness of other people and the implicit optimism regarding potential gratification of dependency needs form the bases for the relative effectiveness of psychotherapy with the phobic individual, as opposed to the paranoid.

In regard to the early experiences that may have set the model for the type of displacement occurring in a phobia, it is well to recall the nature of the distinctions the child must originally make in the process of establishing a sense of ego boundaries as he learns to differentiate the self from the nonself. He must learn to differentiate the self from the outside world, and from other humans. In addition, he must distinguish between the animate and the inanimate, and

between the human and the nonhuman. The management of children may confuse rather than facilitate these distinctions and may serve to perpetuate the animistic and fantastic beliefs that figure so prominently in children's stories, comics, and fairy tales. A recent publication by Searles reveals the degree to which even the normal adult is engaged throughout life in a struggle to differentiate himself from his nonhuman environment.

In the person who develops a phobic reaction, it can be assumed that under extreme anxiety such differentiation becomes defective and that a regressive identification with the feared object or situation takes place. It can also be assumed that the original identification was characterized by ambivalence, since the phobia generally evolves around things or situations that either directly or symbolically represent a source of earlier satisfaction and attraction as well as of threat, in fantasy if not in actuality. Like any neurotic symptom, every phobia can be viewed as representing a compromise between wish (temptation, gratification) and prohibition (threat, fear). For example, heights (and falling from them) literally and figuratively represent fears common to both child and adult, but they also represent powerful pleasures of flight and abandon that under certain conditions are found to be most enjoyable: playing, falling, and jumping games, diving, skiing, sailing, and falling in the moral sense (that is, sinning).

Choice of feared object. What determines the choice of the object to which displacement occurs? Different authorities stress somewhat different possibilities. Using experimental neurosis as an example, learning theorists stress simple associative learning as the basis for selection. Watson and Rayner in 1920 reported the frequently quoted case of "Little Albert," who was conditioned to a fear of rats by an experimenter who struck an iron bar behind the boy just as he was about to touch a rat. The boy's original fear of loud noises was transferred to the rat and even became generalized to other furry objects. In such instances, the role of fortuitous circumstances seems prominent, as presumably rats or furry objects embodied no special properties that predetermined the boy's responses. Related to this viewpoint, both Rado and Lief have stressed the sensory context in which the original anxiety reaction first occurred as providing the basis for the selection.

On the other hand, traditional psychoanalytic theory places significance on the meaning of the symbolic condensation presumably represented by the feared object. Consistent with this view, the specificity of the choice in some instances does appear to represent an exquisitely unique crystallization of all the important determinants of the phobia, including the predominant impulse or threat against which the phobia is a defense. Lewin has likened the process determining the specific phobia to that which occurs in the formation of manifest dream content, showing

the same overdetermination and other parallel phenomena, including traces of early experiences.

The choice of some feared objects can be given meaning in terms of contiguity and continuity.

A woman walking in the street experiences an acute panic about an impulse pertaining to unacceptable homosexual wishes. The fear may be displaced or pushed out of awareness by attaching the anxiety to some circumstance in the immediate environment, such as the street.

A patient had a sudden impulse to take a kitchen knife and stab her 3-year-old child, who was causing her concern and anxiety. At that time, a whistle on a passing train sounded. The patient became phobic about locomotive whistles.

The choice of the feared object sometimes appears to be explained by simple determinants of present association, as in the examples above; but frequently these determinants only describe the situation precipitating the phobia without fully explaining the total condensation involved in the selection of the particular object.

The phobia of being out in the rain was seemingly established in the context of an experience in which a child saw a man without a head walking in the rain (probably a man with a coat pulled over his head). Subsequent investigation of the earlier bathing practices in the family, however, confirmed the prediction that this was a family in which the child from an early age was bathed by being taken into each parent's shower. Therefore, the phobia about the rain was probably as much determined by unacceptable sexual impulses resulting from the family's bathing practices as by the frightening sight of a man without a head.

The true meaning of any symbol to a patient can be determined only by listening to the associations of the patient. Reports of dreams and other fantasy productions are also helpful. Although universally symbolic meanings for the common phobic objects may be suggested, these are not invariably valid. Elongated objects may symbolize the phallus; enclosed objects may symbolize the womb; animals may symbolize aggression. But, like other objects and situations, all these objects may have many other meanings. A fear of the street, for example, may symbolize fears of leaving home, sexual temptation, exhibitionistic impulses, or being attacked. On the whole, it is probably better not to approach the patient's phobia in terms of preconceived ideas about the symbolic meaning of specific objects and situations.

Clarification of the complex reasons for the choice of the specific feared object usually necessitates the patient's systematic recall of childhood experiences for which the phobic adult has long been amnesic. Even in successfully treated cases, however, one is sometimes not certain that all the determinants behind the symptom have been revealed; nor is this necessary, except as a matter of academic or theoretical interest. The inferential nature of the conclusions regarding any phobia is illustrated by the continued speculation regarding "Little Hans." To the already complicated structure that Freud hypothesized as underlying Hans'

phobia, some authors have suggested additional determinants, including a relation between the fact that at one point Hans' fear was transferred to a *white* horse exclusively and the fact that Hans' father was a physician. On the other hand, others disparage the assertion that Hans' phobia in any way symbolized a fear of his father and interpret Hans' phobia simply as a conditioned fear response with a sequence similar to that of the experimentally induced fear in "Little Albert."

Interpersonal aspects. In the discussion to this point, the major defenses leading to a phobia—repression, displacement, avoidance—have been dealt with largely as intrapsychic phenomena. In formulating the psychodynamics of the phobic reaction, some authorities stress more explicitly its interpersonal aspects in terms of the ongoing relationships the phobic person is experiencing with others. For example, phobic persons are frequently found to have convenient partners ("phobic companions"), who stand by continuously to prevent them from experiencing acute panic or anxiety. Such companions, often a husband or child, may become very dedicated, often finding secondary gain for themselves by becoming collaborators in a mutually reinforcing cycle.

A merchant with a fine store in a profitable business area had a wife who became phobic. He gave up his business and devoted all of his time to being with her. She would not let him out of her sight. If he walked the dog, she stood at the window to watch him so that he would not go beyond her view. Apart from financial difficulties because of his inability to work, he did not appear greatly concerned by this state of affairs; in fact, he seemed to take great satisfaction in being needed by his wife. It was not until he was called to leave the city to visit his sick mother that he expressed dissatisfaction with the conflicting demands on him.

Always present in a phobic person is an unconscious wish to be taken care of and to have his dependency needs satisfied. The phobic individual may use his companion as a symbolic parent—that is, as a "good mother," who will protect him from his fears. He may also use the companion as a "bad mother"; by keeping the companion with him, he is reassured that his aggressive impulses will be neither acted upon nor thought about. Some phobic patients keep a companion to protect themselves from acting out other forbidden impulses, as if the companion lessened the necessity for watching over their own impulses. In a sense, this maneuver is based on the feeling that "You can't lose control if there is somebody present who will manage you."

Phobias can be used aggressively to control others and gain special privileges. There are some cases reported in which the need for a companion is motivated by the desire to disengage the companion from some other relationship that the phobic person resents. A phobic girl, for example, by requiring her mother to be constantly at her side, assures herself that her mother and father cannot be alone together. A situation that guarantees exclusive possession is thus created. In most instances, the relationship between

patient and companion is one of mutual intimidation and satisfaction. The companion may find excessive gratification in the phobic person's behavior, thus being reluctant to give up a source of his own pleasure.

Patient history. In patients who develop phobic reactions, some common elements are often discernible. Frequently there is evidence that the person simply never succeeded in mastering early childhood problems. Every child, in the course of development, must learn an appropriate method of dealing with impulses of sex and aggression, that is, self-assertion. The anxiety accompanying these impulses may produce a guilt-ridden, fearful child who is particularly apprehensive about parental retaliation. If he performs a forbidden act, expectations of punishment may result, guilt feelings may arise, and self-esteem and self-confidence may be diminished. In such a setting, anxiety no longer serves the adaptive function of instigating patterns of assertion that lead to mastery.

In the course of normal maturation, the child must also develop a confidence in his body, an understanding of bodily impulses, and a capacity for experiencing pleasure in them. The absence of these attitudes is expressed quite explicitly in childhood fears of being devoured—basic to which is the fear of being devourable by larger beings; it is implicit in the phobic adult's fears and feelings pertaining to dissolution of the body and his general immaturity about bodily relationships and functions.

As in other anxiety reactions, the phobic patient's past history has frequently unfolded in a setting in which communication about sex and aggression has been inhibited and in which repression has become a prominent defense. In our culture, which can be quite open in relation to hostile and sexual stimuli, it is difficult for massive repression to work indefinitely. When failures occur, other defenses, including displacement and avoidance, are then called into action.

In the adult who has the developmental history of the phobic personality, one frequently finds reports of multiple childhood fears: fear of the dark, of snakes, of swimming, of animals, or fear of being hurt. Such patterns are easily reactivated when difficult hurdles must be faced in later life. The child may simply copy or emulate a phobic, timid parent who communicates his attitudes to the child. Although not often reported in the initial histories taken of phobic patients, close investigation frequently reveals the presence of a phobic parent or other significant person in the life of the child who later becomes phobic. This may be repressed and not available to recall in the early stages of investigation.

Counterphobic defenses. Although superficially quite dissimilar from the pattern of avoidance utilized by most phobic patients, the reactive pattern of counterphobic behavior is nevertheless dynamically related. In such behavior, mastery of anxiety

is attempted through compulsive and repetitive confrontation with the source of anxiety in such a way that the person feels actively in control. The patient may feel driven to or attracted to the activity or object without consciously knowing why. Examination of such behavior reveals its *reactive* quality, basic to which is underlying fear and anxiety, which the person is unconsciously trying to master by his repetitive behavior. Implicit in this defense is the reasoning, "I'm really not afraid... see how brave I am!" This process is similar to that observed in children's play, children's dreams, and traumatic neuroses in which the person attempts to master his anxiety by repeating the situation that originally produced the threat.

The counterphobic behavior of parents of a phobic child became discernible in the course of investigation. The mother, originally so fearful of heights that she would not ride in elevators, mastered her fear by subsequently becoming an airlines hostess; following a serious heart attack and an accompanying depressive episode, the father compulsively engaged in athletic exercises more strenuous than any prior activity, in spite of warnings of his physicians.

Counterphobic behavior usually has a hollow quality that can be recognized by its exaggerated bravado, in a sense "above and beyond the call of duty." Because the real reasons for its perpetuation are usually not apparent to the patient, the pattern is an endlessly repetitive one.

Success phobia. The anxiety precipitated in some patients when they are placed in competitive situations, particularly ones involving vocational achievement and success, is frequently labeled "success phobia." Unconsciously fearing punishment for their own aggressive aspirations, these patients reveal a pattern of inhibition of aggression originally related to parental or sibling rivals. Although often dealt within the context of phobic reactions, success phobias, in the main, seem to represent what technically should be classified as anxiety reactions or some other disorder. A frequent paranoid integration has been noted by Ovesey, who also reported that these patients are often subject to the fear of blushing or to blushing itself.

Pathology

The phobic reaction is a disorder of psychogenic origin, without clearly defined physical cause or structural change occurring in the brain. Thus, it is not accompanied by pathological findings.

There is perhaps no psychic phenomenon more multidimensional in its origins or its expression than anxiety. Experimental evidence suggests that one's reactions to emotional emergencies or stress are related to dispositional tendencies that are determined by a combination of both psychological and biological factors. Experimental stress, for example, has been shown to elicit quite different cardiovascular responses in different individuals; these variations are

apparently related to genetic and innate biological factors and to the individual's early childhood experiences and his perception of the situation in which he finds himself at present. Many authorities infer that these extremely complex phenomena are instinctively rooted, varying from individual to individual.

Clinical Description

Fear. The outstanding characteristic of the phobic reaction is a persistent, excessive fear attached to an object or a situation that, objectively, is not a significant source of danger. Despite the fact that the phobic person's reality-testing ability is generally intact and although he usually regards his fear as inexplicable and irrational (even though he may offer rationalizations for it), he nevertheless experiences overpowering anxiety when confronted with the situation. He manifests such typical physiological reactions as excessive perspiration, tremor, pallor, tachycardia, rapid breathing, diarrhea, vomiting, and tightness in the chest. As a means of escaping such anxiety, the phobic person uses a pattern of avoidance in relation to the feared object or situation, thereby often greatly constricting his activity and functioning in daily life. Such avoidance at least makes the anxiety more manageable and life somewhat more tolerable.

Response pattern. A significant component in any manifest phobia is the response pattern that may be elicited by the feared object. In this sense, the phobia is purposeful, and, like other neurotic symptoms, involves secondary gains. Thus, a fear of snakes which may occur in a city dweller, does little to restrict his daily life. Likewise, a fear of subways would be inconsequential to an individual living in a rural community with no opportunity for riding the subway. For a person whose livelihood depends upon traveling to work by the subway, this fear might become charged with implications and meanings, having both obvious and subtle rewards as well as limitations. This fear would then constitute a phobia in the active, clinical sense. Cultural factors thus influence the type of phobia likely to occur in any setting.

To be classified technically as a phobia, the patient's response should include displacement and avoidance as defenses. Rather specific psychodynamics are posited for the phobic reaction. Fears of vague states or conditions such as fear of dying, or of the future, are common in anxiety reactions; repetitive but ego-alien ideas about dreaded acts are common in obsessive-compulsive reactions; fears of certain diseases are common in hypochondriacal reactions. Contrary to the designations sometimes given all these, they are properly labeled as phobias only when the response to them leads the patient to avoid some object or situation (such as heights, crossing of streets, hospitals) that becomes the focus or symbol of the fear. For example, in a postpartum depressive reaction, a mother's self-depreciation, lack of self-

confidence, and fear of responsibility may result in the fear that she may injure her child. Again, this would not technically constitute a phobia unless the fear was displaced to some object or entity such as knives, which was then avoided as a way of making life more comfortable.

Focus. Common objects or situations that may become the focus of a phobia include heights, closed spaces, subways, elevators, dirt, germs, open spaces, water, crowds, animals, and the dark. Phobias have traditionally been classified according to type by means of Greek prefixes, as indicated by the following examples:

acrophobia	fear of heights
agoraphobia	fear of open places
ailurophobia	fear of cats
cynophobia	fear of dogs
aquaphobia	fear of water
mysophobia	fear of dirt and germs
zoophobia	fear of animals
claustrophobia	fear of closed spaces
xenophobia	fear of strangers
pyrophobia	fear of fire

In recent years, such classification is not considered feasible since the theoretical possibility that any object or situation may become the focus of a phobia would result in the useless proliferation of labels. Furthermore, there is the disadvantage of stressing the differences in such irrational fears rather than the more important similarities in the past experiences and present personalities of individuals who become phobic. In addition, some patients develop numerous phobias, so that the object of the phobia often seems less consequential than the patterns of anxiety and avoidance that are specifically represented.

There are many objects and situations that most people dislike or fear to some extent, such as snakes, death, and heights. Freud gave recognition to this fact in his differentiation of phobias according to the nature of the feared object: common phobias, those representing an exaggeration of what are common and universal fears; contingent phobias, fears of special circumstances, specific to the individual. Many fears are common, and some can be rationalized as having a realistic basis. Although in theory it may seem difficult to differentiate a normal fear from a phobia, in actual practice the patient's response to the object usually indicates how rational his fear is, and to what degree both the fear and the reaction to it are appropriate or adaptive. Thus, to evaluate a fear of heights or a fear of cancer, one need not become involved in the statistics of airplane accidents or cigarette smoking. The phobic patient himself usually recognizes the irrational intensity and inappropriateness of his response to the situation. Sometimes the mere thought of the object precipitates an acute anxiety reaction.

Effect. Phobias may be extremely disabling. Some

phobic persons cannot leave their homes. They frequently cannot cross the threshold of a certain room. They feel helpless and are often unable to work or move about. Confrontation with the feared object may precipitate an acute panic reaction that is extremely painful.

Because the impairment in ability to function may be great, some authorities assume that a severe phobia must represent an underlying psychotic process rather than a psychoneurotic reaction, even when the primary signs of a psychosis are not discernible. Although this assumption has sometimes been proved accurate, at least part of the possible confusion arises from a nosological system that maintains distinctions without clear cut operational definitions, relying alternately on clinical signs, psychodynamic tenets, and inferred constructs and treatment responses. Thus, the degree of social incapacitation resulting from a phobia may be greater than that occurring with more formidable sounding symptoms, or it may be significantly less so.

Differential Diagnosis

Fears versus phobias. Theoretical discussions of phobias invariably indicate that there are many objects and situations people dislike or fear to some extent and that even normal individuals have mild phobias. Although it may, therefore, seem difficult to differentiate what is normal from what is psychoneurotic, in actual practice it is the patient himself who usually indicates clearly the degree to which his feelings and his responses to them are appropriate and rational. As is true of anxiety reactions in general, the patient, given the opportunity, usually communicates his distress in direct terms. Contrary to the designation sometimes given them, not every irrational fear necessarily represents a phobia in the strictest technical sense. Specific psychodynamics are posited for a phobia, including the defenses of displacement and avoidance.

Phobic reactions, anxiety reactions, and conversion reactions. As examples of neurotic disorders in which there is no gross distortion of external reality and in which the major defense is repression, these disorders have much in common. In anxiety reactions, however, the anxiety is experienced as diffuse and unspecified, not restricted to any definite situation or object. The primary defensive strategy is repression. In a phobic reaction, anxiety becomes attached to some specified object or situation, which then can be avoided. The anxiety thus becomes manageable in that the person is left with some control over his present state. The primary defensive strategies are repression, displacement, and avoidance. In conversion reaction, however, anxiety is converted into a functional symptom in organs or parts of the body that are mainly under voluntary control. A symbolic resolution of the conflict is obtained, often with prominent secondary gain. In all three, the physiologi-

cal manifestations of anxiety may be either reported or observed, and it is important to distinguish the somatic pattern that accompanies anxiety, involving the cardiovascular and gastrointestinal systems in particular, from that of specific organic pathology.

Phobia (symptom) versus phobic reaction (syndrome). Phobias occur in a variety of disorders. For example, they may represent extensions of what is basically an obsessive-compulsive reaction or a paranoid reaction. On the other hand, a phobia may also be one of many symptoms in a disorder that ultimately is revealed to be schizophrenia. In the pseudoneurotic type of schizophrenia in particular, neurotic-like symptoms (phobic, hysterical, and obsessive-compulsive) may occur in the context of panic-anxiety, masking the underlying schizophrenia. Some authorities feel that a severe phobia is usually an indication of an underlying psychotic state, even when the primary signs of a psychosis are not immediately revealed. Because of the variety of possibilities present, careful evaluation is necessary to make a proper diagnosis. Psychological tests, particularly the Rorschach test, are often helpful in this regard. To repeat, by present A.P.A. nomenclature, the term "phobic reaction" is reserved for those disorders in which the phobia is the major symptom and in which reality testing is intact. As an example of a disorder in which there is neither gross distortion of external reality nor evidence of structural or organic changes, the phobic reaction is thus classified under the heading of neurotic or psychoneurotic disorders.

Displacement (phobic) versus projection (paranoid). In the displacement that occurs in the phobic reaction and in the projection that occurs in paranoia, the world is distorted in terms of inner impulses and needs. The implicit assumption in each is, "It can't be me; it's out there." The degree to which responsibility can be transferred to outside causes can appear similar in individuals who utilize either displacement or projection. Unlike the paranoid individual, however, the phobic person retains better ability to test reality, recognizing that his feelings are irrational, in spite of the fact that he may at times offer rationalizations for them. He retains some possibility of action in that he has an available escape through avoidance, a defense he consciously recognizes. The paranoid patient, on the other hand, frequently feels himself passive or helpless in relation to his persecutors, accepting his delusional fears as appropriate to the threat which he feels exists.

Management

The techniques reported for the treatment of phobias and the phobic reaction represent the gamut of general therapeutic procedures, including psychoanalysis, deconditioning, hypnosis, client-centered therapy, reassurance, group therapy, environmental manipulation, and drugs.

Symptomatic treatment. The distinction between

stages rather than when removal of the phobia has been attempted precipitously with one suggestion.

Group therapy. Group therapy has also been successfully applied to the treatment of phobic reactions. Tentative research evidence suggests that the best results are obtained when desensitization procedures are combined with usual group methods.

Procedure. In general, a combination of some understanding of the psychodynamics of the particular situation combined with an understanding of the early fearful situations in childhood is usually most helpful in treating phobic individuals. The task is made easier if there has been a phobic parent whose pattern can be clearly distinguished from that of the patient. The companion to the patient can be very helpful to the therapist because he has extraordinary power over the patient and is endowed by the patient with attributes that border on magical. Although it is unwise to divorce the companion from the phobic patient abruptly, it is often possible to show the patient how he is using the other person in a destructive and hostile fashion. It is helpful if the patient can come to understand the psychodynamics of his early phobia and his wish to be taken care of. Since a great deal of secondary gain accrues to the phobic patient in terms of care, attention, and support, it is often necessary to reduce such rewards. This rational approach works with many phobic patients. It is probably best to reduce the magic in the situation to a minimum, letting the patient recognize that there is no miraculous cure, and that overprotection, love, and support will not allow him to master situations because such aid is necessarily contingent on other people.

Prognosis

Unfortunately, there are no adequately controlled statistical studies that show the relative effectiveness of varying therapies as contrasted with spontaneous remission rates. Evaluating the effectiveness of any therapy presents as yet unsolved problems of research related to the control of patient, therapist, and therapy, and criteria of improvement.

Opinion varies as to outcome, remission probabilities, chronicity, and therapeutic effectiveness in the treatment of phobias and phobic reactions. In general, a high degree of optimism can be reported, but some phobias are nevertheless found to be quite resistant to therapeutic endeavors. This seems to be particularly true when the phobia is superimposed on or is an extension of some disorder more regressive than that technically labeled "phobic reaction." In such instances, the management of the phobia itself may be the least difficult of the problems encountered.

Mild phobias can often be easily managed with supportive and directive techniques, including explanation, education, and reassurance. As with anxiety reac-

tions in general, symptomatic relief is frequently easy to obtain. The life-long dependency patterns of phobic patients, however, present problems that may necessitate intensive psychotherapy if underlying difficulties are to be resolved.

The efficacy of symptomatic treatment can be judged only in terms of the personality context in which the phobia occurs. Relevant issues include all components of ego strength, not the least of which are the patient's reality-testing ability and his ability to tolerate tension and postpone gratification. In many instances, symptomatic relief may be all that is indicated; in other instances, it is all that can be hoped for. Not unrelated to the choice of treatment goals is the patient's own perception of his difficulties and what he wants to do about them.

Suggested Cross References

For further discussion of the clinical manifestations and psychodynamics of anxiety see Lief's section on anxiety reaction (Section 23.1). Malmö describes the peripheral physical concomitants of anxiety and fear in Section 29.4, while an account of the central cerebral processes concerned with emotional arousal may be found in Sections 2.5 to 2.9, in Area B, on the basic behavioral sciences. That same area also contains a section by Bachrach on learning theory (Section 3.3). Further comments on the problems of nosology may be found in Brill's section (Section 14.1). More detailed information on phobias of childhood may be found in LaViertes' section (Section 43.6), which deals in part with school phobias, and in Anthony's section on childhood neuroses (Section 41.1). Finally, more detailed information regarding the treatment modalities mentioned in this section—namely, psychoanalysis and psychotherapy, behavioral therapy, group therapy, hypnosis, and drug therapy—may be found in Sections 34.1, 34.2, 34.6, 34.4, and 35.1, respectively, in Area G, on psychiatric treatment.

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Chapter 24

Psychoneurotic Disorders. II: Obsessive-Compulsive and Neurotic Depressive Reactions

24.1 OBSESSIVE-COMPULSIVE REACTION

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In one of his earliest psychological papers, Freud wrote:

If someone with a disposition [to neurosis] lacks the aptitude for conversion but if, nevertheless, in order to fend off an incompatible idea, he sets about separating it from its affect, then *that affect is obliged to remain in the psychical sphere*. The idea, now weakened, is still left in consciousness, separated from all association. *But its affect, which has become free, attaches itself to other ideas which are not in themselves incompatible; and thanks to this 'false connection,' those ideas turn into obsessional ideas*. This, in a few words, is the psychological theory of obsessions and phobias.

Freud's first psychodynamic formulations were created to account for the formation of the symptoms of conversion hysteria. When an idea is incompatible with an individual's ego (so ran his theory), the affect associated with the idea is rendered unconscious by repression and is converted into a sensorimotor disturbance that symbolically represents the unacceptable idea. The formulation was a satisfactory one, for it adequately explained the observed clinical manifestations of the conversion reaction: the existence of somatic sensory or motor symptoms, the absence of distressing affects associated with them, and the disappearance of the symptoms when the pathogenic idea and the associated painful affects were brought into the individual's conscious awareness by therapeutic techniques, such as hypnosis.

It soon became apparent, however, that the theory was not adequate to explain other forms of neurotic symptoms. In patients suffering from obsessions and phobias, for example, the predominant clinical mani-

festations were not somatic but psychic; instead of being disabled by disturbances in his sensations or motor functions, the patient was afflicted by distressing, consciously experienced ideas. Furthermore, in contrast to conversion symptoms, these ideas were accompanied by an acute, conscious awareness of painful emotions like anxiety or shame. In other words, at the very beginning of his attempt to develop a psychodynamic psychopathology, Freud was faced with the problem of explaining symptom choice and was forced to modify his theories to satisfy the demands of stubborn clinical facts—a process that continued throughout his long and creative career and led eventually to the highly elaborate web of contemporary psychoanalytic theory.

In this first expansion of his psychological formulations, Freud separated off from the somatosensory symptoms of hysteria a group of symptoms characterized by their psychical nature, but he failed initially to differentiate between phobic and obsessive-compulsive phenomena; this came later in his expanding psychodynamic scheme. There was, however, good reason for this early confusion. Not only do phobic and obsessive-compulsive symptoms have features in common, but the characteristics that are used to differentiate them clinically do not always lead to a clear separation. In fact, the clinical phenomena lie along a spectrum. Clearly differentiated at the extremes, there are forms in the middle of the spectrum in which it is difficult to decide to which category they should be assigned. Indeed, some contemporary authors still include phobias in the clinical syndrome of the obsessive-compulsive reaction.

Definition

Despite the existence of these areas of confusion, it is possible to designate certain symptoms as obsessions and compulsions and to distinguish them from other clinical manifestations by their specific charac-

teristics. Direct observation of the phenomena themselves provides the surest approach to a definition of these two symptoms.

In his autobiographical volume, *Lavengro*, that enchanting English vagabond George Borrow has reproduced a tale told him by a stranger he encountered in his wanderings.

Amid darkness and gloom, occasionally broken by flashes of lightning, the stranger related to me, as we sat at the table in the library, his truly touching history. . . .

'There was one thing that I loved better than the choicest gift which could be bestowed upon me, better than life itself—my mother; at length she became unwell, and the thought that I might possibly lose her now rushed into my mind for the first time; it was terrible, and caused me unspeakable misery, I may say horror. My mother became worse, and I was not allowed to enter her apartment, lest by my frantic exclamations of grief I might aggravate her disorder. I rested neither day nor night, but roamed about the house like one distracted. Suddenly I found myself doing that which even at the time struck me as being highly singular; I found myself touching particular objects that were near me, and to which my fingers seemed to be attracted by an irresistible impulse. It was now the table or the chair that I was compelled to touch; now the bell-rope; now the handle of the door; now I would touch the wall, and the next moment stooping down, I would place the point of my finger upon the floor: and so I continued to do day after day; frequently I would struggle to resist the impulse, but invariably in vain. I have even rushed away from the object, but I was sure to return, the impulse was too strong to be resisted: I quickly hurried back, compelled by the feeling within me to touch the object. Now, I need not tell you that what impelled me to these actions was the desire to prevent my mother's death; whenever I touched any particular object, it was with the view of baffling the evil chance, as you would call it—in this instance my mother's death.

'A favourable crisis appeared in my mother's complaint, and she recovered; this crisis took place about six o'clock in the morning; almost simultaneously with it there happened to myself a rather remarkable circumstance connected with the nervous feeling which was rioting in my system. I was lying in bed in a kind of uneasy doze, the only kind of rest which my anxiety, on account of my mother, permitted me at this time to take, when all at once I sprang up as if electrified, the mysterious impulse was upon me, and it urged me to go without delay, and climb a stately elm behind the house, and touch the topmost branch; otherwise—you know the rest—the evil chance would prevail. Accustomed for some time as I had been, under this impulse, to perform extravagant actions, I confess to you that the difficulty and peril of such a feat startled me; I reasoned against the feeling, and strove more strenuously than I had ever done before; I even made a solemn vow not to give way to temptation, but I believe that nothing less than chains, and those strong ones, could have restrained me. The demoniac influence, for I can call it nothing else, at length prevailed; it compelled me to rise, to dress myself, to descend the stairs, to unbolt the door, and to go forth; it drove me to the foot of the tree, and it compelled me to climb the trunk; this was a tremendous task, and I only accomplished it after repeated falls and trials. When I had got amongst the branches, I rested for a time, and then set about accomplishing the remainder of the ascent; this for some time was not so difficult, for I was now amongst the branches; as I approached the top, however, the difficulty became greater, and likewise the danger; but I was a light boy, and almost as nimble as a squirrel, and, moreover, the nervous feeling was within me, impelling me upward. It was only by means of a spring, however, that I was enabled to touch the top of the tree; I sprang, touched the top of the tree, and fell a distance of at least twenty feet, amongst the branches; had I fallen

to the bottom I must have been killed, but I fell into the middle of the tree, and presently found myself astride upon one of the boughs; scratched and bruised all over, I reached the ground, and regained my chamber unobserved; I flung myself on my bed quite exhausted; presently they came to tell me that my mother was better—they found me in the state which I have described, and in a fever besides. The favourable crisis must have occurred just about the time that I performed the magic touch; it certainly was a curious coincidence, yet I was not weak enough, even though a child, to suppose that I had baffled the evil chance by my daring feat.

'Indeed, all the time that I was performing these strange feats, I knew them to be highly absurd, yet the impulse to perform them was irresistible—a mysterious dread hanging over me till I had given way to it; even at that early period I frequently used to reason within myself as to what could be the cause of my propensity to touch, but of course I could come to no satisfactory conclusion respecting it; being heartily ashamed of the practice, I never spoke of it to any one, and was at all times highly solicitous that no one should observe my weakness.'

In these few paragraphs are to be observed the distinguishing characteristics of obsessive-compulsive phenomena, which, when they form the predominant manifestations of a patient's psychoneurotic illness, go to make up the obsessive-compulsive reaction. The word "obsessive" (or "obsession") refers to an idea or thought, as, in the passage just quoted, the narrator's idea of his mother's death. The word "compulsive" (or "compulsion") refers to an urge or impulse to action that, when put into operation, leads to a compulsive act. Compulsive acts predominate in the narrator's description of his trials—touching the floor, climbing the tree.

Obsessions and compulsions have certain features in common: (1) An idea or an impulse obtrudes itself insistently, persistently, and impellingly into the individual's conscious awareness. (2) A feeling of anxious dread accompanies the central manifestation and frequently leads the individual to take counter-measures against the initial idea or impulse. (3) The obsession or compulsion is ego-alien—that is, it is experienced as being foreign to and not a usual part of one's experience of oneself as a psychological being; it is undesired, unacceptable, and uncontrollable. (4) No matter how vivid and compelling the obsession or compulsion, the individual recognizes it as absurd and irrational—he retains his insight. (5) Finally, the person suffering from these manifestations feels a strong need to resist them.

Epidemiology

It is probably a rare person who has not at some time in his life experienced a fleeting bit of obsessional thinking or compulsive behavior. But a transient unreasonable compulsion to check a gas jet that one knows is closed or a momentary urge to shout out an oath during a solemn ceremony hardly constitutes an obsessive-compulsive reaction, which in its severest forms can be as disabling to the sufferer as the most crippling physical illness.

The exact incidence of the obsessive-compulsive

reaction is hard to determine. Scattered anecdotal evidence indicates that it has occurred throughout history. Those who have studied the natural history of the disorder have found an incidence that is never higher than 5 per cent of all psychoneurotic patients, the percentage, of course, being lower if the total population includes patients with psychoses.

It is possible that the figures given are lower than the actual incidence of the obsessive-compulsive reaction in the community at large. The figures have been derived from those patients who have actually come to the psychiatrist's attention in either an in-patient or an out-patient facility. It is known that individuals with obsessive-compulsive disorders tend to be secretive about their symptoms and to avoid disclosing them to physicians, often doing so only when some other illness has forced them to seek medical attention. Furthermore, since people with obsessive-compulsive symptoms are frequently able to work and earn a living despite marked limitations in their social and emotional life, their disorder may never be known except to their closest associates. Facts such as these suggest that the incidence based on figures derived from clinical populations is spuriously low.

There appears to be no significant sexual difference in the disorder, and the larger the series of patients, the more the percentage of men and women afflicted is equal. It is interesting that a large proportion of obsessive-compulsive patients remain unmarried, up to 50 per cent in some surveys. Recent studies indicate that the frequency of the disorder is higher in upper class individuals and in those with higher intelligence levels.

Clinical Description

Because of the relative rarity of the disorder and of the paucity of patients adequately studied, it is difficult to make categorical statements about the natural history of this psychoneurotic reaction. All that is said in the following pages about the course, prognosis, and etiology must be considered as only tentative and perhaps applicable only to selected patients rather than to the syndrome itself.

Onset. The onset of the disorder occurs predominantly in adolescence or early adulthood. The symptoms first appear in over two thirds of the patients by the time they are 25 and frequently before the age of 10. In less than 5 per cent do the symptoms begin for the first time after the 4th decade of life. As compared with patients suffering from conversion symptoms or anxiety, those with obsessions and compulsions seek professional help at an earlier age. In one series of patients, the average age when they first saw a doctor was 22.0 years for the obsessive-compulsive group, 30.3 for the hysterical patients, and 32.2 for those with anxiety. In over half the patients a clear environmental precipitating event can be found. For example, immediately following a hemorrhoidectomy, a man developed the obsession that he was going

to harm others by inadvertently knocking them down or contaminating their food with dirt. A woman in her thirties was driven home in her own car one evening by a male acquaintance. On the way, her companion stopped by the roadside to void in the bushes. Later that night she had the sudden thought that urine from his hands might have dirtied the steering wheel. Then and there she spent an hour scouring out the inside of her car with soap and water, and afterward she scrubbed herself vigorously in the bathtub. From that time on she was consumed by a washing compulsion that eventually led to her hospitalization.

Symptoms. The fundamental characteristics of obsessive-compulsive phenomena described earlier have a general validity and usefulness in distinguishing them from the manifestations of other emotional disorders. In attempting, however, to categorize the various obsessive-compulsive manifestations themselves, one is faced with a more complicated task, for the multiplicity of variables makes it difficult to devise a classification that will sharply differentiate one kind of obsessional or compulsive symptom from another.

The phenomena may be manifested psychically or behaviorally; they may be experienced as ideas or as impulses; they may refer to events anticipated in the future or actions already completed; they may express desires and wishes or protective measures against such desires; they may be simple, uncomplicated acts and ideas or elaborate, ritualized patterns of thinking and behavior; their meaning may be obvious to the most unsophisticated observer, or they may be the end result of highly complicated psychological condensations and distortions that yield their secret only to the skilled investigator.

No single classificatory scheme can do justice to clinical events that are compounded of these many features in almost endless variation, and the organization that is suggested in what follows is only one possible way of looking at the phenomena. In most general terms the symptoms may be divided into those that are psychic in nature and those that are manifested in observable behavior.

Psychic manifestations

Obsessional thoughts. Perhaps the simplest of the psychic symptoms are those in which thoughts, words, or mental images are obtruded against his will into the conscious awareness of the patient. In *Grace Abounding to the Chief of Sinners*, John Bunyan has left us his spiritual autobiography and a magnificent case history as well, for he has vividly described in these pages the variety of psychiatric symptoms from which he suffered, among them a paradigm of the obsessional thought.

The Tempter came upon me again, and that with a more grievous and dreadful Temptation than before.

And that was, *To sell and part with this most blessed Christ, to exchange him for the things of this life, for any-*

thing. The Temptation lay upon me for the space of a year, and did follow me so continually that I was not rid of it one day in a month, no, not sometimes one hour in many days together, unless when I was asleep. . . .

But it was neither my dislike of the thought, nor yet any desire and endeavour to resist it that in the least did shake or abate the continuation, or force and strength thereof; for it did always, in almost whatever I thought, intermix itself therewith in such sort that I could neither eat my food, stoop for a pin, chop a stick, or cast mine eye to look on this or that, but still the temptation would come, *Sell Christ for this, or sell Christ for that; sell him, sell him.*

Sometimes it would run in my thoughts, not so little as a hundred times together, *Sell him, sell him, sell him;* against which I may say, for whole hours together, I have been forced to stand as continually leaning and forcing my spirit against it, lest haply, before I were aware, some wicked thought might arise in my heart that might consent thereto. . . .

Bunyan's preoccupations and his language are, of course, partly determined by his 17th century surroundings, but the modern sinner has temptations to match his. Freud's famous Wolfman found himself from time to time compelled to think, "God-Shit" or "God-Swine." A young woman of 23 was shocked one day when the mental image flashed into her mind of her father and herself undressing one another and joining in a sexual embrace. From that time on, despite her desperate efforts to erase the image, it recurred with mounting intensity, and she finally fled to the hospital for help. A mother in her late thirties was tortured every time her daughter left the house by images of the child's being hit by a car. Particularly vivid was the mental picture of the little girl's body lying broken and bleeding in the gutter, and nothing she could do would exorcise the tormenting scene. A young law student had the frightening thought every time he turned on a light, "My father will die"; to allay his anxiety, he would have to touch the switch and think to himself, "I take back that thought."

In all these examples the obsessional thought refers to present or future time. In a minor variation of the theme the patient is preoccupied with a guilty dread that an action he has performed in the past has or will lead to dreadful consequences. A young man was constantly plagued every time he left his house with the fear that he had left a cigarette burning that would set the house on fire. An adolescent boy was tormented by the thought after he had masturbated that his semen had been spread about and would impregnate his mother and sisters. For days after she had kissed a boy, a young woman was obsessed with the idea that she was pregnant. A married accountant of 37 could not shake the idea from his mind that he had accidentally bumped passersby on the street or in the subway and that, as a consequence, they had fallen and been severely injured or killed.

A special form of forced preoccupation with thoughts is designated by the term "obsessive-ruminative states." As the term implies, the central feature is rumination about a topic or problem, often of a re-

ligious or abstrusely philosophical nature. The pros and cons of the questions are repetitively considered, and imponderables are weighed in a prolonged, fruitless, and inconclusive inner dialogue, filled with doubting and despair. Bunyan was an adept at such interior debate. He tells us how

...blasphemous thoughts...stirred up questions in me, against the very *Being* of God, and of his only beloved Son; as, whether there were, in truth, a God, or Christ? And whether the holy Scriptures were not rather a Fable, and cunning story, than the holy and pure Word of God?

The Tempter also would much assault me with this, *How can you tell but that the Turks had as good Scriptures to prove their Mahomet the Saviour, as we have to prove our Jesus is? And, could I think, that so many ten thousands, in so many Countries and Kingdoms, should be without the knowledge of the right way to Heaven, (if there were indeed a heaven), and that we only, who live in a corner of the Earth, should alone be blessed therewith? Every one doth think his own religion rightest, both Jews and Moors and Pagans! and how if all our Faith, and Christ, and Scriptures, should be but a Think-so too?*

Sometimes I have endeavoured to argue against these Suggestions, and to set some of the Sentences of blessed Paul against them; but, alas! I quickly felt, when I thus did, such arguings as these would return again upon me, *Though we made so great a matter of Paul and of his words, yet how could I tell but that in very deed, he being a subtle and cunning man, might give himself up to deceive with strong delusions; and also take the pains and travel to undo and destroy his fellows?*

These suggestions, (with many others which at this time I may not, nor dare not utter, neither by word nor pen,) did make such a seizure upon my spirit, and did so overweigh my heart, both with their number, continuance, and fiery force, that I felt as if there were nothing else but these from morning to night within me; and as though, indeed, there could be room for nothing else. . . .

Compulsions. In another form of the psychic phenomena, ideas and images may be present, but the central feature is an irrational impulse to some form of action. The impulse, however, remains merely an impulse and is not acted on by the patient, no matter how fearful he may be that he will lose control of his behavior. As earlier defined, this clinical manifestation is known as a *compulsion*. In yet another passage from his richly clinical autobiography, Bunyan exemplifies this symptom:

One day as I was betwixt *Elstow* and *Bedford*, the temptation was hot upon me, to try if I had Faith, by doing of some Miracle: which Miracle at that time was this, I must say to the *Puddles* that were in the horse-pads, *Be dry; and to the dry places, Be you the Puddles.* And truly, one time I was going to say so indeed; but just as I was about to speak, this thought came into my mind, *But go under yonder Hedge and pray first, that God would make you able.* But when I had concluded to pray, this came hot upon me, That if I prayed, and came again and tried to do it, and yet did nothing not withstanding, then be sure I had no Faith, but was a Cast-away and lost. Nay, thought I, if it be so, I will never try yet, but will stay a little longer.

So I continued at a great loss; for I thought, if they only had Faith, which could do so wonderful things, then I concluded that, for the present, I neither had it, nor yet, for time to come, were ever like to have it. Thus I was tossed betwixt the Devil

and my own Ignorance, and so perplexed, especially at some times, that I could not tell what to do.

The modern day patient is perhaps more prosaic and less articulate than his Puritan predecessor, but he has, nonetheless, quite similar symptoms. He may feel the impulse to jump out of the window of a high building or to throw himself in the path of a moving train or car. His aggressions may be aimed at others rather than himself. A man constantly had the urge to push people down elevator shafts and avoided elevators lest his temptations be too strong. A young mother was beset with the impulse to beat her infant baby when he cried and at times had the urge to pick him up by the heels and bash his head against the wall. Others are driven by impulses to stab those around them with knives, scissors, or other sharp objects. The aggressive compulsion need not be physical but may be an urge toward an act of defiance or one that is socially inappropriate or shocking, such as shouting obscenities in church. Although these impulses do not lead to action, they frequently arouse strong anxiety in the patient and cause him to avoid the situation or object that evokes the impulse. Such an avoidance reaction is shared by individuals with compulsions of this sort and by those with typical phobic reactions.

Behavioral manifestations. When the obsessive-compulsive phenomena are psychic, no one would know that there was anything unusual going on in the patient unless he chose to divulge his purely private experiences. The situation is obviously quite different in the case of compulsive acts, where the phenomena are behavioral and usually visible to anyone who is there to see them, although often out of shame or embarrassment the patient will try to restrict his actions to those times when he is alone. There are two principle types of compulsive acts: (1) those that give expression to the primary urges or impulses that underlie them and (2) those that are a reaction to or an attempt to control the primary impulse.

Compulsive acts that simply and directly express the underlying urges are rare, although they do occur, as in the case of a young single woman who felt compelled to keep her diaphragm on top of her Bible in her bureau drawer, and did so. In most instances the compulsion expressing an urge remains in the psychic sphere and is not visible in action, except when it contaminates a compulsive act that began as a controlling maneuver.

In general, compulsive acts are, or at least begin as, attempts to control or modify a primary obsession or compulsion, either because the patient fears the consequences of his obsession, or because he is afraid that he will not be able to control his impulse. Such defensive compulsive acts are employed to contain, neutralize, or ward off the feared results of concurrent obsessions and compulsions, or they

may represent a desire to make sure that some action in the past has not led to disaster.

Compulsive acts of the first type were particularly prominent in Borrow's account of the young tree climber, whose actions were all aimed at preventing his mother's death, which he obsessively feared. The same motivation was apparent in the law student who had to touch the light switch after turning it on to counteract his thought that his father might die.

Bunyan tells us that in attempting to resist the evil thought to sell Christ

...by the very force of my mind, in labouring to gainsay and resist this wickedness, my very body also would be put into action or motion by way of pushing or thrusting with my hands or elbows, still answering as fast as the destroyer said, *Sell him; I will not, I will not, I will not, I will not; no, not for thousands, thousands, thousands of Worlds.* Thus reckoning lest I should, in the midst of these assaults, set too low a value of him, even until I scarce knew where I was, or how to be composed again.

A man in his thirties, fearing lest he push a stranger off the subway platform in the path of an oncoming train, was compelled to keep his arms and hands glued rigidly to his sides. The same patient, obsessed with the idea that dirt from his hands might harmfully contaminate others, often spent hours compulsively washing himself. The elaborate, ritualized preparations that some patients are compelled to carry out on going to bed may be a conscious attempt to control an impulse to masturbate.

Certain compulsive acts, as has been mentioned, are motivated by a guilty dread on the part of the patient that he has done something bad and are designed to atone for his sins or to reassure him that things are, in reality, all right. The patient who kept his arms tight against his sides was on one occasion obsessed with the idea that, despite his stringent precautions, he had, after all, inadvertently knocked someone off the subway platform. He struggled with himself for weeks to dispel what he rationally knew was a foolish notion but was at length compelled to call the transport authority to reassure himself that there had not in fact been any such accident. The same patient was for a time preoccupied with the concern that, when he walked on the streets, he was dislodging manhole covers so that strangers passing by would fall into the sewer and be injured. Whenever he passed a manhole in the company of friends, he would be compelled to count his companions to make sure that none was missing. Another patient who was beset by the same fear, that by accidentally bumping strangers he had caused them to fall and be injured, felt compelled to return to the scene of his supposed wrongdoing to determine whether anything really had happened. He would not rest easy until he was certain that no harm had been done.

The purpose of these compulsive acts was evident to the patient or the observer or both. There are, however, compulsive phenomena the meaning of

which is obscure and can be ascertained, if at all, only by a painstaking exploration of the patient's psychic function and associations. Two commonly found compulsive symptoms often fall into this category: the compulsion to touch (as seen in Borrow's acquaintance) and the compulsion to count. A patient is frequently compelled to utter an idiosyncratic, cryptic, seemingly nonsensical word that on careful examination proves to be a highly condensed and abbreviated formula, the function of which is to ward off or neutralize an underlying impulse. Such was the nonsense word "Glejisamen" uttered by Freud's Ratman. On analysis the word proved to be composed of the initials of the first words of several short protective prayers prefixed to "Amen."

Those compulsive acts that have already been examined have been relatively simple, straightforward, usually meaningful single actions. At times, however, the patient's compulsive behavior may become highly elaborate and repetitively stereotyped in the form of compulsive rituals. On going to bed, for example, the process of taking off one's clothes must conform to an exact pattern; they must be placed exactly so on a chair or hanger; the sequence of washing, voiding, and brushing one's teeth is rigidly adhered to; the furniture in the bedroom, the bedclothes, and pillow must be symmetrically arranged. Any deviation in the pattern arouses anxiety in the patient, and he must be certain that all has been done properly before he can drop off to sleep. Often the same process must be carried out in reverse when he gets up in the morning and prepares for the day.

A man of 32 who worked on the assembly line of an electronic concern developed the following compelling ritual: before he could solder one piece to another, he had to tap the work bench three times with his left hand and three times with his right, followed by stamping three times on the floor with his left foot, then with his right. For a time this merely slowed down his work performance, and he was able to continue his job. Gradually, however, an element of doubt crept into his mind. After completing a sequence of tapping and stamping, doubting thoughts would flash into his consciousness: "Did I really do it right? Am I sure that I tapped three times? Did I stamp with my left foot first?" In response to these questions, he had to repeat the ritual to make sure it was perfectly done; but, the more he performed it, the greater his doubt. Before long, almost his entire working day was taken up by his rituals, and he was forced to leave his job.

The element of doubt manifested by this last patient has been evident in some of the clinical examples already examined, especially in Bunyan's confessions and in the phenomenon of obsessional rumination. It is, indeed, often found in connection with compulsive acts performed to ward off the feared consequences of obsessional ideas and compulsive urges. These fail to be dissipated or quieted by the compul-

sive acts employed against them, and the patient is never sure that he has contained his ever pressing impulses, that they have not somehow leaked out inadvertently into his behavior or in some other way created the trouble he is at such pains to avoid. And often the patient's concerns are justified. Despite the best of his cautious intentions, the underlying impulse may manifest itself in the very process of carrying out defensive compulsive acts and may distort these actions so that they achieve or at least seem to the patient to achieve exactly the effect they are designed to prevent. One of Freud's patients, for example, spent hours saying simple prayers designed to combat obsessional ideas of harm coming to others, but when he wished to say, "May God protect him," he would find the words coming out, "May God *not* protect him."

A woman in her late thirties was obsessed with the idea that her excreta might offend or harm other people. During a stay on a psychiatric ward she spent long periods of time washing in the communal bathroom after voiding or defecating. She would throw her skirts and petticoats over her head and scrub the entire lower part of her body, especially her genitalia and anus. Then the toilet seat and walls of the toilet stall would be scoured with soapy water. Finally, her hands would be mercilessly scrubbed, often to the point where they were red and raw. When she finished her ablutions, she and the toilet were spotlessly clean, but the rest of the bathroom was a shambles—dirty, soapy water still filling the wash basins, the floor awash with sudsy water, and countless soggy paper towels thrown about with complete abandon, littering the fixtures and floor. In the end, the other patients on the ward were infuriated by the amount of time the patient spent in the bathroom and by the filthy mess she created by the very process that was designed to control her dirtiness and to protect the other people around her.

Character traits. Much has been written about the nature of obsessive-compulsive character traits, and the person who exhibits them has been described variously in the literature as having an obsessional character, an anal personality, or an anancastic personality. All these terms refer to a group of behavioral phenomena characterized by control, in contrast to the hysterical personality, where a tendency toward a flamboyant expression of fantasies and feelings predominates.

As he is observed and experienced by others, the individual with obsessional personality traits is seen to exercise a marked measure of control over both himself and his environment. He is cautious, deliberate, thoughtful, and rational in his approach to life and its problems and may appear dry and pedantic when these traits are carried to an extreme. He emphasizes reason and logic at the expense of feeling and intuition, and he does his best to be objective and to avoid being carried away by subjective

enthusiasms. As a result, he often appears sober and emotionally distant, but at the same time he is found to be a person with great steadiness of purpose, reliability, and earnest conscientiousness. What he lacks in flexibility, imagination, and inventiveness, he makes up for in a conservative cautiousness about change that provides a salutary balance to the transient but violent enthusiasms of others.

In addition to his need to restrain himself and his emotions, he likes to feel that he has control of his environment as well. He subscribes to the dictum, "A place for everything, and everything in its place," and neatness, orderliness, and tidiness characterize his arrangement of space, as does punctuality his management of time. He likes people and institutions that behave predictably and conform to his predilections. He can be surprisingly obstinate and stubborn when challenged or contradicted. He sets great store by justice and honesty, has a strong sense of property rights, manages his own resources with frugality, and does not easily part with his possessions.

It needs to be emphasized that the presence of obsessional character traits is not in itself an indication of abnormality. On the contrary, they may be a great asset to their owners, and society owes much of its stability and its efficiency to its more obsessional members. It is only when such traits are carried to an extreme or when the balance between control and impulse expression leads to paralysis that they become a liability. Furthermore, there is no necessary connection between obsessional character traits and obsessive-compulsive symptoms. The incidence of the obsessional personality in the population at large is not known with any accuracy, but it is far more common than the obsessive-compulsive reaction, which is relatively infrequent. Most people with obsessional character traits do not develop an obsessive-compulsive reaction, and the latter does *not* always arise from the soil of the obsessional personality. Indeed, in some 20 to 30 per cent of patients with obsessive-compulsive reactions, there is no history of prior obsessional character traits.

Mental status. The most obvious disturbances in behavior in patients with obsessive-compulsive reactions occur in those whose illness is characterized by compulsive acts. The elaborate rituals or stereotyped movements, if they are performed in the public eye, cannot be missed by the observer. Moreover, if the patient will divulge the nature of his inner obsessional thoughts and compulsive urges, these are often seen to be irrational and bizarre. At the same time it can be observed that the patient retains full insight: he recognizes that his pathological thoughts and impulses are quite unreasonable and alien to the mainstream of his personality. Apart from these obviously abnormal phenomena, there is little else that on casual examination will appear to be unusual. As one observes more closely and perceptively, however, one becomes aware of behavioral elements, most of which

are related to obsessive-compulsive character traits, although they are not invariably present in the obsessive-compulsive patient.

The patient is often neatly dressed and groomed, sometimes with almost fussy tidiness. Reserved and formal in manner, he sits before the examiner stiff and prim, showing little in the way of gestures or facial expression, and his movements are careful and precise without spontaneity or easy grace. The controlled quality of his posture and movement is matched in his speech. His sentences may be long and involved and full of stilted phraseology or stereotyped expressions. He characteristically balances one clause against another—"Whereas . . . , yet . . ."; "On the one hand . . . , on the other" He says the same thing several times in succession, introducing each paraphrase with "Again" or "In other words" or "To put it in another way." He qualifies any direct statement with words like "maybe," "perhaps," or "possibly," to avoid sounding dogmatic or to escape being caught in an error. He relies heavily on rational argument and talks in highly intellectual and intellectualized terms about the simplest matters, interlarding his pronouncements with the copious and needless interjection of words or phrases like "indeed," "to be sure," "be that as it may." He recounts events in infinite detail, with a painful attention to accuracy and completeness, sometimes referring to written notes he has brought with him. Often it turns out that he has rehearsed what he plans to say in the interview for hours before it takes place and has tried to anticipate every move and question the interviewer may introduce. Any attempt to hurry him along, to cut him short, to switch to another topic is met by the patient's resistance and rigid adherence to his preconceived program of action. Evidence or expression of emotion, save possibly controlled anxiety, is at a minimum or entirely absent. If he is sophisticated about psychiatric theory, and such patients often are, he will discourse at length about his "conflicts," his "defenses," his "aggression," or his "libido." But in answer to direct questioning, he will deny having any of the feelings related to these words. His self-awareness and self-knowledge, however extensive, are entirely intellectual in nature and quite without emotional correlates.

These patterns of behavior are apparent from the start, and they tend to be maintained intact by the patient over many hours of contact with his doctor. Despite the latter's attempts to focus on and to promote the expression of emotion, the patient maintains his formality and his distance, and a meaningful, warm, affective relationship appears to develop very slowly, if it develops at all. And yet the appearances can be deceptive, for in many patients evidence of a strong dependence on the doctor can be found early in the relationship, despite their attempts to control their emotions. The patient will ask anxiously for reassurance that his obsessional impulses

have not got out of control; he will be loathe to stop at the close of the interview, and the interviewer may have to cut him short; after leaving the office, he may come back a moment later to add a piece of information he had forgotten to mention. If the doctor casually passes the patient on the hospital wards, the patient, like iron to a magnet, is irresistibly drawn to approach the doctor to ask him a question or to make a comment, following him closely as he walks along, unable to let go until the doctor almost literally has to shake him off. The adjective "sticky" applied to such patients is entirely apropos.

Course and Prognosis

Accurate statements about the course and prognosis of the obsessive-compulsive reaction are precluded by the lack of detailed knowledge of the natural history of the syndrome. The number of series in which longitudinal studies have been carried out is small, and the figures now to be presented must be considered as first approximations at best.

On first consulting a physician for their difficulty, two thirds of the patients give a history of prior episodes of obsessive-compulsive symptoms, some 10 to 15 per cent having first experienced them before the age of 10. The large majority of patients have had only one such prior attack, although a good number (roughly 30 per cent) have experienced two or three episodes. In 85 per cent of these attacks the duration was less than a year, although some attacks may have lasted 4 to 5 years.

The figures given for the prognosis vary widely from series to series, but the following general statement may be made for patients followed up for anywhere from 1 to 10 years after treatment, excluding leukotomy: some 15 per cent are well, 45 per cent are improved, and 40 per cent are unchanged or worse. Those considered improved fall into two groups: (1) patients whose symptoms have lessened to a point where they are able to work and function socially, (2) those who run a fluctuating course, often with long periods of complete remission of symptoms.

In general, it may be said that the obsessive-compulsive reaction is a chronic disorder, often following a remitting course. The prognosis is better (1) the shorter the duration of symptoms prior to the time the patient is first seen, (2) the greater the element of environmental stress associated with the onset of the disorder, (3) the better the environment to which the patient must return after treatment, and (4) the better his general social adjustment and relationships.

Pathology

There is little that can be said conclusively about pathological processes in the central nervous system associated with obsessive-compulsive phenomena. Shortly after World War I, there was considerable interest in the possibility that brain lesions might be

related to obsessive-compulsive symptoms. It was noted that some patients following Economo's disease developed behavioral disorders that often appeared to be compulsive in nature. However, these phenomena differed from those seen in the classical obsessive-compulsive reaction in that they were primarily motoric and characteristically consisted of uncomplicated, stereotyped movements without associated mental content. Furthermore, much of the disturbed behavior that has followed encephalitis in more recent times has been characterized by impulsive, immature, antisocial actions that result from a loss of control of the impulse life—quite the opposite, in other words, from the excess of inner controls that is characteristic of individuals with obsessive-compulsive reactions.

In a small series of patients, Schilder found that two thirds of them showed neurological signs pointing to basal ganglia disease, but his prediction that the careful examination of patients with obsessions and compulsions would reveal such signs in a large number of cases has not been substantiated by subsequent investigators, nor did he have pathological material to complement his clinical findings. More recently, sporadic cases have been reported in which temporal lobe lesions are associated with obsessive-compulsive phenomena. Although studies such as these are interesting and suggestive, in the vast majority of patients with obsessions and compulsions, there is no observable evidence pointing to lesions in the brain. At present the most useful and most sophisticated explanatory concepts are the psychological theories of etiology.

Etiology

History

Early theories. In the *Malleus Maleficarum*, Heinrich Kramer and James Sprenger wrote of a 15th century patient whom one of them observed:

A certain Bohemian from the town of Dachow brought his only son, a secular priest, to Rome to be delivered, because he was possessed. It happened that I, one of us Inquisitors, went into a refectory, and that priest and his father came and sat down at the same table with me. We saluted each other, and talked together, as is customary; and the father kept sighing and praying Almighty God that his journey might prove to have been successful. I felt great pity for him, and began to ask what was the reason of his journey and of his sorrow. Then he, in the hearing of his son who was sitting next to me at the table, answered: 'Alas! I have a son possessed by a devil, and with great trouble and expense I have brought him here to be delivered.' And when I asked where the son was, he showed me him sitting by my side. I was a little frightened, and looked at him closely; and because he took his food with such modesty, and answered piously to all questions, I began to doubt that he was possessed, but that some infirmity had happened to him. Then the son himself told what had happened, showing how and for how long he had been possessed. . . . When I asked him about the length of the intervals during which he had the use of his reason more than is usual in the case of persons possessed, he answered: 'I am only deprived of the

use of my reason when I wish to contemplate holy things or to visit sacred places.'... When he passed any church, and genuflected in honour of the Glorious Virgin, the devil made him thrust his tongue far out of his mouth; and when he was asked whether he could not restrain himself from doing this, he answered: 'I cannot help myself at all, for so he uses all my limbs and organs, my neck, my tongue, and my lungs, whenever he pleases, causing me to speak or to cry out; and I hear the words as if they were spoken by myself, but I am altogether unable to restrain them; and when I try to engage in prayer he attacks me more violently, thrusting out my tongue.'

For 20th century minds, the concepts of witchcraft, of devils, and of possession that fill the *Malleus Maleficarum*—of the whole paraphernalia of external, independent immaterial beings in a spiritual world—are nothing but worthless superstition and delusion. It must be remembered, however, that for men of earlier ages these were real and useful ideas. They provided an explanation for the observed phenomena and constituted a seriously conceived theory based on observable facts. As the 17th century preacher Joseph Glanvil wrote in the introduction to his *Sadducismus Triumphatus*, a volume devoted to the proof of the existence of witches:

Whether Witches are, or are not is a Question of Facts: For it is in Effect, whether any Men or Women have been, or are in Covenant with evil Spirits, and whether they, by the Spirit's Help, or he on their Account, performs such or such things.... Matters of Fact can only be proved by the immediate Sense, or the Testimony of others, Divine or Human. To endeavour to demonstrate Fact, by abstract Reasoning and Speculation, is as if a Man should prove, that Julius Caesar founded the Empire of Rome, by Algebra or Metaphysics.

It is evident that Glanvil eschews logic chopping and deductive ratiocination. For him, the existence of witches is to be determined by observation. Although the modern scientist would not subscribe to Glanvil's reliance on divine testimony, he can find himself quite at home in the strictly empirical approach that Glanvil takes to his subject matter.

By the 19th century, of course, the climate of opinion had radically changed. Scientific theories no longer invoked sentient, purposeful spiritual beings as causal factors but relied on explanations that involved impersonal, measurable natural forces acting mechanically on material objects. This change is reflected in the language used by George Borrow in the case history quoted earlier. Although he does make passing reference to a "demoniac influence," Borrow's vocabulary is otherwise quite different. He speaks of "thoughts," "feelings," "impulses," "anxiety," "nervous feelings rioting within," "a mysterious dread." There is no talk of devils, witches, or possession by spiritual beings. His concern is only with mental events—thoughts, feelings, and impulses—that are contained within the confines of the individual's mind and body. The explanation of the phenomena has been shifted from external supernatural forces to a consideration of the inner workings of the human mind. Demonology has been replaced by psychology—a natural science.

Borrow was, of course, a layman, but the psychologists who were his contemporaries as well as those who followed him in succeeding decades were working within the same scientific frame of reference in their attempts to understand and explain the wide spectrum of normal and abnormal mental phenomena. Obsessions and compulsions had a significant place among the concerns of the clinicians. Two different and rival explanations were offered concerning these symptoms: (1) The primary disturbance lay in a not clearly specified defect in intellectual functions, leading to difficulties in making logical decisions and to an exaggerated preoccupation with certain ideas out of proportion to their importance. (2) The basic problem was a disturbance in the function of the emotions, especially anxiety, which, escaping control and becoming attached to an idea, forced it with undue intensity and persistence onto the patient's conscious attention.

Janet's theories. In 1903 was published Pierre Janet's two-volume work, *Obsessions and Psychasthenia*. From a wide range of clinical observations, Janet deduced a theoretical scheme that included many of the ideas of his predecessors and introduced certain concepts he considered basic to an understanding of the facts. For Janet the central disturbance lay in a pathological diminution of mental energy. As a consequence, there resulted a disintegration of the normal organization of mental functions, leading to a failure of the highest of these functions—those of will and attention, which enabled the individual to control his thoughts and actions, to perceive himself and his environment *realistically*, and to perform actions appropriate to that correctly perceived reality. When these higher mental functions were impaired or destroyed, lower, subsidiary, more primitive mental functions—essentially the emotions with their mental, visceral, and motoric correlates—escaped from control. Without regard for reality, they made their appearance in a chaos of mental anarchy. The lower functions operated with energy that was normally and naturally theirs and with an additional quantum of energy derived from the higher functions that were no longer operable once the whole psychic apparatus had fallen apart.

With this theoretical model, Janet attempted to provide a systematic explanation of a variety of clinical symptoms that he felt were related—the subjective sense of mental fatigue and depression (psychasthenia), obsessions, compulsive urges and acts, phobias, and anxiety attacks. Certain concepts contained in Janet's earlier theories concerning hysteria are to be found in this formulation, in particular the notion, basically a physiological one, that a diminution in energy leads to a disorganization of integrated personality structure, with a resulting autonomous, uncontrolled functioning of subsidiary mental functions. What is interesting is that the idea of

unconscious mental functioning, which had a place in Janet's explanation of hysteria, plays no part in this later theoretical scheme. The entire theoretical model hinges on a quantitatively and mechanistically conceived lowering of mental energy. Although attempts were made to account for this diminution as a result of emotional shock, physical illness, or hereditary degeneracy, its genesis was not satisfactorily explained.

By ignoring the concept of unconscious mental processes, Janet and those who preceded him compromised their capacity to illuminate the genesis of obsessive-compulsive phenomena. In some ways the earlier demonological theories provided a more complete and a more dynamic explanation of the symptoms than the more naturalistic hypothesis of the 19th century. The earlier observers, confronted with the directly observable central feature of the obsession or compulsion as an insistent idea or urge imposed on an individual by some force seemingly outside himself, took these observations at face value. The compelling force that was *experienced* as external was, they argued, *in reality* external in the form of the devil or some related spiritual being. (The Ptolemaic cosmology took the same literal approach to physical phenomena: Since the sun and stars were observed to revolve around the earth, it was assumed that they did in fact do so.) The scientific climate of opinion in the 19th century forbade belief in demons, but the facts persisted.

Psychoanalytic theories. It remained for Freud, by exploiting the possibilities offered by the concepts of the unconscious and of psychological conflict, to devise a theory of the obsessive-compulsive reaction that would explain it in terms of its psychogenetic roots in the early phases of childhood development and of the psychodynamic factors important in the production of its symptoms. His point of departure lay in his early recognition that the difference between hysterical and obsessional symptoms rested on a difference in the psychological mechanisms that led to their formation. Although his earliest formulation was in many ways incomplete, it provided a beginning from which he and his co-workers gradually evolved the theoretical explanation that is widely accepted today. In what follows the current theory will be discussed with respect to (1) psychodynamic factors, (2) psychogenetic roots, and (3) the central role of regression in the production of the disorder.

Psychodynamic factors. There are three major psychological defensive mechanisms that determine the form and quality of obsessive-compulsive symptoms and character traits: isolation, undoing, and reaction formation.

Isolation. Isolation is a defense mechanism that protects an individual from anxiety-provoking affects and impulses. Under ordinary circumstances an individual experiences in consciousness both the affect and the imagery of an emotion-laden idea, whether

this be a fantasy or the memory of an event. When isolation occurs, the affect and the impulse of which it is a derivative are separated from the ideational component and pushed out of consciousness.

If isolation is completely successful, the impulse and its associated affect are totally repressed, and the patient is consciously aware only of the affectless idea that is related to it. For example, a patient reported one day in a therapeutic hour that she had had a fantasy of her doctor falling from a seventh story window. In her mind's eye she had seen him hit the pavement and had then observed his crumpled body with jagged bone fragments sticking through lacerated compound fractures and blood oozing from his nose and mouth. "I infer from this," she said in a flat, emotionless tone of voice, "that I am angry at you, but I don't have any feeling like that." This fantasy could not be considered a symptom: it was transient and caused the patient no emotional distress. The defense of isolation had functioned successfully.

Sometimes, however, the isolation is less effective, and the total quantity of energy accruing to the impulse and its associated affect cannot be completely restrained by the repressing forces from entering the patient's consciousness. He experiences a partial awareness of the impulse without fully recognizing its meaning or significance. He may, for example, have frightening and compelling murderous impulses toward strangers or casual acquaintances; here, the impulse makes itself felt as an urge to violent action, but the direction of the urge is displaced from the true object of the patient's aggression to other people in his environment. At the same time, isolation exerts a partial effect by rendering the patient unaware that he is angry, so that he is puzzled, mystified, and disturbed by his compulsions. Or he may be obsessed with images and thoughts of violence and destruction; here again, the energy from the partially repressed impulse gives the thoughts their compelling quality, and the continuing partial functioning of the mechanism of isolation prevents the patient from an awareness that beneath the surface he harbors intense aggression.

The processes that have just been described can be looked at from two points of view: (1) Clinically, the patient's consciously experienced mental events are seen as obsessive and compulsive symptoms. (2) Psychodynamically, they are viewed as a psychological conflict between impulses and controlling defensive forces. The concept of psychological conflict is based on the notion that an undischarged impulse constantly exerts pressure on the individual both for conscious recognition and for discharge. The defenses that operate to control it must, therefore, exert a constantly opposing energy if the impulse is to be maintained under control. That is, a dynamic equilibrium of opposing psychic forces is established. Such an equilibrium may be relatively stable and persistent, as in the case of successful isolation (where no

symptoms are evident) or as in the case of a conversion reaction (where persistent and stable somatic symptoms are apparent). Conversion, in fact, appears to be in one sense a highly effective, if ultimately pathological, defense mechanism. The energy of the impulse is almost entirely bound by the somatic symptom, and the patient is spared the experience of unpleasant affects, as is manifested clinically in the phenomenon of *la belle indifférence*. In the case of the defensive mechanisms operating in the obsessive-compulsive reaction, the situation is different. In this syndrome the equilibrium often proves to be less stable, and the impulse constantly threatens to break through the controls the patient imposes on it. In fact, this tendency of the underlying impulse to escape its bonds is a salient characteristic of the obsessive-compulsive reaction.

Undoing. In the face of this constant threat of the impulse to escape the primary defense of isolation and break free, further secondary defensive operations are required to combat it and to quiet the anxiety that the imminent irruption of the impulse into consciousness arouses in the patient. In the patient who was obsessed by the thought that, by bumping passersby, he had knocked them down and injured them, it was ultimately discovered that he harbored real and angry wishes to push people out of his way when he walked down the street, a conscious awareness of these impulses emerging into the patient's mind in the course of his free associations. However, when he had initially described his obsessional thought, he strongly denied any such urges and was genuinely unaware of any such angry feelings within himself. Nonetheless, the obsessional thought made him very anxious and guilty, just as if he really did have such urges and as if he had in actuality harmed other people. The only way he could reassure himself and quiet his anxiety was by returning to the scene of his supposed crime to make sure that everything was all right. Despite the fact that he knew the whole thing was absurd, he was compelled to this action and remained acutely anxious until he had performed it. The compulsive act, in other words, was secondary to the original obsessional thought.

The anxiety-allaying function of compulsive acts was noted earlier when the clinical aspects of these phenomena were being described. What should be observed here is that the compulsive act constitutes the surface manifestation of a further defensive operation aimed at reducing anxiety and at controlling the underlying impulse that has not been sufficiently contained by isolation. A particularly important secondary defensive operation of this sort is the mechanism of undoing. As the word suggests, it refers to a compulsive act that is performed in an attempt to prevent or undo the consequences that the patient irrationally anticipates from a frightening obsessional thought or impulse. This mechanism was clearly at work in the patient who, whenever he turned off a

light and obsessively thought, "My father will die," would be compelled to turn around, touch the switch, and say, "I take back that thought." With this act he was literally undoing the damage that he feared would result from the initial thought, which arose from an underlying aggressive impulse toward his father.

Reaction formation. Both isolation and undoing are defensive maneuvers that are intimately involved in the production of clinical symptoms. Reaction formation, a third mechanism closely associated with the obsessive-compulsive reaction, results in the formation of character traits rather than symptoms. As the term implies, reaction formation involves manifest patterns of behavior and consciously experienced attitudes that are exactly the opposite of the underlying impulses. Often these patterns appear to an observer to be highly exaggerated and at times quite inappropriate.

A woman of 32, the mother of three small children, revealed that she had had frightening impulses to kill her two older sons. Describing her relationship to her children she said: "I think of my children all the time... I can't punish them. It hurts me to punish them. I just can't do it. I can't face up to hitting them. Even my husband, he'll tell you—even my sisters say the same thing about me. I'm too good to them. I let them run my life, and yet I can't help it... I can't go out unless I buy them a toy... I never went out or anything. I never left them with anybody. I always stayed in the house. Since I had my first boy, anywhere I went I took him with me... I never had any time away from my children. Since I had my first boy [4 years previously], I've never had no time away from them—no time at all." Her habitual and persisting pattern of solicitousness and kindness concerning her children, which even her husband and sisters recognized as being inappropriately exaggerated, was a defensive maneuver designed to control her underlying aggressiveness to them, which was manifest in her murderous fantasies of killing them. Reaction formation is responsible for many of the personality traits characterized by control that go to make up the obsessive-compulsive character.

Psychogenic factors. One of the striking features of patients with obsessive-compulsive neurosis is the degree to which they are preoccupied with aggression or dirt, either overtly in the content of their symptoms or in the associations that lie behind them. This and other observations have led to the proposition that the psychogenesis of the obsessive-compulsive disorder lies in disturbances in normal growth and development related to the anal-sadistic phase. Normally, the impulses associated with the anal-sadistic phase are modified in the oedipal and succeeding stages of development. If, however, disturbances occur in this developmental process, unmodified anal-sadistic impulses remain as components of the individual's psychological makeup.

Ordinarily, these will be controlled and disguised by character traits and may not significantly affect the individual's functioning in the ordinary course of daily living. They remain, however, as fixation points, which may under certain circumstances give rise to difficulties.

Regression. The concepts of disturbances in development and fixation points permit an understanding of the process of regression. In the classical analytic theoretical formulation, regression is the central mechanism in the formation of the obsessive-compulsive reaction and determines that an individual will develop that disorder rather than a conversion reaction. According to psychoanalytic theory, in the conversion reaction the individual *represses* oedipal genital libido, the energy from this undischarged impulse being then *converted* into somatic symptoms. In the obsessive-compulsive reaction, something different occurs. As with the hysterical patient, the obsessive-compulsive patient may begin with a conflict over the oedipal genital impulse, when, for example, this is aroused by an environmental stimulus. However, instead of *repressing* and *converting* this, he employs a different maneuver to avoid the anxiety associated with the genital impulse. He abandons the genital impulses and *regresses* to the earlier anal-sadistic phase of psychosexual development. The return to that earlier stage is facilitated by the fixation points that have remained from the distortions that occurred during his childhood development. By giving up genital urges, the patient is no longer confronted with the conflicts and problems resulting from these urges.

But he has jumped from the frying pan into the fire. As a result of the regressive movement of psychic energies, all the anal-sadistic impulses from the earlier phase of development are reinforced, augmented, and strengthened. Now the pressure of reactivated anal and aggressive impulses toward discharge in behavior arouses new anxieties and new conflicts and requires new defensive operations. Previously, before the regression occurred, reaction formations had been sufficient to control and modify the manageable amount of anal-sadistic energy in the personality structure. Now, with the amount of that energy dangerously increased by the regressive return of energies flowing from the abandoned oedipal position, emergency measures are needed to control the heightened impulses toward anal-sadistic behavior. Prominent among these emergency measures are isolation, undoing, and displacement. As has been seen, these defenses in conjunction with the constantly pressing impulses lead to the appearance of obsessive-compulsive symptoms. And the mechanism of regression sets the stage for the emergence of these symptoms in the form of an obsessive-compulsive reaction.

Psychological results of regression. According to the theoretical model just described, regression causes

an alteration in the quality of the energy with which the psychic apparatus has to deal and in the nature of the defenses controlling it. Three further changes occur in psychic functioning as a result of regression: ambivalence, the emergence of magical thinking, and alterations in the superego.

Ambivalence. Ambivalence is the direct result of a change in the characteristics of the impulse life. It is an important feature of the normal child during the anal-sadistic developmental phase—that is, toward the same object he feels both love and murderous hate, sometimes seemingly simultaneously; at least, one emotion follows the other in such rapid alternation that they appear temporally to exist side by side. In the normal course of development much of the aggression is neutralized, and what remains becomes a desire to win out over the other person rather than to destroy him. As a result, in a mature person, love for the object is dominant, and aggression plays a minor role. When regression occurs, there is a return to the earlier level of functioning, in which ambivalence is a characteristic mode of feeling. Thus, one finds the obsessive-compulsive patient often consciously experiencing both love and hate toward his object. This conflict of opposing emotions may be seen in the doing-undoing patterns of behavior and the paralyzing doubt in the face of choices that are so frequently found in individuals with this emotional disorder.

Magical thinking. In the phenomenon of magical thinking, the regression uncovers earlier modes of thought rather than impulses—that is, ego functions as well as id functions are affected by regression. Inherent in magical thinking is the phenomenon of the omnipotence of thought: the individual feels that, merely by thinking about an event in the external world, he can cause that event to occur without intermediate physical actions. It is this that makes merely having an aggressive thought so frightening to obsessive-compulsive patients. For example, in the young man who had the thought "My father will die" when he turned off a light, there was an anxious concern that his father really would die because of his thought. As has been seen, to undo the consequences of his thought, the patient would compulsively touch the light switch and take the thought back. Here was more magic, partly in the realm of thinking but also in the form of a ritual, a magical act—the touching—that in itself could have no effect on events but was endowed by the patient with unrealistic powers of prevention.

One recognizes in these phenomena a striking similarity to the incantations and rituals that are central to organized magic in all ages and cultures. And one can see the same modes of thinking in the mental processes of primitive peoples, who fear the evil thoughts of others and ward off the bad consequences of such thoughts by apotropaic formulas or who try to influence natural forces (e.g., rain, fertility)

by sympathetic magic. The same kind of magical thinking can be seen in children's rituals and games and fears, which at times reach a degree that is suggestively pathological. For example, a patient of the Swiss psychologist Flournoy described the following episode that occurred in her childhood:

One of my earliest memories concerns my mother. She had been sick in bed for several weeks, and one of the servants told me that she was going to die in several days. I must have been four or five years old. My most cherished possession was a little toy horse made of brown wood, covered with real hair, with a bridle and saddle that I could put on and off as I wished. The horse was kept in a little stable in the hall. I would stubbornly refuse to say my prayers by my bed because Mama was not there to hear them. Instead I began to pray to the horse, kneeling before the little stable and reciting very quickly, without in the least understanding them, the few German phrases of our evening prayer. I was certain that my mother's recovery depended on the faithfulness of my prayers. When her recovery was slow in taking place, a curious thought arose in my mind: that I must sacrifice my horse in order for my mother to get well. The deed was not done all at once, and it cost me dear! I began by throwing the bridle and saddle in the fire, thinking that I might keep the horse when it was thus denuded. I don't remember the exact sequence of events, but I know that with great sorrow I finally broke my horse into little pieces, and when a few days later I saw my mother up and about, I was for a long time convinced that my sacrifice had mysteriously cured her.

Because it occurs both in less civilized peoples and in children, magical thinking is often considered to be a primitive form of mental functioning. The word "primitive" has here a temporal connotation, referring to the fact that it appears early in the evolution of the race or the development of the individual. The theoretical term "primary process thinking," of which magical thought is a manifestation, has the same temporal implication. It is well to remember, however, that such primitive modes of thinking are never entirely eradicated from mental functioning, no matter how mature the individual. They are merely layered over and controlled by more rational and realistically oriented thinking, and they easily reappear when a man dreams, creates, or suffers a pathological regression.

Changes in the superego. The standards and ideals of the mature individual are generally within the limits of potential achievement, and for the most part he lives at peace with his conscience, which pricks him only when he has clearly violated his ethical principles. In the patient with an obsessive-compulsive reaction, the situation is quite different. The number and range of mental and behavioral activities that are taboo are markedly increased, the patient has a heightened self-awareness and self-criticalness, and he becomes harsher in his self-judgments. This is evident in his obsessional concerns over harming or defiling others, in his constant guilty anxiety over what he may have done, and in his incessant need by ritual and compulsive acts to prevent, control, and undo the effects of his forbidden thoughts and impulses. These pathological features can be found to

a certain degree in nonsymptomatic individuals with obsessive-compulsive character traits, but they become markedly exaggerated when such individuals develop a clinical obsessive-compulsive reaction. In the latter case there has been a regression to developmentally earlier stages of the infantile superego—sometimes called the "archaic superego"—the harsh, exacting punitive characteristics of which now reappear in the mental functioning of the neurotically ill adult.

In summary, the psychoanalytic theory of the obsessive-compulsive reaction ascribes the appearance of symptoms to a defensive regression of the psychic apparatus to the preoedipal anal-sadistic phase, with the consequent emergence of earlier modes of functioning of the ego, superego, and id. These factors, along with the employment of specific ego defenses (isolation, undoing, displacement), combine to produce the clinical symptoms of obsessions, compulsions, and compulsive acts.

Learning theory. Practitioners of behavior therapy have evolved techniques of treatment based on the application of the concepts of learning theory to the development of neurotic symptoms. The concern of learning theorists with pathological behavior has been focused primarily on the phobias, the prominence of displacement and avoidance mechanisms in these phenomena lending themselves most readily to an explanation by the learning theory concepts of avoidance conditioning and learning through drive reduction. Very little has been written about the production of obsessive-compulsive symptoms, and the primary attention in the case of this neurotic syndrome has been on the formation of compulsions.

According to learning theory, the obsession represents a conditioned stimulus to anxiety. Because of an association with an unconditioned anxiety-provoking stimulus, the originally neutral obsessional thought gains the capacity to arouse anxiety; that is, a new mode of behavior has been learned. The compulsion is established in a different way: the individual discovers that a certain action reduces the anxiety attached to the obsessional thought. The relief brought about when the anxiety, which operates as a negative drive state, is thus reduced by the performance of the compulsive act reinforces that act. Gradually, because of its usefulness in reducing a painful secondary drive (the anxiety), the act becomes fixed into a learned pattern of behavior.

It is apparent that learning theory provides useful concepts for explaining certain aspects of the obsessive-compulsive phenomena—for example, the anxiety-producing capacity of ideas that are not necessarily frightening in themselves and the establishment of compulsive patterns of behavior. Furthermore, the theory gives a rationale for treatment techniques that are aimed at symptom removal. But in its present form, learning theory leaves many questions unanswered, such as the reason for the obsessional pre-

occupation with ideas that provoke anxiety (one would expect an avoidance of them), the magical quality of the thought processes in the obsessive-compulsive phenomena, and the special prominence of ideas concerning dirt and aggression. At the present time, despite the many gaps and areas of confusion in its formulations, it is the opinion of the author that the psychoanalytic theory provides the most useful, complete, and systematic explanation of the clinical syndrome.

Differential Diagnosis

Generally speaking, the descriptive and structural characteristics of obsessive-compulsive *symptoms as symptoms* generally permit one to differentiate them from other psychogenic symptoms, such as depression, conversion phenomena, and phobias. When, however, one's attention turns to the obsessive-compulsive reaction *as a syndrome*, involving a consideration of the course and patterns of the symptoms in the life of individual patients, it is harder to separate it from other psychogenic disorders, especially the phobic reaction and depression. There are, of course, many patients whose illness fits tidily within the area defined by the characteristics ascribed to it, but there are frequent admixtures of features belonging to other syndromes, and the diagnostic lines cannot be sharply drawn. Although this lack of neatness and order is distressing to the obsessional clinician, it perhaps reflects the fact that psychogenic disorders are not simply the result of localized pathological lesions but are the surface manifestations of complicated psychodynamic processes and regressions to developmentally earlier phases of thought and behavior.

Conditions associated with gross disease of the brain. Obsessive-compulsive-like behavior has been described as occurring in association with temporal lobe lesions or following certain kinds of encephalitis. The facts that only a small number of such cases have been recorded and that the phenomena following encephalitis are more motoric than mental in nature indicate that neurological disease need not be a serious consideration in patients with a typical obsessive-compulsive reaction.

Psychogenic disorders. Although one assumes that there is a neurophysiological substrate to obsessions and compulsions, neurophysiological knowledge is not as yet detailed enough to provide a useful explanation for the clinical phenomena of these or other neurotic symptoms. The obsessive-compulsive reaction remains in the category of illnesses considered psychogenic. The important diagnostic task is to differentiate it from other psychogenic disorders, of which three—the phobic reaction, depression, and schizophrenia—require attention.

Phobic reaction. Some clinicians classify phobias under the heading of obsessive-compulsive phenomena, and it is often difficult to distinguish sharply

between them. In general, the phobic reaction is characterized by anxiety that harm will come to the phobic individual from an external object or situation, and the patient controls his anxiety by avoiding the object. Furthermore, the important mechanisms in phobia formation are displacement and projection, and the underlying conflicts are primarily oedipal in nature. This is, of course, in contrast to the obsessive-compulsive reaction, in which the patient fears that he will hurt others, his anxiety is controlled by compulsive acts and by the mechanisms of undoing and isolation, and the underlying conflicts are predominantly preoedipal in nature.

When the clinical phenomena fit the criteria specified for either one of these two categorizations, there is no difficulty in differentiating them. The two sharply defined categories are, however, but the two ends of a spectrum, and in between fall phenomena that partake of characteristics from both categories. For example, one patient irrationally feared and avoided elevators—not, as it turned out, because he anticipated being hurt by riding in them but because he was afraid of his impulse to push others down the shaft. A young woman with a phobia of streets was afraid of her temptation to yield to her sexual impulses. The bedtime rituals of a young man proved to be a compulsive defense against expressing genital striving through masturbation. In these three examples there is a mixture of obsessive-compulsive and phobic characteristics. It is not, therefore, possible in every instance to make a sharp distinction between phobic and obsessive-compulsive reactions.

Depression. As with the phobic reaction, there are areas of overlap in the obsessive-compulsive reaction and the syndrome of depression. Some 20 per cent of patients with depressive illness have obsessive-compulsive symptoms, and a third have obsessive-compulsive character traits, the figure being even higher if one restricts one's attention to the midlife agitated or involuntal depression that characteristically occurs in obsessional individuals.

Patients who for a period of time have manifested the symptoms of an obsessive-compulsive reaction may go on to develop a typical depression, a phenomenon that was clearly visible in Bunyan's account of his spiritual turmoil. One day, as he was struggling compulsively with his obsessional thought to sell Christ, as had been his wont for some months, he suddenly

...felt this thought pass through my heart, *Let him go, if he will!* and I thought also, that I felt my heart freely consent thereto. Oh, the diligence of Satan! Oh, the desperateness of man's heart! Now was the battle won, and down fell I, as a Bird that is shot from the top of a tree, into great guilt, and fearful despair. Thus getting out of my Bed, I went moping into the field; but God knows, with as heavy a heart as mortal man, I think, could bear; where, for the space of two hours, I was like a man bereft of life, and as now past all recovery, and bound over to eternal punishment... I felt myself shut up into the judgment to come. Nothing now for two years together

would abide with me but damnation, and an expectation of damnation.

Finally, it must be noted that some patients suffer from obsessive-compulsive symptoms episodically, with seemingly self-limiting periods of marked obsessions and compulsions alternating with periods of remission; in other words, their symptoms run a cyclic course like that which characterizes manic-depressive illness.

If one reflects on the example provided by the evolution of Bunyan's disorder from the state in which obsessive-compulsive symptoms predominated to that in which depression was paramount, one can detect a significant difference between these two conditions. In the former hope still exists. Although the evil impulses are attacking with all their forces, the individual still resists. The enemy threatens mightily, but the patient, goaded by anxious intimations of disaster, mans his defenses and maintains his standards in a precarious stalemate. In depression, on the other hand, the walls have been breached, the keep overrun, and the patient has surrendered to the besiegers. The evil has been done, the patient acknowledges his wickedness in guilty despair, and, utterly alone, he hopelessly anticipates the punishment of the damned.

A similar difference is seen in the type of object relationships manifested by patients suffering from these two disorders. The depressed patient tends to retreat from his relationships with others. It is as if the person to whom he was formerly attached were in actuality lost; the libido and aggression once invested in the object are withdrawn, and the psychic energies thus released are directed inward into the patient himself by a variety of psychological mechanisms, for example, identification, turning inward of aggression. In the obsessive-compulsive patient, on the other hand, the emotional tie to other people remains intact, but it has all the coloring of the ambivalence that is central to the obsessive-compulsive reaction.

Despite these striking differences in the structure of the symptoms, and the nature of the patient's relationships, there are areas of overlapping characteristics when one considers the entire symptom complex of these two disorders. As in the case of the phobic reaction, pure depressive disease and the pure obsessive-compulsive reaction represent the two ends of a spectrum that spans an intervening stretch of clinical states with many features shared in common.

Schizophrenia. Because of the irruption into consciousness of magical thinking, there is often a bizarre quality in the thought content of the obsessive-compulsive patient, which raises the question as to whether he is not really suffering from schizophrenia. And yet, despite this characteristic, clinical investigators have pointed out that surprisingly few patients with chronic obsessive-compulsive reactions develop a clearly defined schizophrenic psychosis. The figures run from 3 to 12 per cent and seem to be related in part to the strictness with which the initial obsessive-

compulsive episode has been defined by the investigator.

There can be no doubt, however, from the nature of the clinical evidence that there is some relationship between the two syndromes. During the developing phase of schizophrenia, especially in the acute undifferentiated form, one frequently sees transient and varying obsessive-compulsive phenomena, and these may appear intermittently during the course of a well established psychosis. Occasionally, a clearly schizophrenic episode may appear in the course of a chronic obsessive-compulsive reaction, but it is characteristically mild and transient. The direct transition of an obsessional thought into a delusion is very rarely observed.

Despite these areas of contact between the two syndromes, it must be concluded that the relationship between schizophrenia and the obsessive-compulsive reaction is a more tenuous one than that between the latter and depression or the phobic reaction. No matter how bizarre the content of the patient's obsessional thoughts or how strange his compulsive acts, he usually maintains full contact with reality and is painfully aware of the absurdity of his thinking and behavior. No matter how preoccupied he may appear to be with his symptoms, he does not retreat from his relationships with the people around him, and his affect remains appropriate. The most careful and prolonged observation of his clinical course usually fails to reveal the characteristic stigmata of schizophrenia. Indeed, the presence of a well structured obsessive-compulsive reaction seems to protect the patient from the radical personality disorganization of the psychotic state.

Treatment

Any discussion of the treatment of the obsessive-compulsive reaction must be prefaced by the reminder that the absence of good controlled studies and the paucity of information about the natural history of the disorder severely limit an evaluation of any of the therapeutic measures that have been recommended. Nonetheless, when faced with the suffering of his patient and with the often desperate situation that his symptoms may create for his family, the clinician is forced to do something in an attempt to alleviate if not cure the condition. The treatment measures described in what follows can be considered only as suggestions based primarily on clinical impressions.

Psychotherapy. There can be no doubt that patients respond to the psychotherapeutic maneuvers of the psychiatrist. It is possible, for example, to effect a complete disappearance of compulsive behavior in some patients by the simple device of informing them that the doctor will assume complete responsibility for anything that may happen as a result of their impulses. With this reassurance an occasional patient may abruptly give up a chronic compulsive ritual.

Unfortunately, the improvement usually lasts for only a few hours. The patient begins to doubt the doctor's capacity to assume responsibility and soon returns to his compulsive acts. If valueless as a definitive measure of treatment, this response shows that symptoms can be modified, however transiently, by psychological maneuvers.

It is hard, nonetheless, to make any valid generalizations about the effectiveness of psychotherapy in the management of the obsessive-compulsive reaction. Early in the development of psychoanalysis it was felt that this was the treatment of choice, since, like the conversion reaction, it was a transference neurosis and should theoretically, therefore, respond to psychoanalytic techniques. Individual analysts have seen striking and lasting changes for the better in patients with obsessive-compulsive character neuroses, especially when they are able to come to terms with the aggressive impulse lying behind their character traits. Likewise, analysts and dynamically oriented psychiatrists have observed marked symptomatic improvement in their patients in the course of analysis or prolonged insight psychotherapy.

The decision as to whether such techniques will be helpful cannot be made on the basis of the nature of the symptoms alone. In general, the more chronic and fixed the symptom pattern, the less liable the disorder is to modification by psychotherapy or, in fact, any treatment measures. As is always the case in choosing patients for insight psychotherapy, the criteria for selection depend primarily on factors other than symptoms: (1) the prominence of situational precipitating events, (2) the capacity to relate to the physician, (3) evidence of good relationships with others, (4) stable work patterns, (5) the capacity to tolerate anxiety and depression, (6) the ability to express emotion, (7) intelligence, (8) the ability to be introspective, and (9) flexibility in thinking and behavior.

Supportive psychotherapy undoubtedly has its place in the psychiatrist's armamentarium, especially for that group of obsessive-compulsive patients who, despite symptoms of varying degrees of severity, are able to work and make a social adjustment. The continuous and regular contact with an interested, sympathetic, and encouraging professional person may make it possible for the patient to continue to function by virtue of this help, without which he would become completely incapacitated by his symptoms. Occasionally, when obsessional rituals and anxiety reach an intolerable intensity, it may be necessary to hospitalize the patient until the shelter of an institution and the removal from external environmental stresses bring about a lessening of the symptoms to a more tolerable level. Nor must it be forgotten that the patient's family is often driven to the verge of despair by the patient's behavior. Any psychotherapeutic endeavors must include attention to family members through the provision of emotional support, reassur-

ance, explanation, and advice on how to manage and respond to the patient.

Behavior therapy. In recent years considerable interest has been evinced in the application of treatment techniques based on the concepts of learning theory. As opposed to traditional psychotherapeutic approaches, behavior therapists ignore the complexities of the conflicts and personality disturbances that underlie the clinical phenomena and focus almost entirely on the removal of symptoms. Behavior therapy has been applied primarily to patients with phobias, but a few cases of obsessive-compulsive reactions, reported in the literature, appear to have responded to the techniques of reciprocal inhibition and aversion therapy. The assessment of the value of these treatment measures is beset by the same difficulties that prevail in determining the effectiveness of all psychiatric treatment. The approach of behavior therapy is an interesting one, but it remains yet in the early experimental phase of its development.

Physical therapies. The role of the physical therapies in the treatment of the obsessive-compulsive reaction is limited. There are no drugs that have a specific action on the obsessive-compulsive symptoms themselves, although the use of sedatives and tranquilizers as an adjunct to psychotherapy may be helpful in cases where anxiety is excessive. Likewise, electric shock treatment and antidepressant medication appear to have no direct effect on obsessions and compulsions. But if these symptoms are secondary phenomena to a primary mood disorder, physical treatment may improve them along with the affective disturbance.

Leukotomy has been recommended by some authors as a valuable approach to the treatment of patients with obsessive-compulsive reactions. As a general rule, one wishes to avoid irreversible surgical procedures on the brain in patients with psychogenic disorders, particularly when these, as is the case with many patients with obsessive-compulsive reactions, run an intermittent course. However, there is evidence that the procedure of leukotomy can lessen the intensity of obsessions and compulsions and can diminish the suffering they engender, even if it does not necessarily improve the patient's social adjustment. On this basis, it should be considered in those patients who have a chronic, severe, unremitting obsessive-compulsive reaction that has not responded to any of the less drastic forms of treatment.

Suggested Cross References

For a more detailed account of the psychoanalytic concepts mentioned in this section, see Mack and Semrad's chapter on classical psychoanalysis (Chapter 6) in Area C, on current theories of personality and psychopathology. That same area also contains sections that present alternate viewpoints of psychodynamics. The various psychiatric disorders mentioned in this section—conversion reaction, phobia,

depression, and schizophrenia—are described more fully in Sections 23.2, 23.4, and 17.2 and 24.2, and Chapter 15, respectively. The various treatment modalities, such as psychoanalysis, behavioral therapy, and psychosurgery, are discussed in detail in Area G, on psychiatric treatment.

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24.2 NEUROTIC DEPRESSIVE REACTION

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Definition

A neurotic depressive reaction is a mood disorder characterized by lowered spirits, reduced self-esteem, self-depreciation, sleep and appetite disturbances,

and a variety of other symptoms. These symptoms most commonly include increased dependency needs or feelings of guilt or inadequacy, fatigue, restriction of interest, difficulty in concentration, and a variety of somatic complaints.

In general, this reaction is differentiated from a psychotic depressive reaction by the absence of certain endogenous characteristics and by a lesser degree of regression. The neurotic depressive suffers only a limited impairment of reality testing and of interpersonal functioning. He is still responsive to his human environment.

This sketchy definition suffices for an initial introduction to the neurotic depressive reaction. However, it implies a much more clearly delineated and generally agreed on picture of this disorder than many papers in the literature would support. It would be misleading to pretend that a consensus exists about the definition and the clinical boundaries of the neurotic depressive reaction. In fact, a vigorous dispute about the very existence of this diagnostic entity has existed throughout its history.

History

Early concepts. Kraepelin in the eighth edition of his textbook subsumed under the diagnosis of manic-depressive psychosis a number of variously named and seemingly separate types of melancholic and manic disorders. He regarded all of these conditions as “merely forms of one single disease process,” which he labeled manic-depressive psychosis. When Kraepelin spoke of a “single disease process,” he was referring to an illness that, despite its manifold symptoms, had a specific and common neuropathology, which admittedly had not yet been discovered.

In the German literature a debate promptly ensued about the alleged unity of this collection of disorders. This debate was gradually resolved in favor of the Kraepelinian synthesis. In this same literature a reactive—that is, psychogenic—type of depression was soon differentiated from manic-depressive psychosis, which was quite generally regarded as being endogenous—that is, biologically and hereditarily determined and independent of environmental stimuli. A certain amount of confusion was soon injected into the situation when it was observed that some seemingly typical cases of manic-depressive psychosis were triggered by psychological events.

In a highly provocative paper, Mapother in England in 1926 challenged the validity of the distinction between neurotic and psychotic depressions. He thought it was “a flat defiance of all relevant experience in medicine” to argue that there was no physical basis for some disorders that were termed neurotic simply because their organic basis had not yet been demonstrated. He asserted that, clinically, “neither insight nor cooperation in treatment nor susceptibility to psychotherapy” would serve to distinguish neurotic from psychotic depressions.

A heated debate promptly ensued in the British literature, mainly defending the legitimacy of this distinction. This defense was based on one or more of the following criteria: (1) spontaneous recovery in the psychotic depressions as compared with the necessity for psychotherapy in neurotic depressions; (2) the presence of remorse in psychotic depressions as compared with the alleged tendency of the neurotic to blame others for his distress; (3) differences in pre-morbid personality; (4) differences in heredity and body build; (5) the absence of diurnal variation of mood in the neurotic depressive; (6) the absence of insight in psychotic depressions; (7) the reactivity, that is, the responsiveness to environmental stimuli, in the neurotic and the absence of this reactivity in the psychotic depression.

An important turning point in this controversy occurred in 1934, when Sir Aubrey Lewis published a detailed clinical study of 61 hospitalized depressed patients and declared himself unable to identify any criteria that would distinguish neurotic from psychotic depressions. He found himself unable to confirm that the criteria of heredity, tendency to spontaneous recovery, diurnal variation of mood, insight, psychogenicity, and reactivity had any invariable or important differentiating significance.

Despite this resounding blow to the separatists, the battle was taken up again in 1940, when the validity of the differentiation between neurotic and psychotic depression was again defended, primarily on clinical grounds. Around this time, a third point of view appeared. It contended that neurotic depressions at one end of the continuum were easily distinguishable from psychotic depressions at the other end of the continuum but acknowledged that there was a borderland area where differentiation was indeed difficult if not impossible.

Much of this debate took place before the days of specific treatment for depression. Since then, persuasive arguments have been advanced in favor of the distinction by appealing to the differential responses of neurotic and psychotic depressives to specific therapeutic modalities—first to electric shock therapy, then to prefrontal lobotomy, and most recently to the new antidepressive drugs.

In the United States, Adolf Meyer, as early as 1908, expressed his impatience with German theorizing about the existence of undemonstrated brain pathology in mental disorders. He disagreed with the value of speculating about hypothetical cell alterations in psychiatric illness. He said:

To realize that such a reaction is a faulty response or substitution of an insufficient or protective or evasive or mutilated attempt at adjustment opens ways of inquiry in the direction of modifiable determining factors and all of a sudden we find ourselves in a live field, in harmony with our instincts of action, of prevention, of modification, and of an understanding doing justice to a desire for directness instead of neurologizing tautology. The conditions which we meet in psychopathology are more or less abnormal reaction types...

Steering clear of useless puzzles liberates a mass of new energy.

Present concepts. The shift of attention to types of reaction, to the impact of the environment on the individual, later supplemented by the psychoanalytic interest in intrapsychic and interpersonal psychodynamics, characterized the perspective on emotional disorders of American psychiatry. The *Standard Nomenclature* of the American Psychiatric Association, with its emphasis on the concept of reaction, embodies this attitude. Both neurotic and psychotic depressions are designated in the American Psychiatric Association *Diagnostic Manual* as, respectively, (1) neurotic and (2) manic-depressive or psychotic depressive reactions.

In British psychiatry, on the other hand, endogenous or biologically determined depressions tend now to be carefully distinguished from reactive or neurotic depressions, although the picture is somewhat confused by some writers, who include under the reactive heading cases of endogenous depression that follow obvious antecedent stress. In these instances, the term endogenous is used to refer to a specific clinical syndrome—characterized by a particular quality of depressive affect, diurnal variation of mood, early morning awakening, etc.—rather than to the cause.

In Germany and Scandinavia at the present time, manic-depressive and involutional depressive reactions are thought of as endogenous and are differentiated from psychogenic neurotic reactions. But there, too, the picture is confused, since some authors regard some cases of endogenous depression as psychogenic.

Thus, in Europe, some authorities cling to the strict definition of endogenous depressions—that is, independent of environmental factors—whereas others feel that some of the depressions they refer to by this adjective may be triggered by psychological circumstances. There is, however, considerable agreement, except among some authorities in England, that neurotic depressions are essentially different from endogenous depressions, which are regarded as constitutional, regardless of precipitating factors.

Insofar as the official nomenclatures are concerned, in Europe as well as in the United States, the separatists, despite some dissenting voices, have clearly won the debate. Neurotic or reactive or psychogenic depressions are generally distinguished from endogenous or psychotic depressions, even though the lines of demarcation are not always clear; both frequently have environmental precipitating factors.

Epidemiology

Since most neurotic depressive patients are not hospitalized, the epidemiological data for this reaction are inadequate. In addition, there are so many disagreements among experienced psychiatrists about the criteria for this diagnosis that such estimates as

do exist in the literature are open to disagreement and skepticism. Under these circumstances, it seems logical not to introduce statistics that are at best uncertain and at worst misleading.

Etiology

Depression basically represents a reduction or breakdown of self-esteem. Self-esteem, in turn, is determined by the balance of libidinal or aggressive cathexes of the self-image. For a psychoanalytic understanding of the etiology of depression, it is necessary to discuss the determinants of self-esteem, that is, the factors that determine the quality of the cathexis or the affective coloring of the self-image.

Factors affecting self-esteem. Among these factors are the following: (1) The self-image. Pathological early development of the self-representation in an unfavorable family atmosphere inevitably affects self-esteem. (2) The superego. An important element in depression is the presence of guilt, which represents the influence of the superego. Discrepancy between one's behavior and one's superego values is experienced as guilt with an accompanying lowering of self-esteem. If the superego should remain fixated in an archaic, infantile, or childish punitive form or if it should regress to this level, then the predisposition to depression is correspondingly increased. (3) The ego-ideal. The more realistic the ego-ideal, the more possible it is for the individual to attain his goals. An overly grandiose ego-ideal inevitably leads to feelings of inadequacy and conflict. (4) The ego functions. The actual abilities and talents of the individual and the smooth integration of his other ego functions determine the degree of his success in living up to the demands of his ego-ideal and therefore also determine the level of his self-esteem.

Thus, love and affection or dislike and criticism from the earliest or the most current love objects, health or sickness, the presence or absence of talents and abilities, success or failure, high standards and conscientiousness, or low expectations and moral indifference all have an effect on one's self-esteem.

Self-image. The self-image is a concept that refers to the psychological (endopsychic) representation of one's bodily and mental self. The synonymous terms "object image," and "object representation" are analogous to self-image and self-representation. Both self-images and object images are conceptualized as being cathected with libidinal or aggressive or neutralized energy. If one's self-image is highly libidinally cathected, one's self-esteem is said to be high.

According to the psychoanalytic model, the gradual acquisition, development, and consolidation of self-representations and object representations are important functions of the ego. One's self-image derives initially from sensations barely distinguished from perceptions of the gratifying part object, the breast, and consequently tends to fuse and become confused with object images. This phase of primary

identification represents a developmental period when the infant is theoretically unable to distinguish objects from itself, when the boundaries between self-images and object images are absent or rudimentary and fluctuating because of the immaturity of the perceptual and cognitive processes.

The self-image is at first not an enduring, firm psychic unit but is made up rather of a constantly changing series of self-representations that reflect the incessant, natural fluctuations of the infantile mental state. In the course of normal development, these early, fluctuating self-images are gradually integrated, organized, and unified into an enduring and consistent self-representation; firm and stable boundaries are established between the self-images and object images; and these images become optimally cathected with libidinal energy. Phrased somewhat differently, in ideally normal development one's identity becomes firmly established, the individual becomes able to differentiate himself clearly from others; he develops an optimal and enduring level of self-esteem; and he acquires the capacity to relate well to others.

Parental influences. For all this to occur, the child requires an atmosphere of parental affection and interest in which he is exposed to tolerable frustrations in manageable doses. An atmosphere in which he is overgratified unduly prolongs the mother-child tie, retards the formation of clear boundaries between self-images and object images, and delays the development of independence and realistic perceptions of the outside world.

As the child develops, an affectionate, accepting parental atmosphere tends to produce a basic self-confidence in one's own lovability; that is, it produces a self-image healthily endowed with self-esteem, representing the reflected appraisal of the important love objects. As the child continues to develop in optimal circumstances, his actual effectiveness, contributed to by his confidence in himself, in turn maintains and consolidates his self-esteem. In other words, feeling loved and esteemed permits the child to develop good feelings about himself and thus permits him to enter into independent interpersonal and educational activities with a minimum of inhibitions. In the absence of frustrations too extreme for the developing child to master, success in these activities then increases and further consolidates his self-regard.

Among the developmental vicissitudes leading to decreased self-esteem and depressed feelings are insufficient parental acceptance and affection, excessive parental devaluation, excessive frustrations experienced prematurely, and a sense of ineffectiveness in one's early social and educational activities. All these tend to produce excessively aggressive cathexes of object images and self-images with correspondingly ungratifying interpersonal experiences and feelings of inadequacy and self-derogation.

From all the above it follows that an important

predisposing factor in neurotic depressive reactions is the quality of the early familial relationship. An unhappy, frustrated, or emotionally deprived childhood spent with undemonstrative or uncaring or punitive parents tends to produce a devalued self-image and a predisposition to depression. Loss of a parent in childhood has also long been recognized as a predisposing factor in depression. During and after childhood, one's self-esteem can also be adversely affected by experiences like illness, disfigurement, unattractiveness, and poor performance in social, educational, or vocational activities. All these circumstances can predispose an individual to react with depression to occasions of loss or guilt or failure. Sometimes the predisposition is so pronounced that the person has a recognizably depressive personality structure characterized by chronic pessimism, loneliness, dissatisfaction, unhappiness, guilt, or feelings of inadequacy.

Variety of causes and reactions. Knowledge of the variety of determinants of self-esteem helps to explain why decreased self-esteem can be experienced in a variety of ways. To put it simply, self-esteem can be decreased and depression can be present because one feels lonely and unloved, unworthy or bad or guilty, or unsuccessful, or inadequate or inferior. And depression can be precipitated by the failure to obtain or by the loss of love or emotional supplies; by engaging in behavior or by experiencing feelings, such as sexual or aggressive ones, that cause one to feel guilty or unworthy; or by failure in the pursuit of goals, whether realistic or unrealistic.

A neurotic depression, once established, may involve a regression to earlier, ordinarily repressed self-representations or components of the self-image. One's self-image, even in ideal circumstances, is never an entirely homogeneous, integrated structure. Ordinarily, except in individuals who are chronically depressed or who are burdened with enduring and conscious feelings of loneliness, guilt, or inadequacy, devalued aspects of the self-image tend to be repressed. When a person becomes depressed, these ordinarily repressed components of the self-representation emerge and become predominant. If the regressive process is sufficiently extensive and sweeping, the depressive reaction is psychotic in character.

Other psychoanalysts' concepts. From the time of Freud's important paper, "Mourning and Melancholia," an association has always been assumed between aggression and depression. According to the formula, aggressive feelings meant for the disappointing love objects are redirected against the self and produce feelings of guilt, unworthiness, and depression. The patient blames himself for the characteristics of the disappointing object. As Jacobson has shown, the confusion and identification between the object representation and the self-image, which was earlier taken to be a characteristic feature of depression, actually represents a regressive dissolution of

the boundaries between the self-image and object images. This type of regressive fusion of self-representation and object representations is the hallmark not so much of a depression as of a psychotic process. Self-directed aggression in the context of this regressive process was prematurely taken to represent the paradigm for all depressions.

More recent psychoanalytic studies of depression have shifted the emphasis to the loss of self-esteem as the central psychological problem in depression. In this perspective, the melancholic introjection that produces the loosening of boundaries and the confusion between self-directed and object-directed aggression is seen as a late defensive or restitutive maneuver in a psychotic depression.

Certain psychoanalysts of the nonclassical schools have also paid special attention to the vicissitudes of self-esteem. Although Horney did not discuss specific clinical syndromes in her major works, she nevertheless analyzed the problems of self-esteem and the self-image in great detail. She, in fact, considered them the central issues in personality development. Sullivan did consider and describe certain diagnostic entities, but there is no specific discussion in his published works on the neurotic depressive reaction. However, his ideas on psychodynamics are characterized by the view that the attempt to maintain self-esteem is one of the chief security operations of what he referred to as "the self-system."

Clinical Description

A neurotic depressive reaction usually begins as a reaction to a loss or to a failure of some kind. The depression may develop suddenly or slowly, over some period of time. The loss may be the death of or a disappointment by a loved object. The depressive reaction may be triggered by a failure to live up to one's standards or to achieve one's personal or vocational goals. Whatever the immediate cause, the depression is characterized by a loss of self-esteem. The clinical picture in a neurotic depressive reaction may be of varying degrees of severity.

Psychological symptoms. The patient ordinarily complains of a disturbance of mood. Depression may be exceedingly painful to the individual. In describing this change in his spirits, he tends to use words like "blue," "sad," "unhappy," "hopeless," or "depressed." He often reports a reduction or loss of interest in his usual activities and may complain of difficulty in concentration. These symptoms may not be severe enough to interfere with his work, although in severe cases the patient may find it difficult to carry on and may require hospitalization.

Further inquiry into his feelings and thoughts usually reveals that the patient feels deprived of emotional support, that he feels empty and lonely, guilty and unworthy, or inferior and inadequate. He may express any combination of these feelings. He is usually self-critical and self-derogatory but is not

necessarily so. A patient may occasionally complain of loss or loneliness or feelings of emptiness without expressing or experiencing any feelings of self-criticism.

Although impairment of reality testing is a major characteristic of psychotic states, the perception of reality does not remain unaltered in neurotic depressive reactions. Nor is this surprising, since reality testing is not an all or none phenomenon that is either present or absent in emotional reactions. It is an ego function with varying degrees of impairment. Even the average normal human being develops a subtly individual perspective on reality that is a consequence of his unique life experience. There are, furthermore, no objectively calibrated models of reality by which to measure precisely the accuracy of someone's reality testing. The physician depends on his intuitive clinical judgment.

Since even normal fluctuations of mood have a considerable effect on the way that a person experiences himself and the world, it is not surprising that neurotic depressive reactions generally produce perceptible alterations in the patient's critical judgment of himself and others. In a depressed mood one exaggerates or distorts some aspects of reality and overlooks or denies other aspects. Denial and distortion of various facets of reality are invariably found in depressed states.

The patient often craves emotional support of one kind or another, such as affection, reassurance, sympathy, or attention. The patient's complaints may serve the purpose of eliciting sympathy and support. Frequently, however, his complaints are so hostile or peremptory or his needs so insatiable that he frustrates his own purpose by irritating or alienating his potential sources of support.

The presence of suicidal thoughts are to be looked for in every depressed patient. They are rarely absent. But it is the task of the clinician to distinguish between occasional feelings that life is not worth living; specific thoughts of suicide; and rare, frequent or continuous, and actual, suicidal plans.

Physical symptoms. In appearance, the patient may look obviously unhappy and dejected with strained and drawn features. He may look tired and discouraged or even apathetic. There is usually a lack of vivacity or color in his speech and manner. There may, however, be no evidence of any of these signs, even if the patient is quite depressed. The neurotic depressive may complain of fatigue. A sleep disturbance is another frequent finding. The patient may have difficulty falling asleep. He may sleep fitfully. Occasionally, he has no trouble getting to sleep but awakens early in the morning, although this pattern is more common in psychotic depressions. Some patients seem to escape into sleep to avoid their distress and preoccupations.

Appetite may be impaired, but this is not a universal finding. Some patients resort to eating as a solace

or substitute gratification during periods of depression. Almost every depressed patient experiences an intensification of oral cravings during periods of depression, but only in certain patients does this assume the form of increased eating.

Schizoid depression. This subtype of neurotic depressive reaction has not received the notice it deserves, although there have been occasional references to it in the English literature, and the predisposing personality type has been described in several papers. Patients with this kind of depression ordinarily describe themselves as empty, lonely, yearning, hungry, and perhaps hopeless. This quality of depressive affect is thought to be related to early deprivations experienced in the context of unsatisfactory parental relationships. Patients with this kind of depression are found to possess a self-image that is fundamentally libidinally undernourished and that represents a defect in ego development.

The depression associated with this type of self-image usually represents an intensification of a feeling state that is chronically present and that is very much a part of the patient's personality structure. In terms of its clinical features it is to be differentiated from depressions that are experienced by the patient as feelings of inadequacy and guilt and that psychoanalytically can be conceptualized as reflecting aggressive tensions between the ego-ideal or superego and the self-image.

Patients with this lonely, empty type of depression are often referred to as schizoid, a term that applies to the defensive techniques of detachment, non-involvement, and intellectualization that many such patients adopt. An intensification of the schizoid state into a depression usually occurs following the loss of, or the failure to obtain, a love object rather than after experiences of guilt or failure.

This empty, hungry kind of depression often presents as a depressive equivalent rather than as an overt depression. The patient may complain of an eating disorder or of an addiction or drug habituation problem or of alcoholism instead of the underlying depressed state that has led to these substitute gratifications. However, these alternative manifestations of oral regression may coexist with conscious depressive affect.

Differential Diagnosis

Since depressive affect is not confined to those psychiatric conditions categorized as depressive reactions, the physician may occasionally have to decide whether the presence of this affect in a mixed clinical picture warrants the diagnosis of neurotic depressive reaction.

Very often, some degree of depression is present in an anxiety reaction and other psychoneurotic disorders. In such a case the clinician makes his diagnosis on the basis of the predominating symptom, although he may wish to direct attention to the secondary

symptom if it is sufficiently prominent; for example, he may designate it "anxiety reaction with depression." In this instance, "depression" is not a diagnosis; it is merely a descriptive term. The American Psychiatric Association's *Diagnostic and Statistical Manual* clearly states that "only one type of psychoneurotic reaction will be used as a diagnosis, even in the presence of symptoms of another type."

Depressive affect may also be present in a schizophrenic reaction, especially in the category labeled "schizophrenic reaction, schizoaffective type." Here the determining criteria for the diagnosis are the schizophrenic signs and symptoms. If a schizophrenic thought disorder or bizarre behavior is present, the schizophrenic rather than the depressive diagnosis is indicated.

Depressed conditions, sometimes difficult to distinguish from neurotic depressive reactions, may be present after the administration of certain drugs. Reserpine, or the steroids, for example, may produce an emotional reaction characterized by depression. This type of depression should be regarded as secondary to the use of the particular medication rather than as a primary neurotic depressive reaction.

A variety of physical conditions may give rise to depressed states that are sometimes difficult to distinguish from functional depressive reactions. A depressed mood may occur in a variety of hormonal disequilibria, such as thyroid dysfunction, the menopause, and adrenal cortical dysfunction. Malnutrition and electrolyte disorders may produce depressed states. Central nervous system disorders, such as multiple sclerosis and occasionally brain tumors, may also produce depressive symptoms.

Psychotic affective reactions. The most common diagnoses from which the neurotic depressive reaction must be differentiated are the psychotic affective reactions. The history of the patient tends to be different in these various kinds of depression. Although the descriptions in the literature of the premorbid personalities are not altogether uniform, one can say that the neurotic depressive tends to have a neurotic history. He has a history of varying degrees of maladjustment, characterized by symptoms of anxiety or tension or by mild depressive upsets of short duration. Such a person may have always been a worrier, with poorly established and fluctuating levels of self-esteem.

The manic-depressive's premorbid personality is often one that is superficially well adjusted, warm, outgoing, confident, and not troubled by minor stresses and strains. Frequently he is quite insensitive to the subtleties of interpersonal transactions. The type of person who develops an involutional depressive reaction may, on the other hand, have been a compulsive, hardworking, somewhat introverted person with high standards of achievement, not necessarily warm or friendly. He is frequently the kind of person who is a pillar of his community.

Most British and European as well as many American psychiatrists believe that there is a constitutional difference between the neurotic and the psychotic depressive. Many psychoanalytic authorities, such as Freud and Jacobson, have subscribed to the idea of as yet unknown constitutional, endogenous, or physiological processes in psychotic depressions.

The manic-depressive usually has a history of depressive or manic episodes, occurring in attacks, with periods of well-being in between. The involutional patient tends to get sick in his later years after a lifetime of freedom from depressive illness. Although it has been traditionally held that the involutional has only one depressive illness in his life, in actuality many patients have one or more recurrences.

As for the symptomatic differences, the psychotic depression is ordinarily accompanied by a much more profound disorganization than the neurotic depressive reaction. The psychotic depressive appears to have a much more profound depression than the neurotic. Some writers point to a difference in the quality of the depressed mood, difficult to describe but alleged to be easily recognized by the patient himself. The patient with the psychotic or endogenous depression experiences his depression as something befalling him from the outside, slowing him down, and interfering with his thinking processes and his zest. These authors describe the neurotic depressive, on the other hand, as experiencing his depression as a mere intensification of lowered moods with which he has been familiar most of his life.

The psychotic depressive tends to experience a much greater deterioration in his relationship to reality. Some alteration of reality testing occurs in a neurotic depressive reaction, too, but the neurotic patient is usually aware that he is distorting or exaggerating the situation. He is aware that the depressive mood is somehow subjective in nature and that, although the self and the world are seen differently from before, things have not actually changed. The patient is still to some extent open to alternative perceptions of himself and others. Indeed, the less he is able to distinguish his mood-determined perspective from the objective situation, the closer to a psychotic state he is. When the psychotic depressive expresses delusions of sinfulness, guilt, or inadequacy, there is no difficulty in making the diagnosis.

The psychotic depressive is likely to show moderate or severe retardation, which he may experience as difficulty in thinking, concentrating, and moving. To the observer this appears as a slowing down of speech, thought, and movement. The patient may sit dejected and immobile for long periods of time, and in severe cases the retardation may be so overwhelming that it may be difficult to distinguish the depression from a catatonic state. This type of retardation is not common in neurotic depressions.

Also not ordinarily present in neurotic depressive

reactions is the agitation that the psychotic depressive may exhibit instead of retardation. This is characterized by restless pacing and perhaps hand wringing and by repetitive complaints or expressions of delusional self-depreciation or hypochondriasis.

Psychotic depressive patients tend to have a specific kind of sleep disturbance, characterized by little difficulty in falling asleep and by early morning awakening, sometimes as early as 2 A.M., although patients with less severe cases awaken around 5 or 6 A.M. The neurotic depressive, on the other hand, tends to have difficulty falling asleep or, alternatively, he may escape into long hours of sleep.

The psychotic depressive characteristically exhibits a diurnal variation of mood, at least before he becomes too severely depressed. He tends to feel worse in the morning when he awakens and best in the late afternoon or early evening. This pattern is ordinarily not present in a neurotic depressive reaction.

The mood of the neurotic depressive tends to respond to what goes on around him. He may cheer up when something pleasing happens to him or when someone offers sympathy or affection. The psychotic depressive tends to be uninfluenced by such events. His mood may be impervious to environmental stimuli.

Although there is ordinarily no difficulty in distinguishing a neurotic depressive reaction from a severely retarded, agitated, or delusional psychotic depression, there is a type of depressive reaction that is much more difficult to distinguish from a neurotic depression. In this type of depression no obvious retardation or agitation may be observed. The patient expresses no delusional ideas. He may not even complain of being depressed but may, instead, speak of being fatigued or of having lost interest in his work or in his former pleasures or hobbies. He complains of difficulty in concentrating and sometimes of inability to go on with his work. He exhibits early morning awakening and diurnal variation of mood.

Such a patient may superficially resemble a neurotic depressive reaction by virtue of his apparent grasp on reality and because of the absence of florid self-depreciating or behavioral phenomena. However, there may be no obvious precipitating circumstances; the patient may not be appropriately responsive to external events; and there may be present the endogenous signs and symptoms mentioned above.

This kind of depression is variously referred to in the literature, especially the European literature, as a simple or atypical or pseudoneurotic endogenous or manic-depressive psychosis. Sometimes, in recognition of the absence of obvious psychotic manifestations, this kind of depression is referred to as a nonpsychotic or mild endogenous or manic-depressive reaction.

Prognosis

Neurotic depressive reactions usually remit spontaneously without treatment unless suicide intervenes. However, their course may be fairly prolonged, and

the patient remains susceptible to another episode of depression.

With treatment, prognosis is better as far as the duration of the depressive episode is concerned. With medication the depression sometimes lifts within a few days. One of the goals of psychotherapy is to so modify the personality structure of the patient that the predisposition to subsequent depressive episodes is reduced.

Management

Initial evaluation. The first task of the clinician is to estimate the depth and severity of the depression and the danger of suicide. If there is evidence of a suicidal risk, the patient should be hospitalized.

The criteria for the likelihood of a suicidal attempt include the depth of the mood disorder, feelings of hopelessness, and the presence and quality of suicidal thoughts, fantasies, or plans. A criterion that has more to do with the personality structure or the ego functions of the patient than the depression itself is related to the patient's history of impulsivity or to the degree of control he has over his impulses.

The life-long empty, lonely kind of depressed patient may at some point decide that, unless something can be done to make his life seem worthwhile, he will commit suicide. Here the clinician is faced not with the management of a depressive episode but of a long, enduring, lonely, or depressed state. A brief period of hospitalization will not abolish the danger of suicide. Unless the inner emptiness and desolation are relieved, the patient may at any point decide that he has had enough distress. And it is impractical to hospitalize a patient like this for the rest of his life.

After the initial evaluation, a depressed patient should be told that he is suffering from an illness and not from a moral lapse, that there is treatment available for his condition, and that his prognosis, in general, is good. The clinician should avoid admonishing or advising the patient to cheer up, to try harder, to stop complaining, or to cease being so absorbed with himself. The probabilities are good that the patient's relatives and friends have been very generous with advice of this type, often to the patient's despair.

When the patient is suicidal, the psychiatrist should hospitalize him and, depending on the particular circumstances of the case, may wish to pursue more vigorous treatment, such as antidepressive drugs or electroconvulsive therapy. Although neurotic depressives do not ordinarily respond to electric shock, it is sometimes resorted to with hospitalized suicidal patients.

Psychotherapy. The treatment of choice in neurotic depressive reactions is psychotherapy. Because of the particular nature of this reaction and because of the possibility in some depressed patients of a psychological shift in the direction of suicide, the psychotherapy of depression should occur in a setting of

therapeutic support appropriate to the nature and depth of the depression.

Unlike some other psychiatric disorders, a depressed affect is something with which most clinicians, like the rest of the human race, have probably had some experience. It is ubiquitous. Therefore the therapist can ordinarily empathize with the neurotically depressed patient, even though the latter may manifest a depth of depression that the clinician may never have experienced.

An empathic, understanding, and nonexhortatory attitude on the part of the physician is a prerequisite in the treatment of this condition. The clinician who treats depressives must be able to tolerate the intense dependency needs of many of these patients and the often monotonously recurring discouraged complaints. He must be sensitive to certain reactions in himself that may interfere with an effective therapeutic relationship. The patient's incessant complaining may eventually irritate or anger the therapist. It may also, especially if the patient does not seem to be improving, threaten his sense of effectiveness. It may then produce a defensive avoidance reaction on his part or perhaps an attitude of antagonism or blame, as if it were the patient's fault that he was not getting well despite all that the therapist is doing.

Aggression. Freud's "Mourning and Melancholia" directed attention to the aggressive components in a depressive reaction. He illustrated with clinical examples the turning of aggressive feelings away from the disappointing love object onto the self. This insightful observation has given rise to a tendency, especially among inexperienced therapists, to treat all depressed patients by trying to get the aggression out, that is, by attempting to make the patient aware of hostile feelings and encouraging him to express them.

This therapeutic formula fails to take into consideration several important elements in the psychodynamics of depression. In the first place, the patients that Freud wrote about were melancholics, that is, psychotic depressives. The pathognomonic introjection that Freud described represents essentially a psychotic failure to maintain the boundaries of the self-representation rather than a typically depressive mechanism. It is the fusion of self-images and object images that causes the melancholic to berate himself in terms that are more appropriate to the disappointing object.

Neurotic depressives do not undergo this psychotic regressive process. They do not confuse themselves with the object. And although the self-image may, in psychoanalytic terms, be aggressively cathected by the superego, the aggression here refers to instinctual energy, an entity belonging more in the realm of metapsychological conceptualizations or theoretical models than in the world of hostile feelings.

Nor is it universally agreed among psychoanalytic authorities that aggression, even in the form of ten-

sion between the superego and the self-image, plays a universal role in depression. Some analysts see depression entirely as an ego phenomenon, not involving aggressive cathexis at all. However, even analytic writers who do not question the role of aggression and the superego in depression visualize some types of depression as resulting from a defect in ego development secondary to early disturbed parental interactions. This ego defect results in a self-image inadequately endowed with libidinal cathexis. It results in an individual who chronically feels empty, lonely, and yearning for affection and closeness. Oversimplified, his problem is not that he is inadequately expressing his hatred of others; his problem is that he feels starved for love, closeness, and self-respect.

To indicate to such a patient that his illness derives from inadequately expressed feelings of hostility is only to depress him further. Not only is he likely to feel misunderstood, but his self-esteem is likely to sink even further because, in addition to all of his other troubles, his therapist seems to be telling him that he is also a hateful, angry, hostile person.

Even in those patients where seemingly unavoidable resentful and hostile feelings are not being expressed, it is often a therapeutic error to focus on these feelings too early. Frequently, the patient's inability to express or experience these feelings stems from his own sense of unworthiness. It requires a certain amount of self-respect before one can feel resentment at some injury. To experience and express hostility, one's self-esteem must first be restored.

Tasks and goals of therapy. Since a depressive reaction is essentially an affective state characterized by a loss of self-esteem, the therapeutic task is to examine the circumstances of this loss and of the factors that predispose the patient to it. The goal of treatment is not only the alleviation or resolution of the depressive symptoms but also the development of the kind of insight that will give the patient greater immunity to subsequent recurrences and that will permit a more successful adaptation to life.

Therapy involves one or more of the following tasks.

1. Where the patient is empty and lonely, the therapeutic task may be to uncover the factors that prevent the patient from achieving the kind of object relationships that are necessary for adequate self-esteem. This may lead into the following areas: helping the patient identify his needs, for not every person is consciously aware of his interpersonal and affectional needs; the examination of defensive maneuvers that tend to isolate the patient; the identification of self-defeating patterns of relating to members of the opposite sex. To achieve these goals often requires a long period of intensive therapy, especially if the patient has evolved complex or stubborn defenses or personality patterns that interfere with the gratification of his needs.

2. Where the problem is one of guilt, the thera-

peutic task may involve the modification of an unrealistically harsh conscience, that is, of a superego retaining much of its early unmodulated punitiveness, somehow insufficiently affected by the usually softening influence of the developmental process. Although guilt is probably more characteristic of psychotic depressions, it is by no means unusual in the neurotic depressive reaction.

3. Where the patient's reduced self-esteem is a consequence of an unrealistic feeling of inadequacy, the therapeutic goal will be to help the patient acquire a more realistic perspective on his abilities and talents. This usually includes the modification of an unrealistic ego-ideal in the direction of a more reasonable level of aspiration.

Medication. Since the neurotically depressed patient usually has trouble falling asleep, he is grateful for a nighttime sedative that spares him hours of tossing and turning. It is best to prescribe this medication in small quantities in order to minimize the suicidal risk.

The anxiety that is often present in a neurotic depressive reaction can be relieved by the administration of one of the milder tranquilizers.

The amphetamines are often useful and sometimes gratifyingly efficacious in lifting the spirits in a mild depression. When antidepressive medication is resorted to, the amphetamines should probably be tried before prescribing the newer antidepressive drugs.

Although antidepressant drugs appear to be more effective for psychotic depressions, they do have a place in the treatment of neurotic depressive reaction. However, there is still considerable uncertainty and controversy about the exact indications for use and about the criteria for choosing among the drugs available.

Chemical relief of the depressed mood should not imply abandonment of the psychotherapeutic goals discussed above.

Neurotic depressive reactions ordinarily do not respond to electroconvulsive therapy.

Suggested Cross References

For a comparison of neurotic depressive reactions with other depressive states see Cohen's section on

manic-depressive reaction (Section 17.1), Ford's section on involitional depressive reactions (Section 17.3), and Huston's section on the psychotic depressive reaction (Section 17.2), as well as Ford's section on nonpsychotic cyclical depression (Section 32.4). Suicide is discussed by Hendin in Section 33.1. For more detailed information regarding the various treatment modalities used in neurotic depressions see Area G, on psychiatric treatment, with special reference to the sections on psychoanalysis and psychotherapy (Section 34.1), antidepressant medication (Section 35.2), and convulsive therapy (Section 35.5). Further discussion of such psychoanalytic concepts as superego, ego-ideal, and the mental mechanisms of projection and introjection may be found in Chapter 6 on classical psychoanalysis in Area C, on current concepts of personality and psychopathology.

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Chapter 25

Personality Disorders. I: Trait and Pattern Disturbances

25.1 TRAIT AND PATTERN DISTURBANCES

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Introduction

"Personality" has generally been used as a global descriptive label for the totality of a person's objectively observable behavior and his subjectively reportable inner experience. The wholeness of an individual described in this way represents both the public and the private aspects of his life.

The word "personality" may have appended to it certain qualifying adjectives with psychiatric significance, such as "passive" or "aggressive," or words that are not freighted with pathological overtones, such as "ambitious" or "religious" or "friendly." A coherent series of such qualifications making up a personality diagnosis implies certain predictions about how a person will behave under given sets of circumstances. It suggests the form that psychiatric illness may assume, should it develop. It offers the physician clues about how a man will react to physical illness or disability and about how he may be approached for treatment purposes—whether that treatment be conducted mainly through the use of drugs, surgery, or interviews. Whether used as a psychiatric diagnostic term or as a folk description, the personality label has value for the physician who must deal with the individual so described.

Personality formation. Personality diagnosis is based on a concept of behavioral categorization that takes into account the interplay of currently active psychological tendencies and that depends for its typology on varieties of formative developmental experiences. Such a concept must be concerned with the learning of environmentally useful responses. A man's personality reflects his techniques for getting along

with people and things; or, in the sense of Hartman's definition of adaptation, it represents his usual behavior in the process of establishing and maintaining a stable, reciprocal relationship with his human and nonhuman environment. It also reflects the nature of his psychological defense system, the mechanisms—called "ego defenses"—that he automatically and customarily employs in order to maintain his intrapsychic stability.

According to psychoanalytic theory, these defensive and adaptive techniques are to an important degree a function of the level of psychosexual development an individual has achieved.

The importance of early development may also be described in other terms, most of which deal with the influence of society and culture, mediated through child-rearing patterns, on adult behavior. A wide range of investigations has suggested the presence of modal or basic personality patterns that emerge in certain cultures. These are determined at least in part by the universality within the culture of parental methods of dealing with the child's basic needs, such as eating, excreting, sleeping, and moving; with his expression of thought and, especially, of feeling; and with the crises that accompany the maturational sequences and the societally determined shifts in context, such as the shift from the family to the school. Such modal personality organizations are also determined by patterns of sanctioned and prohibited adult behavior and by related factors that prevail within the culture.

Within societies, recent research emphasis has focused on the impact of life in the various social class strata. Particular attention has been paid to the types and frequency of adult models—fathers, for instance—available to children in the different classes; to the effect of belonging to discriminated against, socially visible minority groups; to the need to learn differing communication systems within the family and in the larger society; to the influence of lack of novelty and lack of emotionally significant intellectual stimulation in the earliest years, resulting

in a limited repertory of verbal and other cultural symbols; and to the premature activation of adaptive mechanisms, resulting in an apparently rapid acquisition of the ability to think concretely at the expense of being able to think abstractly and imaginatively. These factors—the frustrations imposed by poorly developed intellectual and interpersonal techniques, the establishment of goals without the means of achieving them, and the paucity of channels for need gratification—all influence the ways of thinking, feeling, and acting, that is, the set of responses that are called personality.

A major feature of this response organization is its stability. It reflects a compromise between the pressures of the inner drives, the claims of the superego or unconscious conscience, and the demands of reality. Such a compromise permits the gratification of certain wishes, reduces inner conflict, and may involve the regular endurance of some degree of discomfort or punishment as the price of gratification. For certain individuals the discomfort itself may acquire primary gratifying significance.

Ego-syntonic and ego-alien behavior. A necessary consequence of this view is that the ways of behaving that constitute most of a person's daily activities are ego-syntonic. They are experienced as normal, natural, or part of him. They are not experienced as special or strange because of their very usualness or pleasurable or rightness. This contrasts sharply with the experience of neurotic tension-laden symptomatic behavior as ego-alien, foreign, irritating, and to be gotten rid of.

The concepts of ego-syntonic and ego-alien imply that the diagnosis of a disordered or abnormal personality is fundamentally social in nature. Since the behavior concerned is not experienced as symptomatic or uncomfortable by its possessor, it must be labeled as deviant by others who experience it as destructive, frightening, or nonconforming. The primary subjective experience of the personality-disordered person does not lead him to seek help for himself. When he himself is motivated to search for treatment or to effect a change in his life style, it is usually because of secondary anxiety, remorse, or other tension stemming from the social repercussions of what he has done. He may learn from the repeated criticisms of others or from the repeated experience of defeating his own goals or of alienating his friends and family that something is indeed wrong with him. But this learning is, to a considerable degree, abstracted from his feeling of psychological reality. It is not sufficiently invested with emotion to result in his abandoning the undesired patterns of acting, thinking, and feeling, particularly as they influence relations with others. It is the *others* who make emotionally invested diagnoses of social deviance and press for modification.

The seeming clarity of this model of *self-diagnosis* for the neurotic and *other-diagnosis* for the individual whose personality is disordered (aside from the mo-

tivating force of socially inspired discomfort) will not usually withstand close examination. Most individuals do not present themselves in pure culture, with ego-syntonic conflict solutions and anxiety-free lives. On the contrary, intimate knowledge of the individual usually reveals a number of persistent unsolved conflicts involving unacceptable impulses and associated tensions that are dealt with in more or less unsatisfactory ways by neurotic mechanisms. Such extensive information tends to require two diagnoses: the leading diagnosis, depending on what brought him to psychiatric attention in the first place, may be a personality diagnosis; the other diagnosis may be of a neurotic or, in some instances, a psychotic reaction. The patient who comes to a doctor under social pressure with a life style indicative of personality disorder may, when given the opportunity, offer complaints of an essentially neurotic variety. On the other hand, many patients who refer themselves for help because of complaints of nervousness, depression, or bodily discomfort for which no organic basis was found may impress the psychiatrist as exhibiting mainly a picture of personality disorder in spite of their neurotic difficulties.

Another implication of the concepts ego-syntonic and ego-alien is that it is possible for an ego system to evolve that facilitates the relatively conflictless gratification of wishes resulting in interpersonal difficulties or the defeat of privately important goals. It may promote the use of defense mechanisms and adaptive maneuvers that effectively paralyze constructive action, produce personal alienation or isolation, and make it impossible for an individual to learn from rewards or punishments. These ways of behaving, facilitated by modifications in the ego system, are perpetuated in spite of the social repercussions they elicit. The constantly reinforcing effect of the pleasure, tension discharge, or security they afford outweighs the pain, loneliness, or frustration that may occasionally be suffered.

The avoidance of intrapsychic conflict requires actual or symbolic wish fulfillment as early as it can be achieved during adaptation. However, the adaptive process, in which the analysis and synthesis of incoming data ultimately result in the acquisition of new responses (learning), is impaired by early and effective tension discharge that may remove the need to discover new responses. During psychotherapy, the developing insight itself—that is, the early phase of learning as it occurs during treatment—evokes discharge behavior through action, waking fantasy, or dream. In these instances, a type of intrapsychic stability is achieved at the expense of the person's ability to solve new interpersonal problems and to acquire new responses. This type of intrapsychic stability, based on what may be conceptualized as an ego system so distorted as to minimize psychological tension, is fundamental to the ego-syntonic quality of behavior in most personality disorders. Its relative

stability reflecting the integration of conflict solutions into a structural whole contrasts with the lack of conflict resolution of the neurotic reaction. In the latter, high levels of tension, associated with chronic partially successful efforts to deal with unacceptable impulses through a defense system with repression as the cornerstone, produce feelings, thoughts, and actions subjectively experienced as foreign, upsetting, or irritating, that is, ego-alien.

Treatment. These considerations suggest the difficulties that appear in the course of psychotherapy with personality-disordered patients. They are people who, in the first place, tend to lack any fundamental motivation for change. Increases in tension, such as those that occur during long term psychotherapy, tend to result in discharge phenomena before useful insights can be achieved. The positive pleasure rewards from the deviant behavior tend to outweigh the socially incurred suffering that may follow.

The psychotherapist, concerned with his patient's motivation, may decide to concentrate on the secondary anxiety or distress following the social condemnation of the latter's behavior. This usually provides no more than a very weak lever. Patients whose disorders take forms that evoke particular punishment may even wish to remain in contact with a therapist as an "out" in case of legal difficulties.

The therapist may decide not to question the presence of motivation if the patient has referred himself. He then approaches the problem as he does any other, dealing with the material brought to him by the patient in a relatively nondirective manner. In this instance a repetitive recital of complaints against others or a sterile recounting of the interpersonal reflections of his life style is possible.

The therapist may deliberately focus on the neurotic aspects of the patient's problem or, in the case of certain isolated personalities, on the elements of loneliness, hopelessness, or despair that may be identified. In this approach the socially deviant behavior may be ignored until later in treatment. This offers at least the possibility of enlisting the patient's interest or even temporarily increasing his discomfort while establishing a relationship so that with greater motivation he may avoid the temptation of escaping from therapy entirely.

The usual forms of individual treatment may be eschewed in favor of a group approach that emphasizes the patient's similarities and differences from others and offers him the opportunity to form relationships and learn new interpersonal techniques. Many psychiatrists feel that group treatment is particularly useful for those characterologically disordered patients who can tolerate such contact with others. Variants of this, such as therapeutic social clubs, milieu manipulation in hospitals, conjoint family therapy and even experiments in group living and working, are all regarded with considerable interest by workers in this area.

Perhaps the only general principle that may be offered the therapist is that of flexibility. He is dealing with a patient whose motivations are mixed, whose ability to relate to others is impaired, who has found important solutions to inner problems in the very patterns the therapist threatens to take away from him, and whose complaints have no discrete beginning in the sense of illness but are part of the warp and woof of his life history and his personal identity.

This patient will, if possible, divorce his therapy from the social reality of life. He is ready to see the psychiatrist as a neutral figure who neither desires nor tolerates close involvement with others. He needs models from whom he can learn, people with whom he can identify, and consistent reliable feedback about the nature of his emotional impact on others. This means that the psychiatrist cannot retreat to dependence on a model of neutral passivity. He must be prepared, if necessary, to enter into the actual life of the patient, while remaining fully aware of the possibility of being manipulated. He cannot decide to avoid contacts with the family or friends of the patient. But in every instance he must understand that it is essential for the patient to perceive him as being on his side.

Personality-disordered patients place perhaps the greatest demands on psychotherapists. The rewards for continued devoted work with such patients have been relatively small to date. The tendency for the therapist to become annoyed, discouraged, or preoccupied with his own therapeutic impotence is great. The fact that these patients are more easily seen as bad, stupid, or childish than as disordered imposes special difficulties on those who work with them. It also suggests the need for constant experimentation with new educational or social methods of treatment with which to supplement or perhaps replace the more traditional but often ineffective one-to-one approaches to the problem.

Many authors use the term "personality disorder" interchangeably with "character disorder." In this book, the nosological designation of personality is used following the nomenclature in the *Diagnostic and Statistical Manual of the American Psychiatric Association*.

Personality Pattern Disturbances

The label "personality pattern disturbance" is applied to individuals whose life style demonstrates limited adaptive flexibility and certain relatively unchanging modes of expression and action. Individuals classified this way are characterized by unsuccessful but repetitive attempts to establish a stable, reciprocal relationship with the environment; seemingly rational but actually self-defeating attempts to gratify needs; and restricted, sometimes inappropriate, and often stereotyped thoughts and feelings in response to highly diverse situations.

Exhaustion of their limited repertory of problem-

solving techniques in the face of continued stress may be followed in these individuals by the employment of mechanisms originating in the earliest phases of development. These mechanisms, such as projection and denial, enable the individual partially to shut out current reality and to substitute need-gratifying and defensive fantasies in the form of delusions or hallucinations—in other words, these mechanisms may lead to psychotic behavior. Psychotic episodes of this sort are not, however, inevitable. When they do develop in the course of intensive psychotherapy or in response to other forms of interpersonal stress, they are usually temporary and circumscribed.

Personality pattern disturbances are frequently associated with neurotic symptoms and specific types of deviant behavior, such as sexual perversions. The following discussion deals, in some respects, in abstractions, as it focuses on certain aspects of behavior while ignoring others that are commonly coexistent.

Inadequate personality. This descriptive label is, in effect, a social value judgment. It reflects the lack of congruence between the standards of the evaluator and the behavior of the person being judged. The latter's day-to-day responses to emotional, intellectual, social, and physical demands regularly fall short of the expectations of others. He is usually referred for treatment by family members, agencies, or institutions that do not succeed in their own attempts to alter a life style that does not conform to their standards of effectiveness. In the patient's own view, however, his low level of performance seems natural and inevitable, although perhaps frustrating at times. He may find it difficult to understand the concern of others; more importantly, he may lack the motivation to amend his customary ways of thinking, acting, and feeling.

Clinical description. The inadequate personality may be described clinically as deficient in physical and emotional energy, socially inept, lacking in judgment, incapable of long range planning, and defective in task performance of all kinds. In an achievement-oriented culture, he lacks the necessary incentive to pursue even the minor successes that, under ordinary circumstances, could lead to the positive reinforcement of goal-directed behavior. His responses to the emotional, intellectual, cultural, and social demands of the group are relatively feeble. His social adjustment is borderline and he exists as a marginal member of society. Although he may hang on to a nondemanding job—he may, for instance, be the clerk who seems to have great difficulty in getting things right—he may also drift from one job to another with little concern for the future. Inadequate personalities attract little attention and frequently pass unnoticed, except under circumstances where their poor judgment results in disruption of established social mores or laws. Significant numbers of them are on welfare rolls and in such institutions as prisons and hospitals.

This diagnosis is made most frequently in the

lower socioeconomic strata. Sometimes it is used to label people with no education and poorly developed communicative abilities who might more appropriately be considered culturally disadvantaged or borderline mentally defective. Others, reacting to particular stresses with intense though shallow affective displays or impressing the observer with their emotional poverty and occasional stereotyped responses, may be labeled as simple schizophrenics. Still others may come to psychiatric attention through referrals from general medical clinics, which they may attend repeatedly, complaining of minor aches and pains.

Etiology. There are no satisfactory studies of the genesis of this clinical picture. In some instances the major factors appear to have been deprivational. In other patients, repetitive and seemingly incidental events during their developmental years may result in chronic fears or problems in impulse control—such as the control of reactive hostility—which are dealt with by inhibiting mechanisms so massive that their impact extends to all aspects of everyday life. In these instances the occasionally reported muting or damping of subjective experience is reminiscent of that described by patients suffering from chronic schizophrenic disorders.

Work and emotional inhibitions—an inability to achieve or feel deeply—may be accompanied by a persistent childlike need to obtain the relatively simple instinctual gratifications of the moment. The relatively conflictless need gratification, facilitated by a low emotional investment in interpersonal relationships and value systems, appears to have some value in protecting the individual against the possibility of a psychotic outbreak. Repeated tension discharges through rapid gratification of low intensity wishes help to maintain the stable state of the character organization; they mitigate, however, against an orderly development of those integrative ego functions that permit learning and accurate reality perception. Therefore, even in the absence of measurable physical or intellectual deficits, the inadequate personality functions maladaptively at a level below his native potential.

Treatment. The treatment of inadequate personalities has been discouraging. Their personal resources are limited, and they are frequently reluctant to make the effort to alter their life style. This is especially true when it has solved certain problems for them and brought them some secondary gain. Furthermore, the traditional one-to-one psychotherapeutic model activates anxiety, which is poorly tolerated and only tends to reinforce their need for premature tension release. Since learning is also impaired, any form of psychotherapeutic intervention becomes a formidable task.

Social class differences between patient and therapist also affect the outcome of treatment. But as more effective therapeutic techniques are developed for

lower class patients, these may prove useful in the treatment of inadequate personalities.

Schizoid personality. The person who is designated by this label is usually described in terms of a tendency to avoid close or prolonged relationships with other people. A corollary of this is a tendency to think autistically. Like others whose characterological features are so prominent that they warrant diagnostic tagging, he displays a limited range of responses to social cues; these, in turn, appear to reflect a limited repertory of ego-defensive and adaptive techniques. The cornerstone of the adaptive-defensive system in this instance is withdrawal, understood in both interpersonal and intrapsychic terms.

Etiology. The possibility that this primitive response is determined by genetic and constitutional as well as experiential factors has been considered by many observers. Individual differences in infants have long been recognized, particularly with reference to central nervous system activity. Infants demonstrate individual variations in base line motor activity as well as variations in response to identifiable stimuli. Infantile autism is perhaps the classical example of withdrawal as a response to early disturbed relationships.

Clinical description. Although withdrawal may begin as an adaptive mechanism, it hinders the process of socialization and the formation of relationships with others during the developmental years. Many adult schizophrenics have prepsychotic histories consistent with schizoid or, as they were called by August Hoch, "shut-in" personalities. It does not necessarily follow, however, that schizoid personalities must eventually become schizophrenic.

As children, schizoid personalities are frequently described as shy, docile, and obedient. Favorable parental comments regarding their model behavior and quietness further reinforce these ways of relating to others. They may exhibit marked sensitivity to signs of displeasure or rejection from those who are close to them. Since aggressive acts are rarely included in their repertory of usual responses, most threats, real or imagined, are dealt with by fantasied omnipotence or resignation. This is preferred to a resolution of the conflict by testing reality or by establishing the communication with others necessary for the expression of their needs. Maintaining an air of aloofness or emotional detachment may help the schizoid person soften the pain of isolation, but it transmits an impression of coldness and disinterest to others, still further increasing his alienation.

In childhood and adolescence, the schizoid character stands alone as an outsider looking in. He is frequently a noncompetitor, particularly in those activities requiring physical or emotional contact with contemporaries. His distinctiveness as a nongroup member may increase his self-consciousness and further isolate him from the group. In his isolation, he may invest his energies in nonhuman objects, and

with sufficient talent and persistence, such investment may provide an adaptably useful structure for his life. The boy chemist, the bookworm, and the boy astronomer are a few of the common reflections of creative focusing on the nonhuman.

Success in impersonal activities may facilitate healthier relationships with peers and group acceptance as their respect is gained. More often, though, these substitute activities enhance alienation by being labeled odd and result in increased self-consciousness and feelings of being misunderstood, frightened, and distrustful of others. The schizoid person may find solace in philosophy and align himself with political movements or world causes. As a fervent idealist or poet, he may be able to interact intellectually and invest genuine emotions in topics and issues, without running the risk of deep human intimacy or involvement.

It seems doubtful that mature sexuality can be attained in the presence of nonreciprocating relationships dating from early formative years. Seriously disturbed relationships within the family prevent the adequate resolution of developmental conflicts involving bodily needs and feelings toward parents necessary for progress toward sexual maturity. Many schizoid characters idealize love in an effort to stave off sexuality. In marriage, the sexual union may be intellectually compartmentalized as an obligation of the marital contract but divested of emotional involvement. Many such marriages are characterized by a virtual absence of meaningful communication. Misunderstandings or dissatisfactions remain unexpressed and, therefore, not adequately resolved.

Treatment. The treatment of schizoid personalities offers more promise than that of inadequate characters. There is frequently less social class difference in the therapist-patient dyad. The patient's tendencies toward introspection are more consistent with the therapist's expectations. Perhaps the restrictions imposed by the therapeutic setting on the degree of emotional involvement allow the patient an opportunity to identify with the doctor and use him as a model for future interpersonal relationships without the threat of being overwhelmed.

Cyclothymic personality. The cyclothymic's usual modes of thinking, feeling, and acting are descriptively opposite to those of the schizoid personality. He resembles the latter, however, in possessing a potential for psychosis if his usual defensive and adaptive techniques fail.

Clinical description. Unlike the schizoid, the person labeled cyclothymic is effervescent and outgoing, meeting interpersonal situations with friendliness and warmth and undertaking tasks with enthusiasm. He looks forward to challenges and is ready to compete with others. He often attracts many friends, who regard him as a fascinating though at times unpredictable individual. His life and theirs, however, may be

complicated by his moods of sadness, which sometimes alternate with periods of elation.

These alternating moods of cheerfulness and sadness differ from those of normal individuals in several respects. First, they are frequently stimulated by internal (endogenous) rather than external (exogenous) events, and they are cyclical in nature.

Second, their range and intensity exceed those found in normal individuals. Resembling a pendulum swinging in an ever increasing arc, the heights and depths of elation and depression may blend into a continuum ranging from normal to cyclothymic to manic-depressive.

Third, aberrant behavior may lead family members to seek professional help at a point when the cyclothymic personality no longer demonstrates good judgment and his reality becomes distorted. His enthusiasm may approach grandiosity, but he experiences great difficulty in recognizing the abnormality of his elation, and he rarely refers himself for treatment.

Sadness may develop slowly into a virtual paralysis of productive action. Or the depressive phase may approach cataclysmic proportions with such rapidity, with or without a clear cut precipitating event, that it may overwhelm and immobilize the cyclothymic character.

Etiology. The inclusion of cyclothymic individuals in the category of personality pattern disorders poses several questions. Certain data suggest a biological basis for regular mood fluctuations not clearly related to environmental circumstances. Whether, in these instances, elation reflects a defense against depression through the mechanism of denial under the control of biogenetic determinants is still open to question. A similar question may be raised about the possible mediation of depressive responses through ego-defensive mechanisms, such as the self-direction of hostility, under biogenetic control. Individuals who demonstrate a life style characterized by more or less constant deviations of mood from the social norms—that is, the depressive and hypomanic characters—may be discussed in the same frame of reference as the cyclothymic character.

Histrionic personality. The substitution in 1952 of the terms “conversion reaction” and “dissociative reaction” for “hysteria” in the *Diagnostic and Statistical Manual* precluded further formal recognition of a clinically accepted though poorly described syndrome, the hysterical personality. The literature of preceding years was confused by usage—“hysteria” as described by Charcot and Freud, “hysterical personality” as a nonpsychiatric medical label covering a wide range of problems from malingering to psychophysiological visceral disorders, “hysterical” as used in a defamatory sense by the laity. A semantic solution may be achieved by using the term “histrionic personality” to designate those individuals described as hysterical personalities by Chodoff and Lyons.

Clinical description. The people described in this manner are vain, egocentric individuals displaying labile and excitable but shallow affectivity. Their dramatic, attention-seeking, and histrionic behavior may encompass lying and pseudologia phantastica. They are conscious of sex and appear provocative, but they may be frigid and are dependently demanding in interpersonal situations. They have a life-long history of seriously disturbed relationships with others. The loss of a parent through divorce, desertion, or death is often reported.

Histrionic personalities under stress may exhibit impaired reality testing, intensive fantasy production, and convictions about the motives of others bordering on delusion. In moments of repose, they are characteristically vague and imprecise about emotionally significant matters. They cannot express their inner feelings with accuracy and often utilize bodily action for communicative purposes.

Although histrionic personalities may exhibit conversion reactions, the latter can occur in association with almost any type of character structure. Histrionic character features occur more frequently in Western society among women. They are, indeed, considered feminine by our societal standards, and male histrionic characters are frequently described in this way.

Etiology. Marmor stated that the pre-oedipal period is characterized by intense frustration of oral receptive needs as a consequence of early parental defection or desertion or, on the other hand, by excessive gratification by one or both parents. As children, histrionic personalities may be thumb suckers, and they may feel unloved and lonely. Attempts to please others may include coquettish mannerisms, coyness, or seductiveness. Attention may also be gained through temper tantrums, the dramatization of illness, or the exaggeration of feelings. Overeating and obesity are doubly valuable, producing both the temporary satisfaction of primary needs and the secondary gain of parental concern. Each minor success reinforces an essentially nonverbal, somatic style of communication and immature, clinging ways of relating to others.

The impact of such early experience is considered basic to their insatiable needs for love and affection in adult life. According to this theory, fixation at the oral level of development prevents the ultimate attainment of genital sexuality, and these individuals continue to translate all interaction into terms of unmet oral needs.

These infantile needs inevitably result in frequent disappointment in adult relationships, particularly in the sexual sphere. The provocative and seductive behavior of women, for example, elicits adult sexual responses from their male companions, which may be perceived as frightening or disgusting, since their basic wishes are for nonsexual, protective love. Prominent symptomatic consequences of this situation are fri-

gidity and promiscuity, the latter representing the constant search for a type of love that can never be found.

The close association of histrionic personality manifestations with schizophrenic illness has been noted by many observers, in terms of both early developmental history and symptomatology. The deprivation suffered in infancy is considered similar to but lesser in degree than that preceding infantile autism.

Treatment. The treatment of histrionic personalities can be difficult, lengthy, and frustrating. As love and affection are given priority over understanding and insight, the therapist's interpretations are often viewed as rejection and thus promote renewed attempts to gain his affection. If the stress of therapy is greater than can be tolerated by a poorly integrated ego, psychotic decompensation may result. Seemingly early positive results in psychotherapy should alert the therapist to the possibility that his patient is complying in order to please him, rather than really working out her problems.

An additional obstacle to successful psychotherapy is the histrionic personality's restricted communicative ability. Vagueness, superficiality, and a lack of awareness of inner feelings, other than the recognition of wanting love, leave the therapist little choice but to rely on the patient's observable behavior. Since the patient has difficulty understanding the meaning or intent of her own somatic language, her perception of her bodily changes only tends to confuse and magnify her feelings of not being understood.

Paranoid personality. People designated by this label share many of the traits found in schizoid personalities. They are further distinguished by their defensive position against the world and the regular use of projection as a way of dealing with unacceptable inner feelings and of fending off others. The paranoid personality is uniquely sensitive to real and imagined cues, particularly of a sexual or hostile nature, and quick to translate them into personalized references. His defensive tactics include an aggressive and suspicious attitude toward others as potential enemies. Although he gains a sense of importance in being the focal point of the transgressions by others, his fantasied elaboration of their possible reasons for attacking him tend to further jeopardize his sense of self-adequacy and a secure self-image.

Etiology. Clinical studies of paranoid characters frequently reveal an opposite sex parent who is domineering, overprotective, and ambivalent and a same sex parent who is submissive, passive, and relatively unavailable to the child as a suitable model or object for identification. Similar unavailability may follow when the parent of the same sex instills feelings of inadequacy through intimidation, hostility, and rigid controls. Both sets of circumstances interfere with the development of a stable self-image and gender role and of clear ego boundaries. The child may be faced with an almost insoluble problem in defining

his identity separately from that of the overwhelming parent.

The frustration and anger felt by a child in his affective relationships during the early developmental years reinforce feelings of rejection and suspiciousness of the motives of others. Aggressive and hostile feelings toward the feared and rejecting parent may be repressed, but the battle can continue with siblings, later with peers, and then with the world at large. Two self-defeating alternatives are present: one may comply and surrender to the omnipotent parent figure, leading later to a homosexual pattern; or one may resist and rebel defensively, leading to a regressive disorganization of ego functions, specifically hypervigilance and ideas of reference.

Clinical description. Much of what the paranoid personality undertakes is designed to prove his superior worth. Although he may be highly efficient, he lacks the flexibility needed for innovations, and he reacts sullenly to suggestions or criticisms. To achieve his goal, he may belittle and criticize the efforts of others. Humor and relaxation are incompatible with reaching this unattainable but highly desired goal of worthiness and, therefore, become subordinate to conscientiousness and striving.

Since he is insecure, the paranoid personality may never achieve feelings of adequacy or be comfortable with his self-image. He must remain constantly alert to people or situations that threaten the identity to which he aspires, and he often attacks in order to avoid being attacked. His very actions bring about that which he tries to avoid: further rejection and damage to his self-esteem. Any rejection is viewed as further evidence of a hostile world, and the partial truths expressed about him by those who are rejecting or, more usually, indifferent reinforce his suspiciousness. The paranoid personality may eventually become litigious in his self-righteousness, champion causes that further his feelings of exaltedness, and gradually lose contact with reality.

The association of homosexuality and paranoid behavior was recognized by Freud and has been elaborated on by others. Among paranoid personalities, a homosexual episode or the threat of homosexuality may herald an acute decompensatory episode.

Treatment. The psychotherapeutic treatment of paranoid personality disorders must be undertaken with the following considerations in mind. These individuals fear and simultaneously desire close meaningful relationships with others but seem unable to admit and accept these affective needs. Novey stated that, operationally, paranoid personalities suffer from a quantitative distortion of their perceptual experiences, which makes them poor reporters of actual events. For this reason, therapeutic emphasis is laid on the patient's inner experiences and reactions to events in relation to his immediate interaction with the psychiatrist.

Personality Trait Disturbances

This category includes those individuals whose behavior is organized around a single, well crystallized response tendency. Such a tendency represents the residues of unresolved developmental conflicts as they have contributed to adaptive efforts that, although possibly useful in early periods of life, persist into adulthood as useless or self-destructive responses.

The separation of personality pattern from personality trait disturbances in the current psychiatric nomenclature is not completely satisfactory. The latter, however, seem less pervasive in their influence on total personality structure. They are, furthermore, less readily identifiable as socially or psychiatrically significant, except in retrospect after a characterological decompensation brings them to the attention of physicians or other agents of social control.

Compulsive personality

Clinical description. This diagnostic label is applied to individuals whose actions are driven by needs for perfection and orderliness, who cannot tolerate ambiguity, who seem unable to change their minds after having arrived at decisions, and who have a need for closure and task completion that may not be appropriate to the context in which they are working or to the job at hand. An obligatory quality pervades much of their life experience.

A moderate degree of compulsiveness often seems desirable by Western standards and may be necessary for certain types of professional achievement. Even one whose compulsiveness warrants the diagnosis of personality disorder may successfully engage in occupations suited to his temperament. These involve repetitive tasks, requiring concentration on details in a highly structured situation. Such an adjustment is brittle, however, to the degree that it depends on a stable social context.

When forced to work under circumstances over which he has no control and which may vary unpredictably, the compulsive personality may become anxious and disorganized. If his working situation depends on the moods or the changing directives of a supervisor, he may become resentful, stubbornly resistive to change, and suspicious of the motives of those in positions of power. If under the stress of unanticipated deadlines so that he cannot perform with his usual ruminative thoroughness, he may react with helplessness. If passed over for advancement, his envy, resentment, and frustration at the good fortune of another may reach obsessive proportions.

If, on the other hand, he is promoted, he may become disturbed when delegating tasks to others who do not demonstrate a degree of thoroughness equivalent to his own. As a supervisor, he is one who breathes down the necks of his subordinates and drives them to distraction by his attention to petty detail and his insistence on following the letter of the law. His need

for perfection and order always carries with it the potential for conflict with others who may view him as obstructionistic, petty, inordinately scrupulous, and irascible.

Compulsive personalities commonly avoid or delay marriage because of their precise expectations regarding a suitable mate and their obsessive doubts about making a decision of major significance. Marriage to someone with like characteristics results in a formalized, emotionally distant living arrangement. Or a passively compliant, dependent person may be attracted to the compulsive character, who appears on the surface as strong and self-reliant. In the latter instance, a type of symbiotic relationship may persist for a time. However, the compulsive personality is always able to find fault. By imposing his standards on his spouse, he increases the emotional distance between them, destroys her security, and, thus, experiences an intensification of his own sense of alienation.

Such marriages may be characterized by a failure in full genital sexual consummation. This is particularly true in the presence of the anal interests that appear to be invested with a persisting significance of almost erotic quality in many compulsive personalities. Preoccupation with the regularity and consistency of bowel movements (as well as with the corresponding details of dietary intake) and of smells and sounds related to excretory functions may provide a source of gratification more meaningful to the patient than mature sexuality. This persisting interest is not confined exclusively to the bodily functions and apertures concerned with oral intake and sphincter control; it may be focused on other activities and areas related to maintaining physical integrity and cleanliness, such as exercise, sleep, skin care, and dental hygiene. In short, this pattern of obligatory attention, rigidly applied to minutiae, control of which is essential for the maintenance of a high degree of order and predictability, implies a narcissism that can preclude the development of sustained, warm human relationships free of nagging doubts, suspicions, and irritations.

Etiology. The social transmission of patterns of characteristic behavior inevitably involves the parents (or their surrogates) of patients to be. Parents of compulsive personalities have frequently been described as hard working but inflexible, with little time or energy left for the problems of sustaining a loving, supporting, and giving relationship with children and adolescents whose behavior fluctuates and whose needs make it impossible for them to conform completely to a rigidly controlled life situation. Such parents may offer their children conditional love—that is, dependent upon conformity to their expectations—or punitive behavioral controls under the guise of love.

The young child trapped in this context may attempt to withdraw, to revive or maintain behavior patterns that offered solace at earlier stages of development, or to express his frustration through

temper tantrums. The shape of his eventual compliance reflects the degree of trust or fear learned through past experiences, the nature and intensity of particular stresses to which he is subject, and his physical and emotional maturity and competence at the times the stresses occur. Such compliance, which is both adaptive and defensive, is reflected in the scrupulousness, fastidiousness, obedience, and punctuality of the "good child," who may occasionally display unexpected flashes of cruelty or uncontrolled temper outbursts.

The utilization of rigidly maintained defenses, such as reaction formation and isolation, against tendencies to soil, harm, or destroy is also reflected in consistent and inappropriate smiling or submitting responses. That is, the fixed, relatively unvarying message of good humor and meekness that is transmitted to others reflects the tight control under which potentially hostile tendencies must be contained. Just as often, the resolution of the rebelling-conforming conflict appears in such derivative characteristics of warded off hostility as stubbornness, avarice, possessiveness, and arrogance or pretentiousness.

The early history of this development is thought to lie in the period between the ages of 9 months and 2 years. This period, when the child begins to develop control over his sphincters, usually sees the initiation of parent-child struggles over toilet training, bedtime hours, and the control of hostile expression. Some anally focused parents actually assume control of the child's sphincters themselves through the repeated use of rectal enemas or dilators. Early problems involving parental regulation of eating behavior assume new intensity as they are linked to toilet behavior. The increasingly rapid development of speech at this time, permitting a wider range of hostile and complaint communication, also contributes to new levels of complexity in the child's developing system of internal and external control.

A number of related factors may be involved in the genesis of the compulsive personality. Weaning may overlap the toilet training. The arrival of an additional sibling means magnified deprivation. The child's claims for a reciprocal affective relationship with his parents may reinforce their needs for control and increased emotional distance in curbing his spontaneity.

This stage of life, during which the child achieves mastery over the excretory sphincters and to some degree over the oral functions of talking and ingesting, was described by Freud and Abraham as the anal period. Freud described the nature of coprophilia and pointed out that, following repression, such interests can be sublimated into artistic pleasures or, through reaction formation, develop into a special love for cleanliness.

Abraham emphasized the impact of early traumatic experience on infantile narcissism. Success requires that the child accomplish tasks for the sake of the

parent and is dependent on his ability to transfer to people those feelings that were previously narcissistically bound. Premature demands for cleanliness produce fear and anger, impairing the child's developing capacity to love. A need to resist external controls (obstinacy), preoccupation with details, orderliness, perfectionism, meticulousness, envy, unproductiveness, interest in money, parsimony, sadistic tendencies, and anal erotism—all attributed to unresolved conflicts during this phase of development—were designated by Freud as comprising the anal character.

Most compulsive characters do not come to psychiatric attention, although they may be diagnosed by their acquaintances as stingy, stiff, rigid, conscientious, religious, or hard working. The psychiatric label implies that their characteristic behavior has become so intense as to pervade every aspect of daily life in a manner that interferes with effective adaptation and pleasure. The step from this point to that of the compulsive neurotic reaction with clearly symptomatic rituals, interference with which results in intense anxiety, may at times be a small one.

The defense system reflected in compulsive behavior is vulnerable to disorganization, which can result in other clinical syndromes. Effective utilization of repression and reaction formation to gain mastery over destructive impulses, for example, may require the exercise of an unusual degree of vigilance regarding threats from within and without. Thus, unusual sensitivity to the possible hostile motives of others may permit the compulsive personality to withdraw from contact with them or defend himself in other ways against the possible activation of potentially uncontrollable rage.

The continuing need to deal with poorly resolved internal conflicts may contribute to feelings of tension and fatigue and may lead to the utilization of other defense systems reflected in obsessive-compulsive neurotic reactions, neurotic or psychotic depressions, or paranoid-schizophrenic states.

Those compulsive personalities who do become psychotic usually do not decompensate until later years. Decompensation is often precipitated by factors related to employment, including retirement or transfer to another location. Awareness of advancing age, with the loss of status and physical or mental powers, the death of a spouse, or the loss of children through marriage may be followed by depressive illnesses of neurotic or psychotic proportions or by paranoid psychoses.

The earliest changes preceding a psychotic reaction may be those reflecting a transition from the stage of a compulsive personality to that of a compulsive neurosis. At this point, the polarity of compulsive features is seen in the combination of defense and the disguised expression of what has been warded off. Such combinations regularly include extreme cleanliness coexisting with filthiness ("Scratch a compulsive, and you will find dirty underwear"); extreme, petty penurious-

ness, resulting in gross waste; and frantic efforts at efficiency, resulting in virtual paralysis.

The late stage of decompensation, where a severe and socially incapacitating neurosis cannot easily be differentiated from psychotic behavior, may be illustrated by the case of a woman with an obsessive fear of contamination by dirt and germs on the floor. After years of progressively restricting her behavior, she finally confined herself to bed, where, while avoiding the dirt of the floors and streets, she soiled herself with her own feces.

Some patients who present the syndrome of a compulsive personality on first encounter prove, after more thorough investigation, to have acute schizophrenic reactions. In some of these instances, the apparent characterological picture may be understood as reflecting efforts at restitution or recovery from the psychotic disorganization rather than as a reinstatement of a previously existing personality pattern. A narrowed range of repetitive activities can be protective, allowing progressive attempts at conflict resolution and providing sufficient stability for the patient to rebuild his bridges to reality. The isolation, rigidity, adherence to routine, attention to small details, and intolerance of ambiguity and change displayed by many recovered schizophrenics are descriptive elements of the compulsive personality.

Treatment. The psychotherapy of the compulsive personality presents all the classic problems involved in the treatment of any personality disorder and some special ones. In the first place, it is misleading even to speak of treating such a disorder because, when the person described in this way does consult a psychiatrist, he does not usually come on characterological grounds as such. Like the other personality disorders, the subjective experience of the compulsive is ego-syntonic. The affected individual does not conceive of himself as ill or deviant. Unlike many others, however, he is not apt to be brought to treatment by the suffering community, since his behavior is often socially useful and, broadly speaking, reality-syntonic. Thus, when he presents himself in a doctor's office, it is because he is suffering the consequences of a breakdown in the defensive and adaptive system reflected in his characterological picture.

This breakdown can result in depressive, schizophrenic, or obsessive-compulsive symptoms. In each instance, the patient may suffer from a variety of ego-alien symptoms. Or his attention may be focused on some aspect of his bodily structure or function, so that he consults a general physician and never reaches a psychiatrist. In this case, the major therapeutic effect will be that exerted through the establishment of a chronic, dependent relationship with the physician, reinforced by the placebo effect of whatever drugs are administered and the occasional guilt-expiating punishment or direct masochistic gratification imposed by unpleasant diagnostic or unnecessary therapeutic procedures. Progressive behavioral de-

terioration may be stopped in this way and a marginal status quo maintained.

In the event that the person becomes a psychiatric patient, the therapist has to choose between a treatment regimen based on anxiety- or depression-alleviating drugs combined with supportive psychotherapy on one hand, and, on the other hand, a treatment regimen that is exploratory, uncovering, and essentially reconstructive. The choice is made, as usual, on the basis of the patient's capacity to tolerate the stress of psychological exploration and a potentially turbulent transference relationship, his capacity to introspect, his motivation to collaborate in a long term treatment plan, and his education and socioeconomic status.

If the physician chooses drugs and supportive psychotherapy, it is quite possible that rewarding life experiences, accomplished with the doctor's active support and clarifying discussions, may permit the learning of new social and personal techniques of anxiety reduction and need gratification and the abandonment of old ones, so that the patient may be reconstituted as a compulsive but functioning personality.

If more intensive psychotherapy is chosen, two considerations may be emphasized. First the hazards of transitory psychotic episodes in the course of intensive therapy or psychoanalysis are, perhaps, greater with the compulsive personality—who has, after all, begun to decompensate before consulting the therapist—than with the other personality disorders.

The second consideration is more appropriate to the case of the obsessive-compulsive neuroses, but it is mentioned because the compulsive personality who comes for treatment may be one who has begun to display classical symptoms of decompensation after years of rigidly controlled behavior. The treatment of choice for obsessive-compulsive neurotics, following the early experiences of Freud and his followers, has been psychoanalysis. The accumulated experience of many analysts suggests, however, that the analytic ritual may be mainly effective in many instances as a substitute neurosis, offering no protection against the recurrence of disabling symptoms when the relationship with the analyst is severed. For some patients with long standing obsessive-compulsive symptoms, a flexible, nonritualistic type of psychotherapy may be useful—one in which appointments are made at irregular intervals, ruminative free associations are actively discouraged, and major emphasis is placed on the immediate therapeutic transactions and life situations, with a deliberate deemphasis of the exploration of developmental events. Such a procedure over a period of several months, with specific tactics based on psychoanalytic insights into the current therapeutic relationship, has appeared to hold some promise.

Emotionally unstable personality. This label is applied to the individual who repeatedly exhibits

volatile affective and related behavioral responses in the face of minor stresses. Such a person has a low response threshold for emotionally meaningful stimuli. His tendency to rapid response with little modification through learning increases the probability of progressive perceptual distortion, poor judgment, and inappropriate behavior. Immediate cognitive functioning can be disorganized by affective outbursts.

Etiology. Emotionally unstable behavior has been viewed as a function of sociocultural and developmental factors and of neurophysiological immaturity.

Clinical description. In the absence of stress, the emotionally unstable personality may be affable and enthusiastic and appear relatively well adjusted. When confronted with seemingly insignificant events or clear disappointments, however, he may react explosively, sometimes to the point of temper tantrums, physical assaults, or suicide. These actions may be considered, in part, as attempts at nonverbal communication and reflections of loss of control. They may be compared to uncontrolled infantile rage reactions, both in terms of their immediacy and of the person's total involvement.

The emotionally unstable personality tends to form shallow relationships with others, viewing them as serving his own immediate needs. Petty jealousies and arguments interspersed by periods of carefree unconcern for adult responsibilities are usual.

The emotionally unstable personality is usually known to his family and those around him as "nervous," "easily upset," or even, in the folk sense of the word, "hysterical" rather than sick.

A psychiatric diagnosis may be made as an aid to disposition if the patient is a member of an institutional community, such as the military or a school. In such a setting, his behavior may provoke anxiety and hostility in others, and his usefulness to the group may be minimal. His evanescent and unpredictable turbulent emotional displays often prevent rational problem solutions by those around him. In desperation, they may request hospitalization or arrest or retreat into a state of helpless resignation until his current emotional storm has passed. Occasionally, anxiety triggered by a physical complaint will bring him to the notice of a general physician, who will then make the referral to a psychiatrist.

Differential diagnosis. The instability sometimes associated with early multiple sclerosis, Huntington's chorea, and other organic brain disorders has been compared with that encountered in emotionally unstable personalities. Neuroanatomical behavioral correlates with lesions in the hypothalamic area are well established. Sham rages produced in cats by severing posterior hypothalamic cortical connections resemble the erratic behavior accompanying tumors in the floor of the third ventricle that impinge on the posterior hypothalamus. The inappropriate euphoria in multiple sclerosis and behavioral modifications in cases of encephalitis are attributed to lesions in the

same area. Similarly, basal ganglia motor disorders may be preceded by changes in affect and impulse control resembling the emotionally unstable personality. Whether instability is thought to reflect character defects in biogenetic, sociocultural, or psychological terms must await development of more sophisticated investigative techniques than now exist.

Treatment. Treatment of an emotionally unstable personality carries a poor prognosis. Insight into the maladaptiveness of his own behavior is rare or short-lived and then only experienced in the immediacy of these self-created crises. More commonly, he tends to rationalize his behavior, to deny its pathological quality, and to resist efforts at intervention. These factors, his inability to form prolonged close interpersonal relationships and to tolerate anxiety, and his tendency toward emotional acting out of his conflicts all impair efforts at treatment.

Hospitalization can be used to impose external controls during acute episodes. This may permit the establishment of a therapeutic relationship in which the doctor, as a parental figure and a representative of a social organization, may function as an auxiliary ego for the patient. Ultimately, the protection afforded in this way may allow a degree of delayed maturation. Similarly, the general physician, by the judicious use of anxiety-alleviating drugs, advice, and opportunities for ventilation may shepherd the patient through repeated crises and gradually become an important source of security for him. Whether or not the physician should look forward to psychological exploration with the aim of eventually weaning the patient from the dependent relationship is questionable. It is possible, however, that similar therapeutically significant bonds may be formed to task-oriented groups. Such devices as therapeutic social clubs and sheltered workshops may be useful in this respect.

Passive-aggressive personality. This grouping includes three subclassifications: (1) the passive-dependent, (2) the passive-aggressive, and (3) the aggressive. Its establishment as a general diagnostic category is based on a theory of the etiological importance of the highly dependent period of infancy during which sucking and related activities involving the mouth and perioral areas have been attributed special importance. For some infants, sucking may be unsatisfactory because it does not provide adequate nourishment or because of defective neuromuscular mechanisms. In others, it may produce unpleasant satiation or be associated with forced contact with the smothering or choking breast. Still other difficulties may stem from the general nature of the infant's contacts or lack of contact with the mother during feeding by breast or bottle.

Biting during this phase has been interpreted as a direct consequence of frustration associated with weaning or the failure to obtain a variety of dependent gratifications. Such frustration has also been regarded by some as resulting in a displacement of pleasure-

seeking activities and sensations to other body areas, such as the anus.

The subtypes of the passive-aggressive personality can be viewed in terms of the variable experience suffered during this period of complete dependence, when the major relationships with others appear to be mediated through being fed. Presumably overindulged during infancy, the passive-dependent individual, lacking responsible participation and involvement with others on a mature level, continues to think, act, and feel that his dependent needs will be magically gratified. The passive-aggressive individual manifests characteristics that, according to Freudian theory, are associated with both the oral and anal character structures; these include procrastination and stubbornness associated with intense cravings for acceptance, generosity, and verbal demands for attention. The genesis of the aggressive character type has been traced by some psychoanalysts to the oral biting phase associated with early dentition and characterized by an ambivalence generally not present in the dependent and passive-aggressive types. His envy, hostility, and jealousy are thought to be derivatives of unresolved conflicts in this phase.

Passive-dependent type. This individual relates to others by pleading helplessness; he seems incapable of decisive action, even with strong support. The rewards of dependency, including attention and love, reinforce his clinging responses. Dependent behavior also offers a disguised means of controlling others. Such manipulation may be illustrated by the person who has never learned to drive an automobile or assume the initiative in shopping for food. Under such circumstances, protestations that one would be willing to act if his condition would permit are common.

Cultural expectations reinforce dependent behavior in women during late adolescence and early adult life. Passively dependent females may fulfill a need for certain men who come to their rescue or need to possess them. The social role of the beautiful but helpless woman, the property of a dominant male, can aid her in maintaining a tenuous and superficial relationship with others. This congruence of social role and personality usually precludes the diagnosis of a disorder until such time as diminishing physical attractiveness or other changes result in rejection and loneliness. At this point, the primary complaint is apt to be depressive, hypochondriacal, or somatic in nature.

For males who are passive-dependent, one symbolic mother is substituted for another in a repetitive fashion. Many seem incapable of employment except under protected circumstances and with constant support. The diagnosis of a passive-dependent personality disorder may be made more readily in men than in women, since there is no culturally acceptable male social role of this type. This personality resembles the psychoanalytic oral personality.

Passive-aggressive type. The person labeled in

this way characteristically expresses hostile or destructive wishes through covert and passive means. A major function of such behavior is to achieve the oral-dependent needs never met in the family. He may be relatively compliant and passive in his daily relationships. When faced with situations that threaten to terminate his dependency on others, pouting, stubbornness, and procrastination become evident.

In work settings, he may passively and publicly accede to conditions he finds unacceptable while covertly undermining the situation by complaining bitterly to others, procrastinating, and performing inefficiently. Passive obstructionism and failure to contribute productively to group tasks are characteristic. His unresolved narcissism prevents his giving up his self-interest in favor of interest in others.

A major hazard in the treatment of the passive-aggressive personality is a tendency to develop a prolonged ambivalently dependent relationship with the psychiatrist. Subtle resistances are likely to be masked under a facade of conformity to the therapeutic ritual. The therapist is frequently blamed for changes in the patient's life situation, identified by the patient as inimical and a consequence of therapy. In the face of occasional overt acting out behavior, realistic limit setting may become necessary.

Aggressive type. Sulking and tantrum-like behavior in the face of frustration is reminiscent at times of the rebellion of children. At other times, aggressively attention-demanding and openly critical and belittling behavior are present. The aggressive character can be argumentative, contrary, and authoritative, involving people in prolonged discussions and attempting to make them feel defensive. This is particularly true in his relationships with authority figures, which may be tinged with unreasonable suspiciousness of their motives and complicated by litigious acts. His attempt to intimidate others can be understood as a means of increasing his precarious feelings of self-esteem. These attempts may take the form of overtly loud, bumptious, or dominating behavior. Caustic verbal aggressiveness, in these instances provocative and unrelenting, has been considered a by-product of persisting oral-sadistic drives stemming from earlier developmental struggles.

Psychoanalytic investigation may reveal feelings of omnipotence and dependency needs, which are dealt with by reaction formation. They may be reflected in more subtle but equally ruthless pursuit of private ambitions at the expense of others. Or they may be reflected in clearly antisocial, episodically destructive behavior. When, in these latter instances, a full or partial amnesia occurs for much of the episode, the possibility of a temporal lobe dysrhythmia should be suspected.

Other personality trait disturbances. Certain ways of behaving that suggest the label of personality trait disturbance depend for their identification on current sociocultural standards. Such

socially stereotyped figures in the 20th century Western world include comics, beatniks, eggheads, racists, do-gooders, and others. In many instances, the social stereotype represents a caricature based on an easily observed quality of behavior, such as the back-slapping politician who presents himself as an accepting, giving, "hail fellow well met" who is, nonetheless, immediately recognized by his admiring supporters as clever, observing, even devious in the service of his goals, which coincide importantly with their own.

The "as if" personality. Among the specific personality types that have been psychologically described, the personality described by Helene Deutsch has attracted much attention. The "as if" personality has a defective capacity for love and assumes pseudoaffective relationships through identification with others. He represents a behavioral adaptation to external reality through the mimicry of others without appreciation for their real emotions.

Such behavior is thought to reflect a defective ability to invest emotional interest in others due to deprivation during the period of most intense early dependency. Strong persisting needs for love and a precarious self-esteem contribute to a tendency to develop narcissistic relationships with others—that is, to relate to people who are similar in important respects. One consequence of a defective capacity to establish long term loving relationships with others can be impaired superego development.

Although the "as if" personality may appear normal in his day-to-day relationships, his chameleon-like tendencies emerge in an unusual ability to copy and imitate without originality. Interpersonal relationships appear on the surface to be appropriately intense. The display of friendship, love, or sympathy, however, is made without warmth. This lack of emotional commitment in the presence of seemingly appropriate behavioral response may cause others to sense that something is absent.

The response of others to this imitative behavioral mode makes the "as if" personality sensitive to environmental cues. Relationships with others are usually short-lived, requiring replacement in a repetitive fashion. Identification permits a transitory incorporation of the morals of others, regardless of their intrinsic quality. Antisocial behavior, possible under these circumstances, may be replaced as quickly by contradictory values with a succeeding identification. The lack of a true identity further hampers the discrimination of self from external reality and may, under stress, lead to psychotic behavior. In this case, identification is no longer limited to human beings but extends to inanimate objects, concepts, or symbols.

The grotesque-comic personality. As described by Annie Reich, this personality type reveals certain developmental deficiencies. Unlike successful comedians, such a person lacks the talent to creatively de-

sexualize feelings in an acceptable manner, perceived by others as comic witticism. The grotesque-comic fails to achieve full sublimation of conflicting sexual feelings and is unable to neutralize aggressive wishes. This is experienced as emerging anxiety, which further threatens to damage self-esteem and evokes feelings of impotence and helplessness. The individual reenacts repetitiously in caricature an unsuccessful attempt at mastery of past anxiety. Such reenactment contains elements of exhibitionism, aggression, self-humiliation, and self-punishment. Some describe this behavior as resembling a repetition compulsion coupled with laughter.

The grotesque-comic uses his body to ridicule his innermost fears and wishes and simultaneously discharges his hostility and frustration toward the audience. In effect, he is able to seduce through laughter the historically sought object (a parent) who rejected him during his formative years.

As the ego evokes these instinctual wishes for the purpose of eliciting pleasure, anxiety may not be felt unless the person fails to elicit laughter. This failure may be due to the quality of the presentation, the lack of receptivity of the audience, or the audience's boredom, apathy, or disgust. What began as humorous caricature is now acutely experienced as a confrontation with reality, and the individual feels exposed, humiliated, and rejected. The audience on whom the grotesque-comic depends assumes the function of an external superego and requires repeated comic reenactment to reinforce feelings of acceptance and approval.

In failing to utilize sublimation successfully, grotesque-comics are frequently prone to depressive episodes. Even in the presence of a receptive audience, the original injury sustained from the rejecting parent cannot be erased and requires constant testing for assurance.

Suggested Cross References

In addition to the pathological types of personality discussed in this section, other characterological types described by Freud are assumed to derive from various stages of psychosexual development. A description of the oral, anal, and genital character types may be found in the chapter on classical psychoanalysis (Chapter 6) in Area C, on current theories of personality and psychopathology. That chapter also gives further information regarding the development of personality and psychopathology from the viewpoint of the psychoanalytic model. Also in Area C are sections dealing with various alternate theoretical approaches. More detailed information regarding the treatment modalities mentioned in this section may be found in Area G, on psychiatric treatment. Problems regarding the treatment of the poor, which was referred to in reference to the therapy of the inadequate personality, is discussed by Brotman in Section 46.4 in Area I, on community and social psychiatry.

Cultural and social determinants of personality and psychopathology are discussed in Wallace's section on anthropology (Section 4.1) and in Silverman's section on sociology (Section 4.2) in Area B, on the basic behavioral sciences.

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Chapter 26

Personality Disorders. II: Sociopathic Type: Antisocial Disorders and Sexual Deviations

26.1 ANTISOCIAL AND DYSSOCIAL PERSONALITY DISORDERS

ELI ROBINS, M.D.

In the American Psychiatric Association's *Diagnostic and Statistical Manual*, the term *sociopathic personality disturbance* is used to include the following diagnostic terms: antisocial reaction, dyssocial reaction, sexual deviation, and addiction as a primary diagnosis. This section discusses only *antisocial reaction* because the other diagnoses are treated in other sections and because the concept and description of dyssocial reaction is in such an unsatisfactory state.

Antisocial reaction is defined in the *Diagnostic and Statistical Manual* as follows:

chronically antisocial individuals who are always in trouble, profiting neither from experience nor punishment, and maintaining no real loyalties to any person, group, or code. They are frequently callous and hedonistic, showing marked emotional immaturity, with lack of sense of responsibility, lack of judgment, and an ability to rationalize their behavior so that it appears warranted, reasonable, and justified.

On the other hand, however, dyssocial reaction is defined in the *Diagnostic and Statistical Manual* as follows:

This term applies to individuals who manifest disregard for the usual social codes, and often come in conflict with them, as the result of having lived all their lives in an abnormal moral environment. They may be capable of strong loyalties. These individuals typically do not show significant personality deviations other than those implied by adherence to the values or code of their own predatory, criminal, or other social group. The term includes such diagnoses as 'pseudosocial personality' and 'psychopathic personality with asocial and amoral trends'.

In the author's opinion, dyssocial reaction either does not refer to a psychiatric illness or has not been studied in a manner to differentiate it clearly from antisocial reaction. However, the contrast between dyssocial reaction as above defined and antisocial

reaction as discussed in this chapter will become evident from the data presented in this chapter. The term "dyssocial reaction," although a logically and psychologically impeccable concept, appears to be so rare that it may be safely assumed that the overwhelming majority of criminals would fit into the diagnostic category of sociopathic antisocial personality, and not dyssocial reaction.

The acute question confronting psychiatry with regard to the classification of antisocial reaction is the establishment of valid common denominators to define this syndrome in such fashion as to clear away the many confusing philosophical, moral, and clinical issues that have grown up about it during the 130 years since its description by Prichard. Even Prichard's original description of "moral insanity" contained many different entities. In the succeeding years, attempts have been made to describe this condition more precisely. Contrasting with this tendency has been one to extend the limits of its description, making it less precise and more difficult to deal with as a substantive scientific issue. Resulting at least in part from this latter tendency, the use of the term *psychopathic personality* (another of the many names by which this syndrome has been known) became a psychiatric wastebasket for a heterogeneous collection of illnesses with etiologies which were not known and with clinical pictures which differed in essential elements. These ambiguities were to some extent taken cognizance of in the *Diagnostic and Statistical Manual* of 1952 by separating off two groups of disorders, personality pattern disturbance and personality trait disturbance, and by the coining of two diagnostic terms to describe primarily antisocial disorders: antisocial reaction and dyssocial reaction.

The attempt to give a clear description of an illness with unknown etiology, pathogenesis, and total clinical manifestations suggests that mild and atypical cases may well not be included, or at least their significance will not be properly evaluated. Despite these shortcomings, a description of antisocial reaction, with regard to its clinical picture and natural history is

important for its clinical usefulness, for the establishment of a homogeneous group, for research into its etiology and pathogenesis, and for the tentative delineation of the mild cases and atypical cases.

To generalize, studies of antisocial reaction have suffered from the lack of detailed systematic clinical description and from insufficiently detailed and prolonged follow-up. These lacks have recently been remedied in a series of studies of L. N. Robins, P. O'Neal, and associates (Robins, 1966); Guze et al.; and Ehrlich and Keough. L. N. Robins' monograph contains a detailed description of the methods and results of a study based on a 30-year follow-up study of 524 child guidance clinic patients and 100 controls. As adults, 94 of the patients received the diagnosis of antisocial reaction. Guze's investigation was based on the study of 223 felons. Ehrlich and Keough's investigation was based on the study of 50 patients with the diagnosis of antisocial reaction in a mental hospital. Based on these investigations and on a century of clinical observations by many other students of this illness (Prichard, Henderson, Cleckley, Schneider, Maughs, Glueck and Glueck, and Gibbens et al.), the following clinical picture and natural history emerge. The outlines of this syndrome in terms of its clinical picture and natural history are now clear enough to characterize an illness or syndrome.

Clinical Description

Age of onset. The age of onset is before 15 years and probably, where an adequate history is obtained, before 12. The invariability of this early age of onset

TABLE I

Childhood Antisocial Symptoms and Behaviors in Patients Who Were Given the Diagnosis of Antisocial Reaction as Adults^a

Symptom	Percentage Who Had Symptom in Childhood
Theft.....	83
Incorrigibility.....	80
Truancy.....	66
Running away overnight.....	65
Bad associates.....	56
Staying out late.....	54
Physical aggression.....	45
Poor employment record.....	44
Impulsivity.....	38
Recklessness and irresponsibility.....	35
Slovenly appearance.....	32
Enuresis.....	32
Lack of guilt.....	32
Premarital sexual relations.....	28
Pathological lying.....	26
Homosexual activity.....	13

^a Data from Robins, L. N. *Deviant Children Grown Up: A Sociological and Psychiatric Study of Sociopathic Personality*. Williams & Wilkins, Baltimore, 1966.

is a diagnostic point of great importance and, in itself, excludes most of the other reasonably well defined psychiatric illnesses that sometimes begin that early in life but most often begin later, such as schizophrenia, manic-depressive reaction, anxiety reaction, and obsessive-compulsive reaction. It seems to the author of this section that the personality trait and personality pattern disturbances are so ill characterized that they cannot safely be said to exist in their described forms because of the absence of systematic detailed clinical and follow-up studies. Their ages of onset are, therefore, not relevant here.

Symptoms in childhood. The most frequent symptoms occurring in childhood—prior to ages 12 to 15—in persons who were later given the diagnosis of antisocial reaction include theft, incorrigibility (extreme disobedience, usually of parents), school truancy, running away from home overnight, having associates with bad reputations, staying out late, physical aggression, poor employment record in the somewhat older children, impulsiveness, reckless and irresponsible behavior with regard to time and place of its occurrence, slovenly appearance, nocturnal enuresis, lack of guilt, premarital sexual intercourse, pathological lying (lying that was not used to hide or minimize misbehavior), and homosexual activity (see Table I). In one study there was a median of seven such antisocial symptoms. A few childhood antisocial symptoms occurred either infrequently or did not reliably predict an adult antisocial reaction. These symptoms included, for example, vandalism, use of alcohol, and use of aliases. A median of four nonantisocial symptoms was reported in the same group. These symptoms included (besides enuresis, which should properly be classified as a nonantisocial symptom) sleep-walking, sleep-talking, irritability, nail-biting, poor eating, oversensitiveness, nervousness, being withdrawn and seclusive, odd ideas, unhappiness and depression, tics, and fears (see Table II). Each of these symptoms occurred in from 4 per cent to one third of the children who as adults were given diagnoses of antisocial reaction. The diagnosis of antisocial reaction for an adult was made without knowledge of the childhood symptoms. The symptoms differentially predictive of adult antisocial reaction are the antisocial symptoms listed in Table I, but proper emphasis should be placed on the finding that many of these same children had nonantisocial symptoms at the same time. *However, not a single child developed the antisocial reaction syndrome as an adult in the absence of antisocial symptoms in childhood.*

The number and variety of symptoms in childhood are as important in describing the natural history of antisocial reaction as are the specific individual symptoms themselves. If the number of childhood and juvenile antisocial symptoms was 10 or more, 43 per cent of these children developed the antisocial reaction syndrome as adults. But if the number of such symptoms was less than 3, only 4 per cent did (see

Table III). The significance of these findings cannot be fully appreciated from the numbers themselves. As the number of symptoms increased, the number of different areas of the patients' lives that were affected increased, so that, even in a child or juvenile, the antisocial disorder affects many areas of functioning. These patients exhibited disturbances in parental relationships, in relationships with their peers, in their sexual relationships, in their school behavior, in conforming to legal norms, in their sense of subjective discomfort (psychological and physical), in handling their aggressive impulses, in their general lack of responsibility, and even in the neatness of their appearance.

Even in the most antisocial group—10 or more antisocial behaviors and symptoms as a child—only about half the patients had developed the sociopathic personality syndrome as adults, as is shown in Table III. It should not be assumed that the remaining antisocial children who were not given the diagnosis of antisocial reaction were well as adults. Over 90 per cent of them were psychiatrically ill at follow-up. They showed a high prevalence of other adult psychiatric illnesses, especially alcohol addiction. Of those in whom 10 or more antisocial symptoms were present in childhood, only 5 per cent were clinically well as adults. In contrast, when there were fewer than 3 childhood antisocial symptoms, 34 per cent were clinically well as adults, even though they had attended a child guidance clinic when young. Thus, the occurrence of moderate to severe antisocial behavior in childhood is a serious prognostic sign with regard to adult psychiatric illness.

The factors that differentiate the children who will

TABLE II
Childhood Nonantisocial Symptoms and Behaviors
in Patients Given the Diagnosis of Antisocial
Reaction as Adults^a

Symptom	Percentage Who Had Symptom in Childhood
Enuresis.....	32
Dirty appearance.....	32
Sleep-walking or -talking.....	31
Irritability.....	29
Nail biting.....	23
Oversensitive.....	16
Poor eater.....	15
Nervous.....	12
Withdrawn.....	12
Seclusive.....	7
Odd ideas.....	5
Unhappy, depressed.....	4
Tics.....	4
Fears.....	4

^a Data from Robins, L. N. *Deviant Children Grown Up: A Sociological and Psychiatric Study of Sociopathic Personality*. Williams & Wilkins, Baltimore, 1966.

TABLE III
Number of Antisocial Symptoms in Childhood and the
Diagnosis of Antisocial Reaction
as an Adult

The only significant correlations between number of childhood antisocial symptoms and adult diagnosis (other than antisocial reaction) were a direct one with alcohol addiction and an inverse one with anxiety neurosis. Of those children with six or more antisocial symptoms, 11 per cent were diagnosed as alcohol addicts as adults, and 8 per cent were diagnosed as having anxiety neurosis. Of those children with fewer than six childhood antisocial symptoms, only 4 per cent were diagnosed as having alcohol addiction, but 21 per cent were diagnosed as having anxiety neurosis. Other psychiatric illnesses, such as schizophrenia and hysteria, showed no significant relation between number of childhood antisocial symptoms and adult diagnosis. (Data from Robins, L. N. *Deviant Children Grown Up: A Sociological and Psychiatric Study of Sociopathic Personality*. Williams & Wilkins, Baltimore, 1966.)

Number of Antisocial Symptoms in Childhood	Diagnosis as Adult		
	Antisocial Reaction	Other Psychiatric Diseases	Well
	%	%	%
<3	4	62	34
3-5	15	60	25
6-7	25	42	13
8-9	29	55	16
10 or more	43	52	5

from those who will not develop the syndrome as adults are not understood or described satisfactorily. However, the families and environments from which the antisocial children have come will be described later in this section in an effort to ascertain differences between the children who do and the children who do not develop antisocial reactions as adults.

Symptoms in adulthood. The clinical picture of the patient diagnosed as a sociopathic antisocial reaction personality as an adult depends, in part, on the minimal criteria for making this diagnosis and on the criteria for excluding other psychiatric illnesses. In the studies of L. N. Robins and O'Neal (Robins, 1966) the diagnosis was based *only* on specified behavior and symptoms occurring after age 18—that is, excluding consideration of childhood and juvenile symptoms in making the adult diagnosis—and on the exclusion of patients whose antisocial symptoms occurred in the presence of any psychotic disorder or mental deficiency. Patients who were mentally deficient were arbitrarily excluded in order to obtain as homogeneous a group as possible.

The criteria for making the diagnosis of antisocial reaction required disturbances in a minimum of 5 of the possible 19 life areas described (see Table IV) and a clinical decision that the patient, regardless of the number of antisocial symptoms (as long as there were disturbances in at least five life areas), most

probably was suffering from an antisocial reaction and not from some other psychiatric disorder.

Somatic and behavioral but nonantisocial symptoms occurred with a significantly appreciable frequency in those diagnosed by Robins and O'Neal as antisocial personalities—31 per cent having more than 10 such symptoms or being disabled by them (Table IV). The specific symptoms noted in 5 per cent or more of these patients include anxiety symptoms (nervousness, anxiety attacks, dyspnea, palpitation), conversion symptoms (blindness, paralysis, trances, amnesias), depressive symptoms (suicide attempts, death wishes, chronic unhappiness), and many other somatic and psychological symptoms (see Table V).

In the Robins and O'Neal study, the vast majority of patients at follow-up were not seeking a physi-

TABLE IV

Adult Behavior and Symptoms of Patients given the Diagnosis of Antisocial Reaction

To be scored as positive, each of these disturbances had to be severe, as indicated, for example, by the criteria for marital history (two or more divorces, marriage to wife with severe behavior problems, repeated separations), arrests (three or more nontraffic arrests), sexual behavior (arrests on charges pertaining to sex, interview claims of extreme promiscuity—such as 50 different sexual partners—interview reports of homosexuality), impulsiveness (frequent moving from one city to another, more than one elopement, sudden Army enlistments, unprovoked desertion of home), financial dependency (totally or partially supported by relatives, friends, social agencies, or public institutions), and social isolation (does not participate in activities of any formal social group, sees friends less than once in 2 weeks, has no or only one close friend, sees less than 10 people socially). (Data from Robins, L. N. *Deviant Children Grown Up: A Sociological and Psychiatric Study of Sociopathic Personality*. Williams & Wilkins, Baltimore, 1966.)

Life Areas Indicative of Behavior	Percentage with Behavior Disturbance or Symptom
Work history	85
Marital history (per cent of those married)	81
Financial dependency	79
Arrests	75
Excessive alcohol	72
School problems	71
Impulsiveness	67
Sexual behavior	64
Wild adolescence	62
Vagrant	60
Belligerency	58
Social isolation	56
Armed Forces difficulties (percentage of those who served)	53
Lack of guilt	40
Somatic complaints (>9 or disabling)	31
Use of aliases	29
Pathological lying	16
Use of drugs	15
Suicide attempts	11

TABLE V

Somatic and Psychological Symptoms Occurring in Patients Given the Diagnosis of Antisocial Reaction^a

Symptom	Percentage with Behavior Disturbance or Symptom
Nervousness	47
Back pain	45
Headache	37
Death wishes	37
Nausea	32
Dizzy spells	30
Dyspnea	30
Palpitation	30
Insomnia	30
Easily upset	30
Chest pain	29
Bowel trouble	28
Abdominal pain	28
Fears	27
Menstrual problems	25
Fatigue	22
Anxiety attacks	22
Vomiting	22
Weight loss	20
Chronic unhappiness	20
Weakness	20
Sexual indifference	18
Paresthesias	17
Blurred vision	17
Anxiety in crowds	15
Fainting spells	14
Anorexia	12
Lump in throat	10
Time out sick	10
Paranoid ideas	9
Episode of blindness	8
Episode of paralysis	7
Trouble walking	7
Trances	7
Amnesia	7
Obsessions	7

^a Data from Robins, L. N. *Deviant Children Grown Up: A Sociological and Psychiatric Study of Sociopathic Personality*. Williams & Wilkins, Baltimore, 1966.

cian's help at that time, and, as it turned out, only 12 per cent were in prison at the time of follow-up. Since most of the patients were not incarcerated at the time of follow-up, and since many other studies of persons with antisocial reactions have been on felons who were incarcerated, it seems important to include some aspects of the clinical picture seen in an incarcerated group, in one currently on parole, and in one on probation. The recent studies of Guze et al. present data on such groups. These prisoners (or parolees or probationers) showed early onset of antisocial behavior and of school difficulties. As adults, they exhibited, besides repetitive criminality, wanderlust or vagrancy, poor military records, poor job histories, poor marital

histories, belligerency and fighting, job difficulties, excessive alcohol intake, anxiety symptoms, conversion symptoms, drug addiction, suicide attempts, and sexual abnormalities. An investigation by Ehrlich and Keough of 50 patients diagnosed as having an antisocial reaction in a mental hospital showed that these patients had symptoms very similar to those in the studies of L. N. Robins and Guze.

Thus, whether studied when actively seeking medical help, when incarcerated, or when subjected to a follow-up study without the implications of current pressure for medical help or of current incarceration, there appear to be clear and striking similarities in the clinical picture of antisocial reaction in each of these ostensibly very different situations. Such a finding adds support to the concept of antisocial reaction as a specifically diagnosable illness with relatively well defined characteristics, even when these characteristics are elicited in different situations and presumably when the patients have differing motivations in imparting information.

Neurotic symptoms. Many investigators have commented on the presence of neurotic symptoms, especially conversion symptoms, in patients with antisocial reactions who came to them as patients. The observations of E. Robins et al. and others indicated that neurotic symptoms, including suicide attempts, occur in persons with antisocial reaction syndrome, whether or not they are actively seeking medical assistance at the time observed, and that these symptoms form part of the clinical picture of antisocial reaction. Jenkins, in an analysis of the personality disorder cases in the Brill and Beebe study, also emphasized the high prevalence of neurotic symptoms in patients given the diagnosis of antisocial reaction.

In those patients who later improved (see under "Prognosis"), there was no increase in neurotic symptoms following improvement. Giving up adult antisocial behavior is, therefore, *not* associated with an increase in numbers and kinds of neurotic symptoms. This finding indicates that acting out—that is, antisocial behavior—is not a substitute for neurosis. When those patients who had more than nine somatic or psychologically uncomfortable symptoms or who were disabled by somatic symptoms (31 per cent in Table IV) are compared with the patients who had nine or fewer such symptoms and who were not disabled by them (69 per cent), it is evident that the greater the number and variety of antisocial symptoms, the greater the number of or disability from neurotic symptoms. Of those patients with nine or more antisocial symptoms, 40 per cent had a large number of disabling neurotic symptoms; of those patients with eight or fewer antisocial symptoms, only 25 per cent had a large number of disabling neurotic symptoms. It appears, therefore, that a person with antisocial symptoms will have more neurotic symptoms the more antisocial symptoms he has, and he will

have fewer neurotic symptoms the fewer antisocial symptoms he has.

Psychological attributes. The conceptions of antisocial reaction that emphasize primarily such qualities as inability to learn from experience or punishment, callousness, lack of responsibility, poor conscience, egocentricity, lack of guilt, self-hatred, extreme narcissism, pregenital fixation, absence of generous emotions, absence of psychological conflict, lack of judgment, ability to rationalize one's behavior, incapacity for loyalty, and warped capacity for love are not presently useful either clinically or in research on this syndrome. Each of the above qualities is difficult to define and can be ascertained only from statements made by the patient about himself or by a relative about the patient or by inferences from his behavior. Since patients and relatives rarely make such observations, these psychological attributes can ordinarily be inferred only from the patient's behavior. These inferences are probably correct in many instances, but, being only inferences, they are subject to much more serious error than is the direct reporting of symptoms and behavior. Because of the errors of reliability and validity to which these psychological attributes are subject, they form a poor structure on which to base a definition of antisocial reaction. These inferred attributes are merely convenient summaries and are not a more profound analysis of antisocial reaction than is directly observable behavior. Indeed, these attributes are probably less profound because some are demonstrably incorrect, such as absence of psychological conflict if this implies absence of neurotic symptoms, and others have no demonstrated evidential basis. A more profound analysis is made possible by defining the syndrome in terms of reliably identifiable symptoms and behavior that permit clinicians and research workers to select homogeneous groups of patients to study.

Sex Incidence

The sex incidence of antisocial reaction is preponderantly male, whether observed as children or adults, in prison or out of prison, in a medical setting or not. The degree of preponderance in males has not been quantitatively established but may approximate 5 or 10 males to 1 female.

Etiology

The etiology of antisocial reaction is not known at present. Part of the reason that the etiology is not known may be that our techniques for studying causes are primitive. Another part of the reason may be that the syndrome has only recently been precisely enough defined to permit the study of a homogeneous group.

Physical factors. Despite numerous electroencephalographic (EEG) studies indicating varying but high rates of abnormality in adult criminals, there is no proof that brain damage or abnormality as reflected

in the EEG is a necessary precondition for the development of antisocial reaction. Genetic studies by the twin method or the contingency method are lacking. Although there have been a few studies of the genetics of criminality, these have not decisively settled the nature-nurture controversy.

Environmental factors. Almost all investigators, whether interested primarily in the environment, intrapsychic dynamics, or the gene, agree that there is a high family prevalence of antisocial reaction or alcoholism. Whether this familial loading is primarily genetic or environmental is still unsettled. It may be an almost equal interactive effect of nature and nurture.

The families and environments from which patients with antisocial reaction syndrome come have been noted by many students of the disease to show a high rate of antisocial behavior, broken homes, alcoholism, and low socioeconomic status. Most of these observations have been retrospective, but the general agreement strongly suggests the validity of these findings. L. N. Robins and O'Neal obtained data concerning the families of patients destined to develop the syndrome of antisocial reaction as adults while these patients were still children, thereby avoiding any retrospective bias.

Although the best predictors of the development of antisocial reaction syndrome as adults are the frequency, severity, and variety of antisocial symptoms of the patients as children, these are by no means perfect predictors, as shown in Table III. Do other identifiable childhood factors give additional aid in predicting which children will go on to develop an antisocial reaction as adults and which ones will not? Are such childhood conditions as broken homes, quality of parental discipline, parental antisocial behavior, low socioeconomic status, and quality of neighborhood related to the causes of antisocial reaction, or are they merely associated phenomena with minimal or no causal impact? (Causal in this context means a necessary precondition, whether or not it is sufficient.)

The answer to the first question is that, in the more severely antisocial children (those with six or more such symptoms), only two nonantisocial factors—being male and having no parental discipline or parental discipline that was inconsistent or excessively lenient—were related to the development of an antisocial reaction syndrome as an adult. Each of these two factors tended to increase slightly but significantly the proportion of severely antisocial children who developed antisocial reactions as adults. In the milder antisocial children (those with fewer than six antisocial symptoms), the only family and environmental variable that led to increased proportion of patients diagnosed as antisocial as adults was having an antisocial or alcoholic father.

The answer to the second question is that the association of antisocial reaction and each of the factors ordinarily thought of as associated with the syn-

drome (broken home, antisocial or alcoholic parent, etc.) was once again confirmed in the study of Robins and O'Neal, in which the children were studied and the factors assessed prior to the knowledge of whether or not the patient had developed antisocial reaction syndrome as an adult. Whether these same factors are causal cannot be ascertained because they are not independent of antisocial behavior in the child. If some of these factors are causal, they must be mediated through the occurrence of antisocial symptoms as a child. In the absence of childhood antisocial symptoms, broken homes, sociopathic or alcoholic parents, poverty-stricken neighborhoods, living in slum areas, etc., do not lead to adult antisocial reaction syndrome. In addition, it was found that middle and lower class antisocial children did not differ from each other in the proportion developing antisocial reaction syndrome as adults if they had similar frequency and severity of antisocial behavior as children, even though in the middle class children most of the negative environmental factors were absent. These findings suggest that many or most of these associated factors are not necessary causes. There is no proof, one way or the other, at present.

Differential Diagnosis

The differential diagnosis of antisocial reaction from other psychiatric illnesses is based on manifestations of antisocial behavior. In illnesses where antisocial behavior is rarely or never a manifestation, as in anxiety neurosis, the question of differential diagnosis seldom arises. In contrast, where antisocial behavior is a common or major manifestation of a syndrome, as in alcoholism, the question of differential diagnosis arises frequently. This discussion of differential diagnosis is predicated on the assumption that complete information is generally available for each patient. Since this is often not the case, the differential diagnosis becomes more difficult. It is especially necessary, therefore, to obtain outside information from relatives and from records to diagnose the antisocial reaction properly.

The characteristics of antisocial behavior and related manifestations in antisocial reaction that most help to make a positive diagnosis of the syndrome include: (1) the invariability of the early age of onset, always before age 15 and probably before age 12; (2) the frequency, variety, and severity of the antisocial behaviors manifested; (3) the large number of life areas involved by the symptoms, such as troubles with peers, legal difficulties, marital difficulties, sexual abnormalities, impulsiveness, irresponsibility, poor military record, poor employment record, and financial dependency; (4) the repetitiveness and chronicity of the antisocial acts, which make it difficult to find periods of temporary remission of antisocial activity enduring even a few months; (5) the inferred psychological attributes underlying these behaviors, such as callousness, egocentricity, lack of

deep attachments, and lack of loyalty; and (6) the absence of another psychiatric illness that could explain these diagnostic attributes.

Alcoholism. The most difficult syndrome to differentiate from antisocial reaction is alcohol addiction (chronic alcoholism). There are three chief reasons for this difficulty. First, the behavior of alcohol addicts with regard to arrests, imprisonment, marital difficulties, sexual difficulties, fighting, irresponsible and undependable behavior, lying, rationalization, and neurotic symptoms is similar to these behaviors and symptoms in adults given the diagnosis of antisocial reaction. Second, approximately three quarters of patients given the diagnosis of antisocial reaction as adults are alcohol addicts or at least excessive drinkers. Third, in adults it is frequently difficult to obtain a childhood history that unequivocally demonstrates the onset of antisocial behavior prior to the onset of drinking. Without this information, with the knowledge that adult patients with alcohol addiction behave in a fashion similar to those with antisocial reaction syndrome and with the knowledge that the majority of adult patients who are antisocial drink to excess, it is very difficult and frequently impossible to determine which disorder appeared first. Only in the minority of patients given the diagnosis of antisocial reaction who do not drink alcohol to excess and in the minority of alcohol addicts who manifest little or no antisocial behavior is it possible to differentiate the two syndromes easily.

Manic-depressive reaction. The differentiation of antisocial reaction from the manic phase of manic-depressive reaction rarely presents a difficult problem, even though a patient with mania may manifest many antisocial symptoms during a manic episode. The relative ease of differentiation depends primarily on two factors: (1) The natural histories of the syndromes are vastly different. Mania is episodic and rare in childhood, and between episodes a patient with mania is not antisocial. (2) The mental status in mania—euphoria, clang associations, flight of ideas, etc.—is very different from that in antisocial reaction. The only possibility of confusion between the two syndromes would be if there is a chronic hypomania that manifests itself as antisocial reaction. The occurrence of this situation could only be decided by long term follow-up and family studies. A large number of Prichard's original cases of moral insanity were instances of what today would be diagnosed as manic-depressive reaction.

Schizophrenia. The differentiation from schizophrenia presents a problem because some patients with schizophrenia present antisocial behavior as part of their disease. The problem in differentiation is generally resolved easily by taking into account the natural history of each illness and the positive manifestations of schizophrenia—delusions, hallucinations, affective blunting, formal thought disorder, etc. In the author's view, antisocial reaction with psychosis is

usually Ganser's syndrome or, in very rare instances, a coincidental occurrence of two separate illnesses in the same patient.

Chronic brain syndrome. The necessity for differentiating antisocial reaction from chronic brain syndrome is based on the finding that a few cases of chronic brain syndrome manifest antisocial behavior. Once again, the natural history of each syndrome; the presence of disorientation, confusion, memory loss, and intellectual deterioration in those with chronic brain syndrome; and the age of onset make the differentiation of the two syndromes rather easy.

Neurosis. The occurrence of neurotic symptoms in antisocial individuals sometimes raises the question of whether the patient suffers from a neurosis or antisocial reaction. The primary point of differentiation is the total or virtual absence of antisocial symptoms in the anxiety reaction, obsessive-compulsive neurosis, and hysteria. The only exception is that some women with hysteria show antisocial symptoms early (ages 12 to 16) in the course of their illness. But, as adults, even these women show little or no antisocial behavior. As long as one avoids unnecessary arguments with regard to the etiology of antisocial reaction, there is little problem in clinical differentiation of antisocial reaction and neurosis.

Personality trait and personality pattern disturbances. The attempt to differentiate antisocial reaction from personality trait and personality pattern disturbances is, in the author's estimation, a futile exercise at present because there are no detailed and systematic studies of the latter syndromes. Generally, the essential point is alleged to be that antisocial behavior is not a chief manifestation of the personality pattern and personality trait disturbances.

Dyssocial reaction. The differentiation of antisocial reaction from dyssocial reaction, as presumably seen in the professional criminal, is ambiguous because the use of the term "dyssocial reaction" implies an etiological diagnosis. Since the etiology of dyssocial reaction has not been demonstrated and since, even if it exists, it may not be a psychiatric illness but only a condition of life, the discussion of a clinical differentiation seems at best unwieldy and at worst misleading.

Malingering. A discussion of the differential diagnosis of antisocial reaction would be incomplete without a discussion of the vexing question of malingering. The presence of malingering is difficult to demonstrate. An allegation or suspicion of malingering also implies, perhaps not necessarily but at least psychologically, an unprofessional attitude for a physician to take towards a patient. Despite these serious reservations, it is the author's impression that malingering is more common in antisocial individuals than in any other definable psychiatric syndrome. Malingering probably occurs most often when the patient has a direct gain in the offing, e.g., avoidance of arrest or prosecution, obtaining money, or avoiding military service. Ma-

lingering, however, is probably not limited to patients with antisocial reaction and almost certainly does not occur in each antisocial patient in each situation noted above. Malingering is a complex phenomenon that has yet to be properly studied. Nevertheless, in antisocial patients, malingering does occur and, when it does, may take the form of a psychiatric, medical, or surgical disease.

Treatment

The optimal treatment for antisocial reaction is unknown. So far as the author is aware, there are no controlled, documented studies to indicate the superiority of any form of treatment—whether psychotherapy, behavior therapy, psychoanalysis, drug therapy, electroconvulsive therapy, or frontal lobotomy—over any other. The absence of the proof of efficacy of a given specific treatment does not necessarily imply that a psychiatrist may not help the patient and his family in decisions concerning management. On the other hand, even this more limited goal has not been clearly shown to be facilitated by psychiatric care.

Prognosis

Remission and improvement apparently do occur in patients who suffer from antisocial reaction. The Gluecks showed some time ago that the extent of repetitive criminality diminishes with age.

In their studies at that time it was not clear that they were dealing with the antisocial reaction syndrome; it was only clear that they were dealing with criminality. The more recent studies of L. N. Robins and O'Neal dealt with persons given a diagnosis of antisocial reaction. The median age at which significant improvement occurred in their antisocial behavior was 35 years. A total of 39 per cent had shown improvement. Of those who had improved, one fifth did so before age 30, three fifths between ages 30 and 45, and one fifth after age 45. The decade of greatest improvement, which included half of all those who improved, was from ages 30 to 40. The improvement in gross antisocial behavior was not necessarily associated with having become particularly well adjusted. Many still reported interpersonal difficulties; irritability; and hostility toward spouse, neighbors, and organized religion.

The relation of life events to improvement is unclear. The most common reasons offered by the patients for their improvements were maturity, marriage, fear of imprisonment, and increased responsibilities. Only about one fifth named an individual as influential in their improvement, and in almost all these instances a spouse was named. No person named a psychiatrist, minister, social worker, parole officer, or other professional person.

The finding of remission or improvement in about one third of these patients indicates that even established adult antisocial reaction can improve. This tends to make uncertain the meaning of statements

concerning antisocial patients, such as that these persons "profit neither from experience nor punishment, and maintain no real loyalties to any person, group or code" (from the *Diagnostic and Statistical Manual*).

Suggested Cross References

For information regarding fundamental concepts of sociocultural and family determinants of behavior and personality see Fleck's section on the family (Section 4.3), Silverman's section on sociology (Section 4.2), and Wallace's section on anthropology (Section 4.1), all in Area B, on the basic behavioral sciences. It should be noted that in this section evidence was adduced to indicate that there is no documented evidence that sociological factors play a causal rather than a secondary role in the genesis of antisocial reaction. Alcoholism is discussed more fully by Chafetz in Section 27.3. Sociopathic behavior in children is covered by Stubblefield in Section 41.4, and Freedman covers the sociological determinants in juvenile delinquency in Section 41.5.

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Sexual Deviations

26.2 SEXUAL DEVIATIONS. I: INTRODUCTION

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Terminology

The sections that follow would have been entitled "Sexual Perversions" 25 years ago. With the development of greater methodological and conceptual sophistication, it is now recognized that the term carries with it a moralistic connotation that is entirely inappropriate for scientific description and categorizing. And since there is no consensus among biological and behavioral scientists that certain types of sexual behaviors are pathological, the more general term, deviance, has come into usage. Nevertheless, as applied to psychiatric syndromes, *deviation* has, for the most part, become synonymous with pathology. The following sections deal with behaviors that are both pathological and deviant.

Whenever the term deviation is used descriptively or diagnostically in this section, a statistical connotation is implicit. In this sense, deviation is a statistical function involving movement away from the median or statistical norm; it does not imply pathology. Statistically, genius is as deviant as mental deficiency; sterility in a woman is as deviant as the bearing of 15 children. Sexual behavior may be pathological and not deviant or deviant but not pathological. Exclusively monogamous love relationships in marriage may be statistically deviant in our society, yet they are hardly pathological. During the Victorian era and well into recent times, sexual frigidity seemed to be the statistical norm, though frigidity is clearly pathological, as has been substantiated by the recent work of Masters and Johnson, who demonstrated the high orgasmic potential of women. The statistical norm cannot by itself be taken as a criterion of the presence or absence of pathology.

The concept of cultural norm, a variant of the mathematical norm, does not bring us any closer to a solution. According to the cultural concept, the standard of what constitutes psychopathology is a relative, not an absolute, one. Each society determines what behavior shall be deemed normal and what abnormal, based on how it fits into the social context. Hence, it is argued that homosexuality is considered abnormal in Western society only because the cultural ethic designates it as such. The cultural relativists reason that, if

societal attitudes toward homosexuality were as accepting as toward heterosexuality, inversion would not be pathological. This point of view contrasts sharply with the argument advanced here—that the health or pathology of behavior must ultimately be assessed in relation to optimal individual and group development and continuity, not on the basis of conformity to a cultural norm, though as the sciences move forward, concepts of optimal individual and group development change. In certain primitive societies infanticide was an accepted practice, but no serious scientist would defend its normative function, even for purposes of population control. Normative practices among primitive peoples also include ritual killing, cannibalism, bizarre sexual rites, and so forth. But such practices are based on irrational, magical beliefs that do not further health and development. Investigators of human behavior continually seek for data among groups and societies that may reveal prevailing attitudes and behavior; however, the modal types that establish statistical norms are not necessarily indicators of an absence of pathology.

The Role of Fear

Psychoanalysis offers a methodology and criteria for assessing sexual psychopathology. A basic assumption is that dysfunction in heterosexual intercourse and orgasm indicates a neurotic disorder. Where fear of heterosexual gratification plays a significant role, the emergent sexual behavior is pathological. Fears of one sort or another determine varying degrees of frigidity in women or potency difficulties in men. Fears may determine dramatic behavioral inventions, circumventions, and shifts in sexual patterns, as may be noted in homosexuality, where sexual gratification is preserved but fear is avoided by a renunciation of heterosexuality. The sexual masochist insures gratification by incorporating into the sexual act the pain that is symbolic of the punishment and injury anticipated as reprisal for his having engaged in sexual activity and erotic pleasure. The hope of finding stimuli intense enough to break through sexual inhibitions leads some individuals to seek out various esoteric sexual practices. The many varieties of psychopathological sexual behavior attest to the imagination and adaptability of man, but these forms rotate around the axis of fear.

In *Three Essays Toward a Theory of Sexuality*, Freud implied that heterosexual behavior terminating in sexual intercourse and orgasm was normal. Sexual behavior terminating in orgasm in situations

other than heterosexual intercourse was designated as a deviation, aberration, or perversion. If, for example, orgasm were to follow masturbation or heterosexual oral practices, Freud would have considered it to be perverse, though not necessarily pathological. He viewed behavior as pathological only if it was part of a habitual pattern: "If a perversion instead of appearing merely *alongside* the normal sexual act and object, and only when circumstances are unfavorable to *them* and favorable to *it*—if, instead of this, it ousts them completely and takes their place in *all* circumstances—if, in short, a perversion has the characteristic of exclusiveness and fixation—then we shall usually be justified in regarding it as a pathological symptom."

Most psychiatrists agree with Freud that where orgasm is habitually achieved without heterosexual intercourse, a pathological condition exists. A wealth of clinical data from psychoanalysis demonstrates that in those instances where sexual behavior does not include heterosexual intercourse, fear and inhibition have determined the exclusion. However, the activities that have led to orgasm may or may not be pathological. Masturbation, for example, can be one normal mode of sexual expression for both sexes throughout life. The same holds for fellatio and cunnilingus, which may make up part of the normal sexual repertoire. Many individuals who participate in such practices suffer shame and guilt because they have been taught that the practices are wrong, sinful, dirty, and so forth. If a physician is consulted, he must correct any such erroneous ideas, thus freeing the patient from unnecessary guilt feelings. When masturbation and oral practices constitute the major if not the sole activities of sexual life, it is not the activities as such that are pathological but rather the existing fears which exclude the capability for heterosexual intercourse.

The central role of fear in the pathological scheme of things requires diligent attention in the treatment of sexual disorders. Underlying unrealistic beliefs must be delineated to resolve the fears rather than to terminate the activities. The latter approach is based on the spurious notion that sexual energies that should be available for intercourse are misdirected and wasted in the perversions. Attempts to interdict homosexuality or any other sexual act deemed to be pathological do not facilitate the restitution of heterosexual intercourse; only the resolution of fear accomplishes this.

Certain sexual activities are, however, always to be considered as pathological—such as sadistic sexual behavior, where the infliction of physical or psychic pain is a necessary component, and its counterpart, sexual masochism, where the experience of pain is a necessary element. Other bizarre activities, such as bestiality and necrophilia, are obviously abnormal.

Freud classified sexual aberrations as (1) deviations linked to the sexual object and (2) deviations linked to the sexual aim. He defined sexual object as the person toward whom one is sexually attracted, and

sexual aim as the act through which the instincts tend to find expression. Under the category of deviation in respect to the sexual object, Freud included homosexuality, the choice of sexually immature persons, and the choice of animals. Under deviations in respect to the sexual aim he constructed two subcategories: anatomical extensions and fixations of preliminary sexual aims. Subsumed under anatomical sexual extensions were the behaviors that include the use of nongenital organs as genitals, such as the mouth and the anus, and personal possessions and parts of the sexual object, such as articles of clothing, or a foot, or perhaps an ear, as stimuli for sexual excitation. Preliminary sexual aims refer to the various aspects of sexual foreplay preceding intercourse. Freud posited that any interference with or fear of participating in sexual intercourse could determine a fixation on some aspect of the foreplay, thus converting the foreplay itself into a substitutive sexual aim. He emphasized touching, looking (scopophilia), sadism, and masochism.

Freud's Explanatory Theories

Freud developed a complex metapsychological theory to explain sexual perversions. Two major components of the theory were found by him to be particularly applicable—the bisexual and the libido theory.

Bisexual theory. Freud did not evolve the bisexual theory; it was current in the psychiatric circles of his time. It held that each individual was part man and part woman. But Freud added his original stamp to the theory by identifying masculinity with activity and femininity with passivity. Experiential as well as constitutional factors were assumed to determine how much of each component would exist in the mature adult. In the normal male, the major part would be masculine and active; in the normal female, the major part would be feminine and passive. The part opposite to the biological sex assignment was thought to constitute the source of perversions. Thus, it would be perverse for a male to harbor any significant quantity of passive strivings and for a female to have a preponderance of active strivings.

Libido theory. Freud originated the libido theory to explain sexual development, sexual process, and sexual psychopathology. According to this theory, the sexual instinct in its development from infancy through adult life goes through several phases of maturation. Each phase is dominated by a somatic organ; each of the oral, anal, phallic, and genital phases unfolds under the aegis of its organ counterpart. Freud postulated that there were erotogenic organs which were linked to various developmental stages and that these organs were the somatic loci for operant processes of the sexual instinct. During the earliest stage, the mouth was identified as the locus of the sexual instinct. Supposedly, a continuous endosomatic stimulation emanates from the mouth, creating a demand on the psychic life of the infant. In this oral phase, the

demand motivates that behavior which brings to the mouth appropriate, gratifying stimuli, such as the mother's breast and food.

Each stage and its organ representative supposedly have specific and particular demands. If, as development proceeds, the demands falling to any particular stage are inappropriately met—that is, insufficiently or excessively met—fixations at that stage then occur. The psychic demands issuing from the infantile erotogenic organs continue on into adult life. In normal sexual development, according to Freud, the infantile libidinal organs and phases do not become fixated at early levels but during the final genital phase become organized under the dominance of the genital organs, the appropriate locus of the sexual instincts from puberty on. Thus, fixation at an earlier level, say the oral level, means that there has been a continuity into adult life of anachronistic demands for oral gratification. Such demands provide the motivating force and psychic energy for perverse impulses and behavior. Oral sexual practices, both heterosexual and homosexual, are explained by this theoretical construct.

Freud connected all adult perversions with anachronistic infantile impulses; he then drew two additional corollaries. (1) Neurotic symptoms are rooted in perverse impulses. Such symptoms are the negative or counterpart of the perversion. Some individuals express perverse impulses in action, others in neurotic symptomatology. The tendency to *act out* the perverse impulse is characteristic of the psychopath while the tendency to translate the impulse into *neurotic symptoms* is characteristic of the neurotic. (2) The tendency to harbor perverse impulses is universal, since each individual is bisexual. Freud thought that it was unlikely that the development of the sexual instinct proceeded without vicissitudes. In the normal person perverse impulses are mediated by means of repression and sublimation, so that acting out does not occur and the perverse impulses are not translated into neurotic symptoms.

Other Explanatory Theories

Freud's libido theory continues to be accepted as a workable conceptual framework in classical psychoanalytic theory, though in the past 25 years it has met with considerable criticism. Many psychiatrists and psychoanalysts no longer accept the libido theory as explanatory either of sexual or of general psychopathology. Among the alternative theoretical systems to evolve over the years, three have gained prominence in American psychiatry: the cultural theory, its major exponent being Karen Horney; the adaptational theory emphasized by Sandoz Rado; and the interpersonal theory promulgated by Harry Stack Sullivan. Each of these theorists has attempted to explain sexual psychopathology in adaptational terms; their views differ essentially as regards a conception of *what the individual is adapting to*.

Interpersonal theory. In this theory, sexual psychopathology is conceived of as both a manifestation of a pervasive derangement in interpersonal relationships expressed in the sexual sphere and as an adaptive way of selecting a type of sexual organization commensurate with optimal interpersonal expressiveness.

Cultural theory. The culturalists assume that beliefs, mores, and values characteristic of the society in which one is reared are reflected in individual psychology and psychopathology. Three such ongoing cultural characteristics are exploitiveness, competition, and authoritarianism, which may find expression in pathological sexuality and other aspects of behavior. The culturalist hypothesizes that sexual psychopathology is a manifestation and an expression of the cultural trends inimical to optimal human relatedness. Through the sexual process an adaptation is made to express or defend oneself against exploitiveness, competition, authoritarianism, and other antisocial trends.

Adaptational theory. As it relates to sexual psychopathology, this theory is predicated on the assumptions that abnormal sexual behavior is a consequence of fear of heterosexual intercourse and heterosexual relatedness, particularly with a loved and valued object; that the determinants of fear emerge from deleterious life experience, from which derive faulty beliefs and belief systems supporting erroneously based fears; and that the variegated pathological sexual behaviors are an adaptation to fear. Pathological sexual behavior is directed toward preserving sexual gratification while attempting to cope with the threat of anticipated injury by engaging in a series of adaptive maneuvers usually referred to as defenses.

The defenses may circumvent the threat or combine the threat with a defense and include both in the sexual act itself, or they may deal with the threat in a variety of other ways. In homosexuality, threat is avoided by substituting a homosexual object for a heterosexual object, which is perceived as threatening. In masochism, the threat of punishment for heterosexuality and the concretized punishment—that is, the painful component of the masochistic act—are made part of the sexual behavioral sequence so that orgasm is not inhibited by fear. Rado refers to such a pattern as pain-dependent behavior.

In sum, psychopathological sexual behavior is organically goal-oriented and is integrated with a variety of defensive and reparative maneuvers as a way of adapting to an expectation of attack for engaging in heterosexual activity, particularly with a loved object. The determinants of the fear, the beliefs underlying the expectation of punishment and damage to self, and the nature of the anticipated attack develop during childhood and adolescence. This neurotic fear derives from three major sources: (1) inappropriate, prohibitive attitudes and behavior by parents and other authority figures toward the child's expanding sexuality; (2) maladaptive parental atti-

tudes and behavior toward a child's oedipal manifestations; and (3) parental interference with normal sexual identification and failure to reinforce gender identity. The anticipated attack may include physical injury—such as castration, bodily assault, even murder—and social injury—such as rejection, humiliation, and degradation—in short, any set of circumstances or acts deemed to be antithetical to the best interests of the self.

Another category which may be considered pathological concerns sexual behavior oriented to nonsexual goals. An analogy to eating is relevant. Normally, eating satisfies the feelings of hunger that arise from metabolic processes. But if an individual eats as a way of relieving tension or boredom, such eating is compulsive and neurotic. If sexuality becomes a way primarily of relieving anxiety and tension or as escape phenomena either from work or other anxiety-laden situations, or where sex becomes an opportunistic maneuver to gain affection or approval, or where sex becomes a way of dominating one's partner, such behaviors must be construed as neurotically inspired. Prostitution is a prime example of the use of sexuality for gains other than sexual gratification. The prostitute also suffers from sexual inhibitions and fears which preclude stable heterosexual love relations with appropriate love objects. Where sexuality is used for purposes other than erotic gratification, one can usually delineate anxiety and inhibition surrounding the attainment of a meaningful love relationship.

Normal Sexuality

If the criteria for diagnosing pathological sexual behavior are basically those of determining the areas of irrational, inhibiting fears, what are the criteria of normal sexuality? Are they simply the absence of pathology and the absence of fear? Or is normal sexuality something that can be described as a viable process? Optimal sexual functioning excludes, of course, irrationally based fear and inhibitions. But since man is a biosocial organism, the nature of his relatedness to a love object is central in determining the criteria. In this writer's view, a healthy sexual adaptation includes the capacity to engage in sexual experiences without fear or guilt and at an appropriate time to fall in love and marry one's chosen partner and to sustain one's feelings of love and sexual attraction to the spouse. The mate will have no preexisting or predictable disorder of a serious kind and no known difficulties that would disrupt, distort, or negate a happy relationship. It is not implied that a couple must maintain a state of constant euphoria and ecstasy but rather that there be the capability of remaining in good emotional contact with each other; of having mutual respect, mutual pride, a sense of identity of interests, and respect for each other's integrity, individuality, and privacy; and of having expectations of

each other which are realistic and free of opportunistic strivings.

Sexually, the male is expected to be potent and orgasmic, with frequency of intercourse determined by mood, mutual agreement, circumstances, and needs. The female is expected to be responsive and orgasmic and to feel as free to initiate sexual activity as does the male. Sexuality should be enthusiastically enjoyed, and each should be capable of having frank discussions about sexual matters. Both partners should have a wish for children and the psychological ability to implement such wishes. When children become members of a family group, husband and wife should be able to relate lovingly, understandingly, and impartially to offspring of either sex, yet parents should be able to respond to the individual differences and requirements of each child.

Problems relating to falling in love, sustaining a love relationship in or out of marriage, resistance to marriage, and psychological sterility are generally not regarded as sexual deviations. Yet such problems are the most common manifestations of sexual fears. The bizarre and esoteric deviation stands out, is more visible, and commands one's attention and curiosity more insistently than the more chronic, persistent, widespread disorder, which tends to lose itself within the culture.

Suggested Cross References

For further information regarding normal sexuality see Section 5.7 in Area B, on the basic behavioral sciences. In Area C, Mack and Semrad's chapter on classical psychoanalysis (Chapter 6) contains a more detailed discussion of analytic concepts mentioned in this section, such as libido, psychosexual stages of development and the theory of bisexuality. In that same area also see the sections on Horney, Sullivan, and Rado (Sections 7.2, 7.3, and 7.5, respectively) for more detailed discussions of their theoretical positions and their alternate viewpoints on sexuality.

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26.3 SEXUAL DEVIATIONS. II: HOMOSEXUALITY

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Definition

Definitions in psychiatry, as in science generally, tend to reflect one's conceptualizations about his subject. Homosexuality is defined here as an adaptation characterized by sexual behavior between members of the same sex.

This seems straightforward enough, but one may ask, "What does sexual behavior include?" If one man puts his arm around another as an expression of warmth and affection, if two women greet each other by kissing, are these gestures expressions of sexuality? Most psychiatrists would not designate such behavior as sexual unless erotic interest and excitement could be demonstrated as motivational elements. Yet it is often difficult to establish motivation, particularly when the participants lack conscious awareness of erotic feelings. Would one classify as homosexual the masturbation of preadolescent and adolescent boys in a group? Certainly the activity in this instance is overtly sexual, and only males are involved, but this experience is onanistic: it is transpiring *among* males, not between any two. It is of clinical interest that habitual homosexuals rarely have a history of having participated in group masturbation. In the view of this writer, early masturbation in groups is not homosexual, though this opinion is not unanimously shared. However, despite differences about acceptable diagnostic criteria, there is consensus that those who exclusively and preferentially engage in same sex erotic activity are homosexuals.

What about married men who involve themselves in homosexual behavior from time to time? Or those who engage in it when separated from the opposite sex, as occurs in prisons? Or the homosexual prostitute, whose sole aim presumably is monetary gain? Are these men true homosexuals? If not, what are they?

Kinsey et al. attempted to solve this theoretical and methodological problem by rating the extent of homosexual activity rather than by designating the respondent as a homosexual or a heterosexual. A seven-point scale was constructed to determine a heterosexual-homosexual balance. Respondents who scored zero had had neither homosexual responses nor experience; those who scored three were about equally heterosexual and homosexual; six was scored by exclusive homosexuals.

Another attempt to establish a valid guidepost for diagnosis was offered by Marmor, who has stated:

The clinical homosexual [is] one who is motivated in adult life by a definite preferential erotic attraction to members of

the same sex and who usually (but not necessarily) engages in overt sexual relations with them....The definition does, however, exclude patterns of homosexual behavior that are not motivated by specific preferential desire—the incidental homosexuality of adolescents or the situational homosexuality of prisoners and sailors....Most members of such groups... who turn, or return, to exclusive heterosexuality as soon as the opportunity arises, are not homosexuals psychodynamically....

According to this construct, consciousness of preferential homosexual desire is required for the classification, but it does not take into account one decisive point: An adult who repetitively engages in homosexual activity may be erotically responsive though awareness of it is repressed. Repetitive experiences establish the existence of a homosexual pattern, whether or not it is perceived as preferential. An adult who repetitively engages in homosexual behavior must, therefore, be designated as homosexual. Those who also engage in heterosexual activity are termed bisexual. They may be predominantly homosexual or predominantly heterosexual. The latter, nevertheless, have the tendency under certain conditions to shift into a homosexual gear; that is, they have the capability for homosexual arousal and behavior. This readiness for inversion differentiates men who engage in sporadic, infrequent, or even rare homosexual encounters from exclusive heterosexuals.

Male Homosexuality

Although homosexuality occurs in both sexes, male homosexuality has been accorded the major attention by theologians, jurists, historians, and other behavioral and social scientists.

Prevalence. Although it existed in ancient civilizations and is widespread in modern society, homosexuality seems to have been absent or rare in some cultures in the past, and there is little or no evidence of it in certain present day societies. The incidence and prevalence of homosexuality in the United States is unknown. Because of the opprobrium associated with inversion, accurate statistics are difficult, if not impossible, to obtain. Kinsey et al. contributed the only systematic statistical studies in this country. According to their findings, about 4 per cent of white adult males remain exclusively homosexual after adolescence, and about 10 per cent are "more or less exclusively homosexual for at least three years between the ages of 16 and 65." At least 37 per cent of the total male population was reported to have had overt homosexual experiences with or without orgasmic culmination at some time between puberty and old age. In preadolescence the incidence of homosexual genital play was reported as 48 per cent, and this percentage increased if nongenital activity was included. Kinsey's definition of homosexuality is very broad. Behavior such as group sexual experimentation is not necessarily homosexual; therefore, if homosexuality is loosely defined, the exceedingly high incidence of behavior reported as homosexual may be inflated.

The psychiatric examination of large numbers of patient and nonpatient populations screened for military service reveals far lower estimates, varying from 1 per cent to 5 per cent. In World War II, 10 million men were involved; they ranged in age from 18 to 45 and over. The overall figures show that about one tenth of 1 per cent were rejected by draft boards for homosexuality. About 0.4 per cent were turned down at induction centers, and about as many more were subsequently discharged for homosexual activity while in active service. In total, about 1 per cent of the Armed Forces were officially identified as homosexual. A proportion of homosexuals likely escaped these surveys; still, an extravagant estimate of those who were missed would be, say, another 1 per cent, bringing the total to 2 per cent. The estimate that 1 to 2 per cent of male adults are exclusively or predominantly homosexual accords with this writer's experience as a psychiatrist in civilian practice and in the Army. In a study of thousands of German males, a research work that endured over the first 2 decades of this century, Hershfield estimated that 2.3 per cent were exclusively homosexual and 3.4 per cent were bisexual. Clearly, homosexuality is relatively uncommon, but since the behavior of overt homosexuals is highly stylized and frequently exhibitionistic, there is often an overestimation of its prevalence.

Inversion is widely distributed and cuts across caste and class lines. There seems to be some underrepresentation among Jews, but whether second generation and third generation Jewish-Americans are less affected than the general population remains to be determined. Homosexuality appears to be overrepresented in occupations such as acting, dancing, and hairdressing, but in general it is not restricted to any occupation or stratum.

Characteristics. Male homosexuals differ from each other as do heterosexuals, but they have in common the homosexual proclivity and an inability to form or sustain an orgasmically effective, romantic heterosexual relationship. However, two major groupings of homosexuals may be noted: one consists of men who are exclusively and predominantly homosexual; in the second category, the homosexuality is less prominent. In the first group, the life style is homosexual. Social relationships and meaningful emotional relationships are had with other homosexuals, with the possible exception of members of the family and in some instances carefully selected heterosexual friends. The other group live in the heterosexual world. They are usually married, have children, and seem, on the face of things, to conform to heterosexual standards. They carry out their homosexual activities in the greatest secrecy, unknown to those closest to them. Few, if any, are recognizable as homosexual. Many in the first group do not conform to the popular effeminate stereotype. They themselves are largely of the opinion that they can distinguish

each other. This may involve a cue and response signaling system. For obvious reasons, few homosexuals are unconcerned about being exposed, and most successfully conceal their condition.

The homosexual world. Homosexuals tend to gravitate toward large urban centers where, in more recent times in this country, they have built up a social system that has the features of a subculture within the larger society. There are both visible and hidden areas in the homosexual world. Turkish baths, well defined sections in cities, and resort spots are part of the visible world that is habitually frequented by homosexuals who have openly affiliated themselves with this life style. Others move in and out of it, and still others hold it in contempt and avoid it.

Homosexual society is stratified. A small elite with money, power, and prestige make no contact with the visible homosexual world but are known to it. As occurs in an open class system, many homosexuals are upwardly mobile and aspire to be accepted by the "in" group. The elite is cliquish, and they behave like most socially select groups. To give voice to their aspirations and needs, visibly committed homosexuals of both sexes have formed national organizations. They attempt to improve the public image of homosexuals, to protect them from persecution and discrimination, and to give them a sense of personal dignity; but they are not oriented toward helping their members change their pathological sexual pattern.

Homosexuals who seek to affiliate themselves with the homosexual world hope to find fulfillment of social, emotional, romantic, and sexual needs. The sought fulfillment consists of living happily with a homosexual mate in an analogue of heterosexual marriage. Few, if any, realize this wish. As youths, many fall passionately in love, only to have their romances break up somehow after relatively short periods of time. These liaisons run a stereotypic course. Passionate beginnings are followed by episodic phases of turbulence and fade into ennui before ending. By maturity, they have long since abandoned the hope of finding romantic satisfaction in a homosexual relationship. If a homosexual continues to be a member of a pairing, he learns to expect far less than bliss or even reasonable contentment. The few relationships that endure tend to be characterized by sharp conflict or by absence of sexual activity, so that sexual gratification may be sought outside the partnership. Such extra-pairing liaisons are casual and emotionally shallow and may be anonymous to the point of mutual ignorance of identity.

The unattached homosexual is, by and large, a lonely hunter, seeking sexual satisfaction where he can find it. The chronic frustration of romantic longings spurs him into the restless displacement behavior common to most homosexuals, which they express in a frenetic pursuit of excitement and pleasure

epitomized in the phrase "the gay life." The average heterosexual spends far less time and energy in sexual pursuits than do homosexuals, especially those who perpetually involve themselves in nocturnal prowling for new partners—cruising streets, bars, and haunts known to be frequented by other homophiles. These encounters expose them to a variety of dangers: robbery, beatings, blackmail, and venereal disease. The incidence of gonorrhea and syphilis has sharply increased of recent years, much of it traceable to homosexuals. When treating the homosexual patient, the physician must be alert to the possibility of venereal disease.

The homosexual encounters of bisexuals who are predominantly heterosexual occur episodically for the most part. The homosexual activity may be a compulsive outburst; it may occur during periods of stress or while under the influence of alcohol or when away from home on business or vacation. The homosexual world has dubbed such men "closet queens" because of the secrecy with which their homosexual activities are pursued. Psychiatric examinations reveal these men to be sexually inadequate as husbands or unable to sustain effective emotional contact with their wives. These bisexuals are circumspect about homosexual activities, but in some instances they seem to invite apprehension by the authorities and subsequent public exposure. A small number renounce heterosexuality and become committed homosexuals.

Sexual practices. Homosexuals are more preoccupied with sex than are heterosexuals; they begin sexual practices earlier and are more often sexually active in preadolescence, adolescence, and adulthood. In a systematic study of male homosexuals by this author and associates, 35 per cent of the sample were already aware of their sexual interest in males by the time they were 10 years old; about 80 per cent had this awareness by the age of 16; less than 10 per cent became aware of their inversion after the age of 20. Of the 106 homosexuals studied, 60 per cent remembered having had erotic responses to another male by the age of 12. By the age of 14, more than half had participated in homosexual activity involving genital contact, compared to less than 10 per cent of the comparison group of heterosexuals who by the same age had had a genital heterosexual experience.

Most commonly, homosexual practices involve kissing—including tongue play—caressing, and mutual masturbation. The mouth and anus as sexual orifices usually become part of the pattern as homosexuals gain in sexual experience. Among the patients studied, one third had engaged in sexual activity involving orifices by the age of 16. The others tended to enter into these practices as they grew older.

For accuracy of description, where fellatio is practiced, the individual being sucked may be designated as the insertor, the partner as the insertee. The insertor may remain relatively passive while the in-

sertee is actively sucking, or the insertor may actively simulate intercourse. The partner's mouth is then equated with the vagina. In anal intercourse—also referred to as pederasty, sodomy, and buggery—the insertor is active; the insertee is passive. Many homosexuals have a habitual and preferential sexual practice, but the majority vary their techniques; they may take different roles at different times with different partners. Most homosexuals have certain strong disinclinations; for example, a man may be an insertor in anal activity, but find the role of anal insertee repulsive. Some are interested in oral practices only; others in anal activities only. There is no reliable correlation between appearance, social behavior, and preferred sexual practices. Masculine types may be exclusive oral insertees or anal insertees, and more effeminate homosexuals may be exclusive insertors.

The most popular choice of homosexual partner is the masculine type or the male who has traits that symbolize masculinity. A large penis is highly valued and sought as the ultimate in masculine symbolism. Emphasis is also placed on beauty of figure and muscular development. Only a minority of homosexuals *consciously* look for feminine characteristics in the partner. Some in this category seek transvestites as partners who, when wearing feminine clothing, are said to be "in drag." The seeking of children as sexual partners is rare among those who are exclusively homosexual. Pedophilia occurs mostly among bisexuals. As a group, such bisexuals tend to be older men who may even be married and have children.

Despite an apparent disinterest in and aversion to heterosexual intercourse, evidence of sexual responsiveness to women can be demonstrated in most homosexuals, including those who are exclusively homosexual. Of the group systematically studied, two thirds had made an attempt at heterosexual intercourse, and of these about one half had been successful. In the course of psychoanalytic treatment, half the number who were exclusively homosexual had presented dreams depicting explicit heterosexual strivings. One repeatedly observes clinically that they seek feminine companionship and tend to become depressed when separated from women for any prolonged period. Homosexual couples often make friends and companions of a female homosexual pair. If the heterosexual threat is neutralized by a woman's sexual unavailability because of marriage, advanced age, etc., homosexual men may be affectionate, charming, and even subtly seductive.

Etiology

Pre-Freudian theories. The pre-Freudian conceptualizations about the etiology of homosexuality were based on two major and related assumptions: (1) There is a universal bisexuality. (2) There is a congenital or hereditary basis for the accentuation of

the feminine component among male homosexuals. Ellis summarized the bisexual assumption:

We thus see that the ancient medico-philosophic conception of organic bisexuality put forth by the Greeks as the key to the explanation of sexual inversion, after sinking out of sight for 2,000 years, was revived early in the 19th century by two amateur philosophers who were themselves inverted (Hügel, Ulrichs) as well as by a genuine philosopher who was not inverted (Schopenhauer). Then the conception of latent bisexuality independently of homosexuality was developed from the purely scientific side (by Darwin and evolutionists generally). In the next stage this conception was adopted by the psychiatric and other scientific authorities.

The pre-Freudian psychiatrists were in agreement that an inherited predisposition was basic in the etiology. Some allowed that experiential factors might be influential when the inherited tendency was not strong. The condition was conceptualized by some authors as abnormal but not necessarily as a disease such as color blindness, to which it was compared. Krafft-Ebing, among others, viewed it as a stigma of degenerative disease of the nervous system, though later he committed himself to the bisexual assumption. Ellis considered male homosexuality to be a biological variant in the sense of a mutation. All considered the condition to be untreatable, though Krafft-Ebing did attempt to activate heterosexuality in his patients by the use of hypnosis.

Deviant but normal theories. The nature or nurture controversy is still a live issue as concerns etiology, though there are attempts to integrate or work out variations of these opposing approaches. Some workers hold that homosexuality is a sexual deviation along a spectrum of widely varied sexual behaviors, all falling within a biologically normal range. The concept that homosexuality is deviant but normal is essentially statistical, in the sense that genius and low normal intelligence are deviations from the statistical norm of average. It is based on the assumption that innately man is neither heterosexual nor homosexual; the path his sexual development takes depends on the particular way he has been conditioned and biosocially patterned. Accordingly, homosexuality is considered to be pathological only in societies having taboos and prohibitions against it.

As one order of supporting data, these proponents cite sexual behavior between same sex participants in infrahuman species, particularly the mounting behavior of estrous females who mount other females and males who mount other males. The meaning of such behavior, however, is not well understood. We have no information as to the steering mechanisms or cues that set it off. Classing it as homosexual implies that the animal is seeking and attaining homosexual gratification as we know it to occur in humans. Even where there are copulatory attempts, as in thrusting movements, nothing is known about the arousal stimuli. Is the arousal a response to internal or external stimuli? Does it occur when estrous females are in the vicinity but are unavailable for reasons unknown

to the human observer? There are countless other questions one could raise.

The salient fact about animal sexual behavior that is rarely mentioned is that in no other species where reproduction depends on male-female coupling have deviant types appeared that fear or abhor heterosexual mating and engage solely in homosexual behavior consistently, exclusively, and in highly organized sociosexual patterns. In humans the presence of anxiety and fear of heterosexuality is a central feature of the inversion. This has no counterpart among infrahuman species. Taken by itself, this fact is reason enough why animal behavior is not suitable as a model for interpreting human homosexuality, though it may offer some clues that might be suggestive—for example, the presenting behavior seen among male monkeys following a threat by a more aggressive male. But it is a giant step to draw a one-to-one analogy between this relatively simple behavioral sequence and the complexity of psychodynamic mechanisms, motives, and behaviors operant among humans.

A second order of evidence used to buttress the deviant but normal hypothesis deals with conditioning or early imprinting. It rests on the assumption that sexual object choice is learned or conditioned and excludes the possibility that biological steering mechanisms direct the male to the female or vice versa. The work of Money and the Hampsons on hermaphroditism has often been cited as evidence supporting the conditioning hypothesis. These workers have shown that gender role and sexual orientation and direction correlate with parental sex assignment and that gonadal, hormonal, and chromosomal statuses are not the crucial determinants in the gender role behavior of hermaphrodites. These authors have made a valuable contribution toward understanding the psychological development of hermaphrodites, but this work has no direct application to homosexuality. Gender role assignment is based on anatomy, and, since homosexuals are anatomically normal, male gender role is assigned at birth. Homosexuals know full well that they are males. They do not shift into states of mind during which they believe they are women because of role confusion or faulty self-image. They do, however, suffer from doubts and feelings of insecurity about their maleness. Masculinity is a sociocultural construct referring to a male's capacity to fulfill expected role behavior. It includes the ability to attract females and to function sexually with them. Many homosexuals have profound anxiety about appearing masculine, and some conceal such evidence behind a facade of effeminacy.

In this writer's view, biological steering mechanisms probably exist that ensure the heterosexual direction of object choice. One such steering mechanism may be olfactory, in man as in infrahuman species. Militating against a conditioning assumption is the erotic heterosexual content that appears in the

dreams of homosexuals. Such dreams usually contain symbols of threat and are accompanied by anxiety. If a homosexual were truly conditioned, he would have neither a heterosexual response nor an anxious or aversive reaction to females; he would be neutral and nonresponsive.

A third order of evidence used to support the deviance hypothesis consists of historical and cross-cultural data on the widespread occurrence of male homosexuality in ancient as well as modern civilization. Some authors indicate, explicitly or implicitly, that homosexuality would be ubiquitous were it not tabooed. According to Kinsey et al.,

Whatever factors are considered, it must not be forgotten that the basic phenomenon to be explained is an individual's preference for one sex, or for a partner of the other sex, or his acceptance of the partner of either sex. This problem is after all, part of a broader problem of choices in general; the choice of the road one takes, of the clothes one wears, of the food that one eats, of the place in which one sleeps, and of the endless other things one is choosing. A choice of partner in sexual relations becomes more significant only because society demands that there be a particular choice in this matter, and does not often dictate one's choice of food or of clothing.

Yet there are societies where male homosexuality has not been observed and where it appears to be absent entirely. Citing his personal anthropological experiences, Marvin K. Opler, a social psychologist, stated, "In field work among Ute Indians of Colorado, this author's checks on such topics [homosexuality] yielded amusement, disbelief, and counter-questioning on American urban culture." Ralph B. Jacoby, a psychoanalyst who has interviewed Vyana Indians in Surinam, stated in a personal communication that these people have no concept of male homosexuality, no word for, no observable prohibition and that his inquiries about homosexuality evoked perplexed amusement. Thoden Von Valsen, an anthropologist who in recent years lived for 18 months with the Bush Negroes (Djukas) of Surinam, observed no evidence of homosexual behavior among them. T. A. Lambo, chairman and professor of psychiatry at the University of Ibadan, Nigeria, informally reported that, as far as he is aware, in the tribal organization that constitutes approximately 80 per cent of Nigeria's 53 millions, there is no male homosexuality or any prohibitions against it. In Israel, male homosexuality is extremely rare among those raised on the kibbutzim.

A fourth order of evidence is based on Hooker's work with projective techniques. Rorschach and Thematic Apperception Tests were administered to a group of homosexuals and heterosexuals and were then interpreted by three judges, authorities on projective testing. Hooker reported:

The most striking finding of the three judges who examined the projective materials was that many of the homosexuals were very well adjusted. In fact, the three judges agreed on two thirds of the group as being average or superior in adjustment. Not only do all homosexuals not have strong feminine

identifications nor are they all 'somewhat paranoid' but according to the judges some may not be characterized by any demonstrable pathology (Marmor).

However, the test findings reported are not in accord with clinical experience. In this regard, criticism is often leveled at clinicians, who are supposedly biased by skewed samples of homosexuals who have psychiatric problems. This writer had the opportunity during World War II to examine psychiatrically 50 homosexuals who had been apprehended by the military police. These soldiers were not patients, nor did they regard themselves as such, but they manifested easily discernible psychopathology quite similar to that seen among homosexuals who enter treatment. Neither Hooker nor the judges defined what they considered to be "well adjusted." At best, the term refers to a purportedly well functioning individual without gross visible symptoms. It does not preclude the presence of severe underlying psychopathology. Beyond Rorschach testing, a larger sample of apparently well adjusted homosexuals should be clinically screened by psychoanalysts. Such a study might well reveal constellations of psychopathology related to the homosexual adaptation.

Genetic theories. Contrasted to the workers who consider homosexuality to be a deviant but not aberrant condition are those who view homosexuality as a constitutionally or genetically determined disease, disorder, or defect. The strongest support for this argument derives from Kallmann's twin studies. Kallmann studied 85 pairs of homosexual twins, 45 of whom were dizygotic and 40 monozygotic. He reported that the concordance rates of homosexuality (the percentage of pairs in which both members were homosexual) were somewhat higher among dizygotic twins than that reported for the total male population, considering only Groups 5 and 6 on the Kinsey scale, but not differentiated at a statistically significant level. For the monozygotic twin pairs, however, Kallmann reported 100 per cent concordance.

These statistics are indeed impressive, but they must be interpreted with caution. The fact that monozygotic twins are genetically similar does not mean that if they develop similar complex patterns of behavior, these patterns are, therefore, genetically determined. The possibility that each twin is exposed to similar social influences must be considered, as should the individuated identification processes. In Kolb's study of seven monozygotic twin pairs, one member of each pair was homosexual and the other heterosexual. This study did not support Kallmann's astounding findings of 100 per cent concordance.

Freud's theories. Freud's conceptualizations about the etiology of male homosexuality combined biogenetic and psychosocial hypotheses. He accepted the bisexual theory of his day but put his own stamp on it. Constitutional factors were thought to explain preponderant tendencies toward or away from activity. Masculinity was identified with activity; fem-

inity was identified with passivity. Constitutional factors were also invoked to explain exaggerated influences of the oral and anal zones, which, in their receptive aspects, were identified with femininity and, in their sadistic aspects, with masculinity.

Freud allowed that life experience could play a determining role in extinguishing or reinforcing genetic factors; that is, experience could play its part in establishing pregenital libidinal fixation. He never explicitly assigned quantitative values to the dual genetic and psychic determinants but implied that they might vary in each case. Thus, he left room for homosexuality as a pathological condition resulting from abnormal experience within the family. He described homosexuals as having had an intense erotic attachment to their mother during childhood "which was evoked and encouraged by too much tenderness on the part of the mother herself and further reinforced by the small part played by the father."

Freud predicted that his bisexual theory would eventually be confirmed or invalidated by biological advances. Since his time, it has been determined that in the normal organism bisexuality is a fiction. Physical, chromosomal, and hormonal examinations reveal homosexuals to be biologically normal males. Sex is clearly differentiated at the moment of conception by the XX and XY chromosomal pattern, and there is no biological basis for assigning bisexual constitutional components. The bisexual theory as a set of conceptualizations to explain the etiology of male homosexuality is no longer tenable, nor is there any existing evidence to support a genetic theory of homosexuality.

Rado, the first psychoanalyst to review Freud's bisexual theory critically, had this to say:

There is no such thing as bisexuality either in man or in any other of the higher vertebrates. In the final shaping of the normal individual the double embryological origin of the genital system does not result in any physiological duality of reproductive functioning. This double origin is of significance only in developmental disturbances and reversals resulting in an admixture of structural characteristics of the opposite sex and thus recognizable as inconsistencies of sex differentiation. In such abnormally built individuals reproductive activity may be impaired or impossible, but the presence in their genital structure of fragments of the opposite sex does not confer on them the reproductive capacity of that sex (Marmor).

Experiential theories. The findings of a comprehensive, long term study by Bieber et al. demonstrated the association between adverse intrafamilial influences and homosexual development, thus strongly supporting the theory that homosexuality evolves as a consequence of deleterious experience. In comparing 106 male homosexuals in psychoanalytic treatment with 100 heterosexuals in treatment, certain clusters and themes of parental attitudes and behavior were found to be typically characteristic of the homosexual case histories. Significant statistical differences were found between the homosexual and heterosexual pa-

tients, particularly in items tapping parental interaction and influence.

The modal type of mother of the homosexual was overly close, overly intimate, possessive, and dominating; she was overprotective as well as demasculinizing. She spent a great deal of time with her son and generally favored him from childhood on over other siblings. She demanded undue attention and solicitude from this boy. She encouraged an alliance against the father and frequently openly preferred son to husband. Puritanical and sexually frigid, she interfered with her son's heterosexual interests in childhood and adolescence, yet she herself tended to be seductive with him. Overly concerned about illness and physical injury, she babied him and hindered his participation in normal activities and the rough and tumble of boyhood, presumably out of concern for his welfare. In a few cases, the mother was seemingly detached, rejecting, and overtly hostile, but the majority had formed a possessive, controlling, inappropriately intimate relationship with the son. There were instances where mother and son occupied the same bed far into the boy's adolescence or where the mother exhibitionistically exposed her nudity.

Salient attitudes to such a mother included submissiveness, overeagerness to please her, and a fear of displeasing or hurting her. These sons usually felt admired and accepted by the mother; in turn, they admired and respected her. Consciously, few homosexuals hated or feared their mother; they turned to her for protection and sided with her in family quarrels.

The father was usually detached, unaffectionate, and hostile to this son, whom he minimized and humiliated and with whom, in most cases, he spent very little time. Rarely his father's favorite, usually his least favored child and scapegoat, in the large majority of cases the homosexual hated and feared his father and lacked respect or admiration for him.

Thus, the parental constellation most likely to produce a homosexual or a heterosexual with severe homosexual problems was a detached, hostile father and a close-binding, overly intimate, seductive mother who dominated and minimized her husband.

The majority of patients described their parents as conforming to these profiles. There were exceptions. Some of the mothers were apparently detached, disinterested, and even explicitly hostile. They constituted a small group whose maternal neglect and underprotectiveness resulted in their son's exposure to a variety of traumatic experiences beyond the adaptive capacity of children. Some of the fathers were overly close but were, nevertheless, minimizing and demeaning. Not one father of a homosexual in this study was classified as a warmly related, constructive parent; in the heterosexual sample the father-son relationship was much more positive. It was concluded that a male child would not become homosexual if he had a loving father, despite the influ-

ence of a mother who conformed to the profile of the homosexually inductive mother. In many cases both parents were able to relate more normally to their other sons.

Extensive clinical and research findings permit the following formulation. Despite differences and variations in neurotic motivation, homosexually inductive parents quite specifically direct themselves toward inhibiting in the child manifestations of assertive masculine behavior; there are unconscious but unremitting attempts to extinguish the son's heterosexuality. Evidences of heterosexual interest and clearly masculine role behavior evoke in such parents anxiety and suppressive behavior that is effectively castrating.

In communicating a desire for singular and unusual closeness to her son, the homosexually inductive mother articulates her pathological behavior with the child's natural need for maternal warmth and closeness. Between the 3rd and 4th year of life, the wish for close contact with the mother strongly reinforces the developing capacity for heterosexual responsiveness that ushers in the Oedipus complex. At the same time, the mother has led her son to believe that he has a basis in reality for expecting gratification of wishes for exclusive rights, privileges, and possession of her.

The adhesive tie between mother and son promotes intensely rivalrous and murderous feelings in the boy toward the father. Fear of retaliation gives rise to irrational fears of the father. Most homosexual patients have had fathers who responded to the oedipal phase by acting out hostility or expressing it through seeming disinterest and lack of involvement while covertly expressing contempt or anger. A mutually competitive struggle between a young child and an adult thus unfolds. Clearly, the winning odds are stacked against the child, who finds himself in the frightening situation of facing an opponent recognized as potentially overwhelming. The boy not only is deprived of realistic needs for paternal security and protection but is denied an admired, loved figure for masculine identification. Where a father adequately fulfills the paternal role—that is, by meeting the realistic dependency needs of his son and encouraging a masculine identification—the sexually determined competition is then neutralized or counteracted. The frustration of a son's need for his father intensifies filial hostility and promotes even further pathological dependency on the mother; at the same time, a yearning for paternal love endures.

A morbid resolution of the Oedipus complex is determined by both the father and the mother in a situation where the son is overly attached to his mother and intensely hostile to his father. The dynamics of this triangular interaction illuminates the problem of the homosexual's persisting affectional tie to his exploitative, dominating, castrating mother and his enduring hatred and fear of a sexually de-

structive father, even when the paternal figure has been consciously viewed as weak and inadequate. From the beginning of the oedipal phase and thereafter, sexual responses, attitudes, and behavior play a determining role in interpersonal relationships and are themselves influenced by all the other dynamic interactional processes operant in human relationships. As biosocial development proceeds, sexuality directs the male toward the female, but in the development of the homosexual, fears of heterosexuality inhibit him in his relationship with girls. At the same time, conflictual attitudes toward other males are set off—dependency on the one hand, competitiveness and hostility on the other.

Entrapment by seduction into homosexuality by other homosexuals, particularly older men, has been popularly held to be an important etiological factor. Clinical findings do not support this supposition. There is no evidence that seduction by other homosexuals is of any significance. Doshay reported a follow-up study of a series of 108 boys who had been sexually seduced between the ages of 7 and 16, and none subsequently became homosexual.

Motivational factors. Closely related to etiological conceptualizations are the psychodynamic formulations that relate to the order of motivational factors governing homosexual development and behavior. Freud believed that the sexual practices in homosexual relationships symbolized regressions to fixation points in libidinal development. The homosexual supposedly sought someone like himself—someone with a penis—as love object, thus confirming the view that the invert regressed to the earliest libidinal level, the narcissistic or autocrotic phase. In an attempt to recapitulate the mother-child relationship, the homosexual chooses a narcissistic object to love. Fixations on the oral and anal level based on the fear of loss of the breast and feces provide the libidinal precursors of castration anxiety and predispose to an excessive fear of phallic loss. Consequently, according to this schema, there is an overevaluation of the penis and an avoidance of females, since they lack it. At the phallic and related oedipal level of development, castration fear, arising from expectations of retaliation for having castration wishes toward the father, provides the basis for a retreat from a masculine posture and favors an identification with the mother and feminine orientation to the feared father.

Freud's theoretical formulations were oriented to the child's psychology in the context of the libido theory. Minimal emphasis was placed on parental psychopathology as it interdigitates with the child's maturational phases. Melanie Klein placed special emphasis on the oral phase. According to her formulation, oral frustration in the infant results in cannibalistic fantasies of the mother's breast and total person. The projection of such fantasies gives rise to fear of being devoured. The vagina is unconsciously equated with the mouth; homosexuals learn to avoid

those who possess this dangerous organ, and they direct themselves instead to males.

New concepts were introduced by psychoanalysts whose theories were rooted in other conceptual systems. Sullivan emphasized the homosexual's difficulty in achieving a close relationship with members of either sex. During preadolescence and early adolescence, homosexuals' interpersonal problems interfere with adequate peer group relationships with males; because of heterosexual fears, they cannot seek close ties with girls. Isolation and alienation thus become central problems. In Horney's view the motivational mechanisms of homosexual relationships and behavior are basically nonsexual. These motives consist of needs to dominate and subdue, intense and irrational needs to please others, and needs to avoid competition with peers in order to escape injury to neurotic pride. Thompson viewed homosexuality as but one symptomatic manifestation of the broader problem of disturbed interpersonal relationships. She agreed with Freud that all people were potentially polysexual and, therefore, one's ultimate sexual adaptation depended on whether heterosexual or homosexual patterns provided the better basis for optimal relatedness.

Rado identified several types of homosexuals: (1) Heterosexuals who are situational homosexuals; they indulge in homosexual behavior because females are unavailable, as occurs in prisons. (2) Incidental homosexuals, who indulge in homosexual behavior sporadically, as may occur during preadolescence and adolescence. Their behavior does not reflect a basic homosexual character structure. (3) Homosexuals who are disorganized schizophrenics; the homosexuality is an expression of chaotic behavior. (4) Surplus variation—an expression of sexual curiosity and wishes for diverse sexual experience. (5) Reparative homosexuality—present in most exclusively or predominantly homosexual males. According to Rado, reparative homosexuality is based on "hidden but incapacitating fears of the opposite sex which result in a homosexual adaptation, which through symbolic processes is in fantasy a heterosexual one, or in which problems of rivalry with isophilic partners who represent father are solved."

Ovesey introduced the concept of pseudohomosexuality—a condition seen in heterosexuals obsessively preoccupied with the idea that they are homosexual. The psychodynamic variables underlying pseudohomosexuality are considered to be pathological dependency and inhibited assertiveness. According to this construct, the patient equates inhibited assertiveness with castration and, therefore, with femininity and homosexuality. True homosexuality is seen to contain these dynamic mechanisms but, in addition, is characterized by a capability for erotic arousal by other males. In etiology, true homosexuality is assigned to excessive sexual discipline.

Proposed theory. This writer's views of male

homosexuality are more in accord with Rado than with other workers, differing in ways that will be elaborated. Male homosexuality is primarily a disorder of sexual development in individuals toward whom highly pathological parental attitudes and behavior have been directed. Classical Freudian theory postulates that object-related sexuality begins at birth. One of the initial phases is termed "oral" and involves infant and mother interactions. There is no evidence, however, that these interactional processes are sexual at this period, though they are of great importance in the formation of personality and in psychopathology. Apart from infantile masturbation, observed especially in males during the 1st year of life, the responses to object-related sexuality start with the onset of the Oedipus complex. Initial heterosexual responsiveness is characterized by a beginning interest and excitement toward members of the opposite sex. In males, differentiated interest first centers on the mother or mother surrogate; in females, on the father or father surrogate. This developmental phase begins between the 2nd and 4th years of life. Reports by Bieber and Kalagerakis are highly suggestive that olfaction plays a determining role in the early differentiated reaction to heterosexual objects.

From birth on the child participates in complex developmental events in which the parents are cardinal figures. Their attitudes and behavior profoundly influence the child's evolving personality and significantly determine the ways in which he will meet and integrate new phases. Parental attitudes and behavior are not static. A child's maturational changes evoke new parental behaviors—appropriate in normal parents, pathological in neurotic parents. Thus, the oedipal phase initiated by biological change articulates with preexisting personality organization in both parent and child.

At about the time a child's heterosexual interests and responses become apparent, same sex rivalry, perhaps a concomitant of heterosexual orientation, also becomes discernible. A boy's rivalry is directed predominantly toward his father but may include other males perceived as competitors for valued females. In girls, rivalry is directed toward the mother and other females. Whether rivalrous reactions are biologically determined, as are heterosexual responses, remains a question. Same sex rivalry is ubiquitous in many mammalian species.

The Oedipus complex as described by Freud consists essentially of a constellation of sexual orientation to the mother and rivalry to the father. The boy's rivalry may coexist with feelings of love, admiration, and hero worship. Whether competitiveness will be reinforced or neutralized is determined by a multiplicity of events and influences but particularly by the relationship with the father. A constructive, warmly related father who is not competitive with his son, more especially not *sexually* competitive, seems to be an essential factor in the child's ade-

quate mastery of feelings of rivalry and in his ability to cope with antagonistic behavior from other males. As has been emphasized by Sullivan, peer group relatedness in childhood and adolescence provides the opportunity for the establishment and reinforcement of affectional and cooperative attitudes among males; it is the testing ground for competitive and combative behaviors and for learning that one survives in the face of aggression. Ethologists have contributed provocative material for conceptualizing problems in this area. Tinbergen has studied combative attitudes and behavior between same sex members of avian species. He points up the survival value of agonistic posturing in birds that contain behavioral components of flight and fight. These postures constitute a communication pattern that usually obviates combat. Much has still to be learned about antagonistic behavior in humans.

In the psychoanalytic treatment of male homosexuals, the fear most centrally related to the avoidance of heterosexual involvement is attack from a male competitor. The homosexual anticipates the attack as primarily physical and murderous and secondarily as a threat of rejection by significant males. His overwhelming fear of attack directs him away from heterosexual desires and toward habitual homosexuality. This adaptation is established in preadolescence or adolescence by eroticizing objects and attributes he most fears—aggressive males and masculine strength. Masculine strength and power are symbolized by the large penis, physical size, prowess, and other characteristics associated with masculine power, such as money, prestige, intellectuality, and so forth. Some homosexuals tend to abstract characteristics of meaningful females to whom they unconsciously respond erotically; they seek these qualities in males, whom they then find sexually arousing. Such abstractions may involve hair, eye, and skin color or facial and characterological elements.

In the homosexual act, as in the established homosexual relationship, a variety of needs are acted out. These needs include human contact and relatedness, sexual gratification, attempts to rehabilitate a sense of damaged masculinity and heterosexuality, and attempts to release inhibitions of function in performance, such as work involving competition with other males. The homosexual act is not an analogue of heterosexual intercourse. It is, in part, a heterosexual masquerade in which multiple role behaviors are enacted. In anal intercourse the roles are well defined. The insertor is masculine; the insertee is feminine. The anus is equated with the vagina by both partners. Similar role behaviors imitative of heterosexuality may be acted out in oral activity, where the insertor may become the masculine partner and the insertee the feminine partner. Another parameter includes the representation of power through dominance in the masculine role and submission in the feminine, receptive role.

The condensation of symbolic heterosexual and symbolic defensive and reparative mechanisms expressed in the homosexual act are also represented in the interpersonal transactions of the more permanent relationships. Supermasculine partners may be sought to work through unresolved problems had with the father or to bulwark or repair self-esteem and defects in functioning. A partner may be chosen who is believed to be the kind of man the father would have wanted as a son. Or, as pointed out, a partner may be sought who possesses a physical attribute associated with the mother or a sister; incestuous feelings may be covertly expressed behind a homosexual mask. Members of homosexual pairings are often intensely jealous of their lovers; in fact, the jealousy is more intense than one generally sees in heterosexual pairs. Dissolution of a homosexual relationship may lead a partner who feels rejected and abandoned to act out grossly destructive behavior, occasionally even murder. Jealousy is but one manifestation of mistrust of the partner. It derives from fears of being exploited, treated inconsiderately, dominated, humiliated, and disappointed in the fulfillment of a range of unrealistic wishes rooted in pathological dependency. Suspicion and fear, in large part, determine the turbulence and brief duration of homosexual relationships.

Latent homosexuality. According to classical psychoanalytic theory, human sexual instinct contains a homosexual component—for example, there is a universal homoeroticism. The theory holds that normal adult males repress or partially sublimate this component in affectionate relationships with each other. Abraham stated:

In normal individuals the homosexual component of the sexual instinct undergoes sublimation. Between men feelings of unity and friendship become divested of all sexuality. The man of normal feelings is repelled by any physical contact implying tenderness with another of his own sex.... Alcohol suspends these feelings. When they are drinking, men will fall upon one another's necks and kiss each other.... When sober, the same men will term such conduct effeminate.... The homosexual components which have been repressed and sublimated by the influence of education become unmistakably evident when under the influence of alcohol (Marmor).

Many psychoanalysts do not assume a universal latent homosexuality. Among 41 per cent of the heterosexual sample in the study for the book *Homosexuality—A Psychoanalytic Study*, evidence of latent homosexuality was absent. This finding failed to support the classical psychoanalytic position. Many heterosexual patients, however, report one or more of the following symptoms: fears about becoming homosexual; fantasies of homosexual activity; impulses to perform homosexual acts; compulsions to look at men's genital areas; dreams with homosexual content; reactions of fear and disgust toward homosexuals; anxiety and feelings of uneasiness when in the presence of homosexuals; homosexual episodes in childhood and adolescence; and desires to be a woman. The symptoms are usually a source of dis-

tress to patients and their meaning a source of interest to psychiatrists.

Homosexual symptoms or, as more recently termed, "homosexual trends" share etiological features with the entrenched mechanisms of homosexuals. Fear of competition and attack is a central dynamic of homosexuality. These fears may be set off in situations threatening competition with other males, such as falling in love, marrying, and achieving success. Guilt-ridden fear that individual achievement of one sort or another will exclude and deprive other males, who will then aggressively retaliate, leads toward submissive renunciation of a desirable heterosexual love object or other goals. Hand in hand with renunciation go wishes for reward and compensation for the sacrifice. A tendency to enter into a pathologically dependent relationship with a powerful male figure is accompanied by the hope that he will grant a substitute for the renounced gratification. This mechanism is clearly operative in the overt homosexual who gives up desired heterosexuality and then seeks substitutive gratification in homosexual activities.

The single most prominent feature distinguishing overt homosexuals from heterosexuals with homosexual trends is the absence among the latter of erotic responsivity to males. Erotic responsivity to males is usually established during the childhood or adolescence of homosexuals. Heterosexuals with homosexual trends rarely become involved in homosexuality. Men who become involved repetitively—be it in prisons, during periods of absence from women, out of curiosity presumably, or for "kicks"—are bisexuals who from time to time shift to overt homosexuality when under psychological stress. Heterosexuals do not become homosexual when separated from females. In World War II, millions of men were separated from women; some for months, even years. Practically none engaged in homosexual activity who had not already done so in the past.

Treatment of patients with homosexual trends involves helping them to resolve irrational fears of male competition and delineating those experiences in life that gave rise to the fears.

Treatment

Prophylaxis. The two major approaches to the prevention of homosexuality are early detection of homosexual tendencies and public education.

Most prehomosexual children exhibit characteristic problems and behavior. They tend to be inordinately fearful of physical injury; they are apt to avoid the scrambles and bruises in games of normal boys. The prehomosexual is usually an isolate who does not become a member of a peer group. He tends to avoid competitive sports and is frequently disinterested in athletics. A minority have effeminate gestures and attitudes. Such boys are the ones other children recognize as different. They are called "sissies" and are

made the butt of peer group hostility. When a child presents such a picture, a psychiatric examination is indicated. If the psychiatrist is able to identify a prehomosexual problem, psychotherapy is indicated for the child and his parents. Early treatment may resolve the underlying problems, enough at least to prevent the consolidation of a homosexual adaptation.

Adolescence is a crucial period, especially for those who have serious sexual problems. Although homosexual patterns are organized during preadolescence, they do not usually congeal into a coherent system until adolescence. If a prehomosexual adolescent can be detected and treated before homosexual activity is attempted, prognosis for recovery is far more optimistic than if he is treated later. Adolescents who consciously avoid girls, who do not develop a crush on a girl, or who may already sense in themselves homosexual tendencies are candidates for psychiatric examination, as are the parents of such boys.

The main targets for a prophylactic educational program are parents, the clergy, physicians, and educators. They are in a position to detect early homosexual manifestations and to guide young people into corrective, therapeutic channels. Teachers, in particular, are sensitively placed, since they spend the greater part of a child's day with him. Mental health facilities in schools, including walk-in clinics for parents, would be a convenient and appropriate setting for discussing problems with qualified personnel.

Reconstructive therapy. Homosexuality can be treated successfully, and the rate of reversal is considerably higher in recent times than formerly, when psychiatrists were imbued with gloomy prognostications about this condition. In the *Homosexuality* study, 29 of 106 male homosexuals had become exclusively heterosexual. Of these 29 cases, 14 had been exclusively homosexual, and 15 had been bisexual at the start of treatment. Of the initial 106 homosexuals in the total sample, 76 had been exclusively inverted at the outset of treatment, but only 43 remained so as of June, 1960. In a follow-up study in June, 1965, it was found that 15 of the 29 cases who were exclusively heterosexual as of June, 1960, had maintained contact with their psychoanalyst. Of these 15 cases, 12 had remained exclusively heterosexual; the other three cases remained predominantly heterosexual, with sporadic homosexual episodes under situations of stress. Thus, approximately 30 per cent of homosexuals in this study became and remained heterosexual.

In 1965 Mayerson and Lief reported a follow-up study of 19 homosexual patients who had undergone psychotherapy. The mean duration of therapy was 1.7 years, and the mean interval between the end of therapy and follow-up was 4.5 years. "In the overall evaluation at the time of follow-up, 46.3 per cent of the patients were found to be 'apparently recovered' or 'much improved,' and 26.3 per cent were im-

proved in comparison to their status at the beginning of therapy. In the majority of patients the follow-up revealed progress in all behavioral areas since the end of treatment" (Marmor).

Recommendations for treatment are determined by how the physician conceptualizes homosexuality and how he views prognosis for change. If homosexuality is viewed as a deviance within a range of biologically normal behavior, like left-handedness, then therapy will be deemed to be unnecessary unless other debilitating psychiatric symptoms require attention. But if homosexuality is viewed as pathological, treatment will be recommended, provided there is a reasonable possibility for change. The results of treatment as reported by the studies cited, and others, establish the efficacy of therapy.

What are the indications for therapy, and what types of therapy are indicated? Youth is an important factor. Homosexuals under 30 and all homosexual adolescents should be advised to undergo psychiatric treatment. This is not to say that homosexuals over 30 should not be treated; many have had a successful psychotherapeutic outcome. However, the longer a homosexual has been involved in and committed to a homosexual way of life, the lower the probability for shifting to heterosexuality. Bisexuals, particularly those who are predominantly heterosexual, should also be encouraged to enter treatment.

The *Homosexuality* study delineated a series of factors indicative of favorable prognosis: (1) a wish to change verbalized at the outset of treatment; (2) respect and admiration for one's father; (3) beginning treatment before the age of 35; (4) a history of having attempted heterosexual intercourse; (5) dreams with manifest content depicting heterosexual interest or activity. Negative prognostic indicators included a history of the mother having openly preferred the patient to her husband and a history of effeminate voice and gestures during childhood.

With the exception of the flagrantly effeminate homosexual and those committed to a homosexual life style, homosexuals do not entirely renounce the possibility of change. This should be kept in mind in advising homosexuals about treatment. The experience of clinicians indicates that, even where homosexual patients have not shifted to heterosexuality, they have at least gained benefits from resolving interpersonal problems and other difficulties.

The treatment of choice is psychoanalysis or psychoanalytically oriented psychotherapy. In reconstructive treatment, emphasis is placed on delineating the irrational fears of heterosexuality, helping the patient learn how his fears developed, and, over the course of time, helping him resolve his fears.

There are therapies extant that are not indicated—in fact, they are definitely contraindicated—such as hormone treatment with androgens, which is based on the erroneous assumption of male hormonal defect. Androgen, if anything, only increases sexual

drive without affecting its direction. Drug therapy, including tranquilizers and ataractics, is not indicated for homosexuality per se but may be helpful if the homosexual patient is also suffering from a schizophrenic disorder. Electric shock therapy is strongly contraindicated.

Recently, behavioral therapy has attracted some notice. In effect, behavioral therapists apply principles of learning theory as a method of extinguishing homosexuality. The patient is negatively conditioned to his usual homoerotic stimuli. He is shown pictures with homosexual content and is simultaneously given injections of apomorphine in order to bring about an association between the homosexual stimulus and a painful experience (aversive conditioning). Although good results have been reported by some investigators, this type of treatment seems to add injury to preexisting injury. It has given little promise of lasting results and at best is ineffective.

Exhortative therapy—which relies on stimulating guilt, moral or religious—is ineffective and generally harmful, as is punitive therapy, including the legally sanctioned.

Female Homosexuality

In about 600 B.C. off the Greek mainland on the island of Lesbos in the Aegean sea, many of the young female islanders were influenced by the poetess Sappho, who encouraged them to participate in mutual sex practices. An erotic relationship between women came to be known as lesbianism.

Prevalence. There is a wider divergence in estimates of female than of male homosexual prevalence. Caprio is of the opinion that homosexuality occurs as frequently among women as among men. Havelock Ellis and Edmund Bergler, among others, share this appraisal, though it is at variance with that of Kinsey et al., who stated:

The incidences and frequencies of homosexual responses and contact and consequently the incidences of the homosexual ratings were much lower among females in our sample than they were among the males on whom we had previously reported. Among the females the accumulative incidences of homosexual responses had ultimately reached 28%. They had reached 50% in the males. The accumulative incidences of overt contact to the point of orgasm among the females had reached 13%. Among the males it had reached 37%. This means that homosexual responses had occurred in about half as many females as males and contacts which had proceeded to orgasm had occurred in about one third as many females as males. Moreover, compared with the males, there were only about one half to one third as many of the females who were, in any age period, primarily or exclusively homosexual.

If the number of female homosexuals in psychoanalytic treatment is any indicator of lesbian prevalence, there are somewhere between one third and one fourth as many females as male homosexuals. Although the clinical estimate accords with Kinsey's findings, it does not support his absolute figures, such as, "13% of all women by the age of 40 have had

homosexual experiences leading to orgasm." This difference may be attributable to sample problems; however. Statistics for the total male sample—such as the number of bachelors, the number of men who were married, separated, divorced, or widowed—were not stated, though comparable data were given for the female sample. Among the females 24 per cent between the ages of 31 and 40 had never married. The high overrepresentation of spinsters in this age group would tend to veer in the direction of increasing homosexual frequencies. Most unmarried women between 31 and 40 fail to marry because of emotional disturbances, especially sexual psychopathology. Until systematic studies are conducted on representative samples of the female population, estimates of prevalence are but guesses—some more educated than others.

Characteristics. The relationships of lesbians to each other are in the main similar to those noted among male homosexuals. In the lesbian act a heterosexual masquerade is played out; one partner takes the masculine role, the other the feminine. The participants may sometimes interchange roles, though some women are habitually "masculine," and others are habitually "feminine." In the vernacular the male emulators are called "butch." They avoid feminine dress and attitudes and to varying degrees imitate men in dress, speech, and other behavioral patterns. The feminine type is referred to as "femme." In pairings where one is butch and the other femme, the roles of husband and wife are enacted in the pathological caricatures they perceive these roles to be. The butch is aggressive, dominant, and tough. She generally initiates sexual activity. The femme is retiring, submissive, dainty—a stereotypic embodiment of soft femininity. In the context of this marital caricature, domination-submission behavior, sadomasochistic activity, and pathologic dependency are clearly evident.

These psychopathological parameters also appear in another type of lesbian pairing, where there is an acting out of a mother-daughter relationship. In this type of role play, age may be a determining factor; the woman who takes the mother role is usually older than the "daughter." The "mother" may affect the characteristics she associates with motherhood. Role play may be enacted to the point where the daughter is cradled like a child in arms during caressing sexual play.

Just as male homosexuals obsessively emphasize genital size and seek out masculine qualities in partners, lesbians seek out feminine qualities, particularly maternal characteristics as symbolized by the breasts. The lesbian's interest in breast size and shape parallels the male homosexual's interest in the size of the penis. Homosexuals of both sexes seek to repair their damaged sexual functioning by attempts at achieving a magical unity with prominent symbols of masculinity and femininity—the penis and the breast.

There is probably a greater tendency among les-

bians than among male homosexuals to establish a stable pairing. Those who live alone are prone to engage in promiscuous, superficial sexual relationships. Female partners are usually ambivalent toward each other, as occurs among male pairs. More often than not, jealousy of rivals and hostility toward them are intense. Should rejection or inconsiderate treatment be anticipated, jealousy and rage are turned against the partner. Sexual infidelity is common; hence, there exists in reality a basis for fearing rejection and abandonment. Hostility may be experienced in physical aggression, and there are cases on record of lesbian murder. In one situation a woman encouraged a successful suicidal attempt by her partner. How long lesbian partnerships endure and what percentage remain in permanent relationships are questions that must await more thorough studies for reliable answers.

Lesbian sexual practices vary among individuals and may vary in the same individuals with different partners. The repertoire of activities include manual and oral stimulation of erotogenic areas such as breast and genitals, simulated heterosexual intercourse with or without the use of an artificial penis, and passionate hugging and kissing.

Etiology. The prevailing concepts of the etiology of lesbianism follow the same general line of thought as for male homosexuality. In some circles female homosexuality is viewed as deviant but biologically normal; in others, it is deemed to be psychopathological. Most psychiatrists hold the latter view. There appears somehow to be a greater concordance that lesbianism is an acquired condition than one notes for theories about male homosexuality.

Classical psychoanalytic theory. The classical psychoanalytic position posits, first, that the earliest love object of both sexes is the mother, but, in order to attain heterosexuality, the female, unlike the male, must renounce the mother as a love object and, instead, identify with her. Females who cannot make this renunciation become fixated on the mother and may ultimately become homosexual. Such women may seek out a younger female, with whom they recapitulate the maternal role as described earlier; others take the role of daughter and seek out maternal figures. Why this occurs in some females and not in others is not clearly explicated in this schema, although such factors are considered as maternal absence, rejection or its opposite, overindulgence, and latent homosexual tendencies in the mother.

Secondly, the girl develops a castration complex consequent to her discovery that she lacks a penis. She may then become unduly preoccupied with her clitoris, which is unconsciously believed to be an analogue of the penis; she will deny her vagina. To resolve her castration anxiety successfully, the normal girl must renounce the primacy of the clitoris and accept the passive receptivity of the vagina. When a girl fails to resolve this crisis, she cannot

enter into a heterosexual relationship: because the male possesses a penis, he reaffirms her castration. She then identifies with males and holds onto the fantasy that she possesses a clitoral penis. Other women become eroticized and sought for sexual fulfillment. Rivalry with a preferred male sibling is offered as one possible explanation for clitoral fixation.

Thirdly, the vicissitudes of the Oedipus complex may determine a homosexual outcome. The decisive pathogenic factor may be a too intense attachment to the father, thus forcing a retreat from feared incestuous impulses. The oedipal phase may include sexually damaging experiential elements, such as paternal rejection or seductiveness. By adolescence, having failed to achieve the father sexually, the prehomosexual girl identifies with him and turns to a woman as a love object.

Missing in classical formulations is a coherent articulation between developmental phases and experiential elements, a linkage necessary for the illumination of differences between girls who become homosexuals and those who do not. The etiological psychodynamics as developed in classical theory are variations on one or another of three themes: (1) the inability to renounce the mother as the first love object; (2) clitoral fixation as a reaction to castration anxiety; (3) oedipal fears and disappointment.

Other theories. Bychowski added the concept of defective ego development consequent to defective parental nurturance, leading to a pathological dependency on the mother. This anaclitic relationship is then acted out through homosexuality.

Rado viewed homosexuality as a flight from the substitute for feared heterosexuality. He accounted for these fears by postulating that in the female intercourse is viewed as a penetrating attack; in some women masochistic wishes to be raped and penetrated reinforce the fantasy of intercourse as a violent act. Unable to pursue heterosexuality, she falls back on infantile dependency on her mother.

According to Thompson, homosexuality is not a clinical entity but a symptom with different meanings for different personalities. Thus, homosexuality could be an expression of fear of the opposite sex, fear of adult responsibility, a need to defy authority, an attempt to cope with hatred of or competitive attitudes toward members of one's own sex, a flight from reality into absorption in body stimulation, and a way of being destructive of one's self or others. Although Thompson did not assign specific causes for the symptom, she suggested that causal factors might include awareness that one's sex was a disappointment to parents, seen in situations where a parent treats a child as a member of the opposite sex. Thompson also pointed out that intimidating influences might be etiological, since timid individuals tend to cling to same sex persons.

Proposed theory. This writer's etiological formulation places major emphasis on the pathology of

parent-child relatedness as it affects personality development in general but more specifically as it affects and is affected by salient psychosexual maturational phases, such as the Oedipus complex in males and the Electra complex in females. The parental profiles associated with lesbianism cannot be definitive until a systematic study of female homosexuality has been done. However, from empirical and clinical evidence, the influence of parents on a daughter's homosexual adaptation is as significant as has been demonstrated for male homosexuals.

Fathers of male homosexuals have a special psychodynamic saliency because of sexual competitiveness with the son. In lesbianism it is the mother who occupies this special position. She tends at best to be ambivalent, but more often she is hostile and competitive. Rather than enhance her daughter's femininity, this type of mother defeminizes. Lesbians often describe having missed the experience of being dressed in attractive, girlish clothes during childhood or of being complimented on physical attributes; on the contrary, they recall their mother's fault finding, rejection, and control. Homosexually inductive mothers interfere with an easy, natural relationship between daughter and father and frequently discourage such closeness, even contact; they also tend to interfere with heterosexual peer relationships. Other maternal characteristics include sexual competitiveness with women, preference of sons to daughters, and rivalry with daughters for males. It is essentially for this last reason that they defeminize a daughter and, to all intents and purposes, castrate her. In another category are those mothers who have the need to create a female companion for themselves. They interfere with the daughter's heterosexuality lest she be lost to a male. Such a mother probably has homosexual problems herself, and she carries out an unconscious homosexual relationship with her daughter, who, if she does not become a lesbian, may well become a spinster.

The fathers are usually submissive to their wives and, as an expression of their submission, fail to come into an appropriate affectionate and protective relationship with the daughter. In part, paternal detachment is a submissive renunciation demanded by the mother, and, in part, it may be a defense against anxiety about sexual feelings toward a daughter. Many such fathers feel that normal sexual feelings to a daughter are unnatural. A wife may exploit this paternal anxiety by subtly, sometimes overtly, stimulating sexual guilt. Some fathers are reported as quite seductive, but they may express it in a conspiratorial way, which only highlights submission to the wife and guilt about their sexual feelings. Fathers who are strong figures in the family and who are openly affectionate and masculine with their daughters do not produce lesbians.

Emphasis is not placed here on the classical female castration complex, which assumes that a girl's dis-

covery and awareness of lack of a penis is the main pathogenic influence. Two components were differentiated by Bieber and Drellich: the phallic and the feminine. The phallic component relates to reactions to the absence of a penis. This appears to be a transitory phase, having little or no pathogenic importance unless it is made so by the influence of parental psychopathology. Mothers who treat sons preferentially, showing them a quality of affection not shown to a daughter, induce feelings of maternal deprivation. The daughter may then develop envy of males, which may be symbolized in expressions of penis envy. In the feminine component of the castration complex, the female is concerned about injury to her femininity, her feminine organs, and the functions they mediate. In lesbianism both phases of the female castration complex are integrated in personality and behavior. It is unlikely that an affectionately related mother who encourages her daughter's femininity will produce a lesbian, nor, as pointed out, will lesbianism occur when a father is assertive, affectionate, supportive, and enhancing of his daughter's femininity.

Treatment. The treatment of female homosexuals is similar to that for male homosexuals with the exception of criteria for early detection of the inversion. The criteria are not so well defined for girls as for boys. One can say, however, that tomboyishness is not necessarily an indicator of lesbian tendencies. It may indicate high spirits, a high level of energy, and perhaps an imitation of boys, who may be perceived as parentally preferred or as having a more favored position in the youth culture. Girls who show strong preferences for masculine dress or who habitually avoid more typically feminine attire and pursuits are, at the least, showing homosexual trends. The prehomosexual female, like her male counterpart, tends to be an isolate who makes defective peer relationships. During early adolescence and later, she tends to develop crushes on other girls or older, admired women. An adolescent girl who has not experienced a heterosexual crush or had heterosexual fantasies and who avoids dating and shuns contact with boys is having sexual difficulties, whether homosexual or not. Psychiatric consultation is indicated for such a girl. If consultation confirms homosexual tendencies, the patient should be treated, as should her parents, if this is feasible. Psychotherapy in early adolescence favors the establishment of a heterosexual adaptation.

Suggested Cross References

For a discussion of normal sexuality, see Section 5.7. As mentioned in this section, sexuality is a phe-

nomenon that is influenced by many determinants, including genetic, social, and psychodynamic factors. For information regarding fundamental concepts in these fields, see Rainer's section on genetics (Section 2.1), Silverman's section on sociology (Section 4.2), Wallace's section on anthropology (Section 4.1), and Fleck's section on the family (Section 4.3). For detailed information regarding some of the basic psychodynamic constructs mentioned in this section, such as the Oedipus complex and castration anxiety and the theory of sexual stages of development, see Area C, on current theories of personality and psychopathology. More information regarding psychoanalysis and psychotherapies may be found in Area G, on psychiatric treatment. The reader is also referred to Section 41.6 on sexual deviations in children.

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26.4 SEXUAL DEVIATIONS. III: FETISHISM, TRANSVESTITISM, MASOCHISM, SADISM, EXHIBITIONISM, VOYEURISM, INCEST, PEDOPHILIA, AND BESTIALITY

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Introduction

Psychoanalytic investigations of sexual deviation were initiated by Freud's discovery, in the course of his study of infantile sexuality, that the sexual aims of the deviant are identical with those of the child. More specifically, in sexual deviation, adult sexuality is supplanted by infantile sexuality. In fact, however, this represents an oversimplified formulation of the current psychoanalytic concept of sexual deviation and requires further elaboration.

At the outset, it should be pointed out that sexual deviations have been practiced throughout history, among all races; and at certain times and in certain cultures they have been generally accepted or even highly esteemed. Thus, Freud described sexual deviations as "universally human." Deviant tendencies, and even occasional deviant acts, or at least fantasies, occur in the life of every individual—normal and neurotic alike. Fenichel's comment in this connection is particularly appropriate: "Since the aims of perverse sexuality are identical with those of infantile sexuality, the possibility for every human being to become perverse under certain circumstances is rooted in the fact that he was once a child." In other words, perverse or deviant acts are exaggerated distortions of acts which also occur as part of the sexual behavior of normal individuals. The crucial difference lies in the fact that the deviant act does not represent the sole source of sexual gratification for the normal individual; consequently, it will take a less definite form.

To illustrate, in a sense the polymorphous activity which is characteristic of sexual foreplay prior to intercourse represents a regression to infantile sexuality. However, in our culture, such foreplay is appropriately regarded as normal sexual behavior. It becomes pathological only when the initial aspects of coitus (i.e., forepleasure) are more satisfactory than genital union with a "willing partner of the opposite sex and of similar sexual maturity."

While foreplay (as the primary source of sexual pleasure) is a useful example of sexual deviation in this context, it may be somewhat misleading. Actually, pathological states which represent nothing more than a regression to infantile sexuality are not typical deviations. Like the normal adult, the typical

deviant can achieve genital orgasm once the obstacles which block sexual gratification are removed by the deviant acts. The point is that deviant sexuality is not simply disorganized, in a manner reminiscent of the "polymorphous perverse" sexuality of children and of infantile personalities. Rather, it is organized under the guidance of one component instinct of infantile sexuality; the satisfaction of this instinct makes genital orgasm possible again.

Like the neurotic, the deviant has specific pathogenic repressions: he has unconscious oedipal conflicts and unconscious castration anxiety. Similarly, disturbances in genital primacy in neurosis and sexual deviations alike may be attributed to the same factors—anxiety and guilt feelings which are associated with the Oedipus complex. But anxiety over loss of love or sexual excitement is less important in sexual deviation. Rather, classical psychoanalytic theory postulates that it is always castration anxiety (and derivative guilt feelings) which prevent the deviant from achieving sexual pleasure. The sexual deviation serves, then, as a denial of the possibility of castration. When this denial is successful, sexual pleasure and orgasm become possible.

Diagnostic classification. Various criteria exist for the classification of sexual behavior, in general, and deviant sexuality, in particular.

In the American Psychiatric Association's *Diagnostic and Statistical Manual*, sexual deviation is listed as a form of sociopathic personality disturbance. Sexual deviation is the official nosological designation and is synonymous with and preferable to the term "perversion." The *Manual* further states that this major clinical entity encompasses those individuals who are ill "primarily in terms of society and of conformity with the prevailing cultural milieu, and not only in terms of personal discomfort and relations with other individuals." Within this larger category, the diagnosis of "Sexual deviation...is reserved for deviant sexuality which is not symptomatic of more extensive syndromes, such as schizophrenic and obsessional reactions."

Within a broader framework, Scott has classified normal, as well as abnormal, sexuality in terms of specific patterns of behavior: (1) Sexual gratification requires the cooperation of a willing partner (e.g., homosexual or heterosexual activity). (2) The cooperation of a willing partner and genital union as a means of achieving pleasure are discounted (e.g., exhibitionism and voyeurism). (3) Sexual gratification does not require the cooperation of a human partner. Instead, things (fetishism), or animals (bestiality) are substituted for the object. (4) The individual is unable to achieve full genital satisfaction (e.g., frigidity or impotence).

The psychoanalytic classification of sexual deviation, which has important implications for therapy, ascribes deviation to either regression or arrested development.

When deviation is due to regression, the patient has demonstrated a capacity for adequate heterosexual relationships in the past, together with an awareness of (and a desire to conform to) the mores of his cultural milieu. The factor, or factors, responsible for deviant sexuality are readily apparent or easily uncovered in such cases. Most frequently, the deviant behavior is precipitated by disappointment in love (i.e., sexual disappointment), and a consequent loss of self-esteem, or by conditions which serve to revive intense childhood fears and/or dependency needs. Finally, real obstacles to sexual satisfaction, or sexual privation, may bring deviant tendencies to the surface. Whatever the specific precipitating factor or factors, persons who react to sexual frustrations with a regression to infantile sexuality are said to deviate. And such patients are infantile in nonsexual respects as well.

When sexual deviation is due to arrested development, the patient has consistently proven incapable of an adequate heterosexual relationship, although no real external obstacle to the development of such a relationship existed. And, as might be expected, the factor or factors responsible for deviant sexuality in such cases cannot be identified accurately without a thorough knowledge of the patient's developmental history.

Historical evolution of psychiatric concepts of sexual deviation. First indications of the recognition of sexual deviation as a psychopathological disorder may be found in Westphal's description of homosexuality as "contrary sexual feeling" in 1870, and Lasègue's reference to exhibitionism in 1877. Subsequently, Krafft-Ebing maintained that perversions were hereditary; however, he later conceded that "accidental causes" might play a role in such disorders. Kraepelin described sexual deviations as "inversions," and a form of degeneracy. In general, until publication of Freud's *Three Essays on the Theory of Sexuality*, in 1905, perversion was considered to represent a genic or constitutional anomaly, which, in effect, precluded serious investigation of this problem. Thus, Freud's delineation of specific stages of psychosexual development had important implications for the understanding of sexual deviation—and of all mental and behavioral phenomena. Within this ontogenetic frame of reference, sexual deviation could be understood as representing either an arrest in psychosexual development or a regression to a previous, infantile level of functioning.

Current Psychiatric Concepts of Sexual Deviation

Etiology

Constitutional determinants. Proponents of genic-constitutional theories of perversion point to the presence of biological anomalies in some sexual deviates as evidence in support of their proposition. In

fact, however, these individuals represent only a small proportion of this total patient population. Furthermore, the fact that the presence of such anomalies does not necessarily indicate sexual deviation is an even more convincing argument against this hypothesis. For instance, in cases of hermaphroditism, where the same individual possesses both male and female genitalia, homosexuality is infrequent. For the most part, male hermaphrodites (by the presence of testes) are emotionally inclined to relate to the female, i.e., heterosexually. Nor is there any evidence, on the basis of available endocrinological data, that larger or insufficient quantities of hormones can influence the individual's direction of drive or his choice of sexual object. Androgens control the strength and vigor of sexual expression, but they cannot control the direction of the drive. In summary, there is little evidence to support the hypothesis that hereditary and constitutional factors are an important determinant of sexual deviation.

Classical psychoanalysis ascribes to this viewpoint, based on other considerations. The fact that fixation determines the choice of the component of infantile sexuality which is overattached in the sexual deviation means that the assumption that such deviations are constitutionally determined does have some validity. However, once again, the endocrinological evidence is not convincing. Furthermore, the fact that normal persons are capable of deviant sexuality under certain conditions is conclusive proof of the limited importance of constitutional factors in the etiology of sexual deviation.

Finally, deviant sexual behavior due to brain lesions has been reported in the literature. However, in such cases, one must assume the prior existence of tendencies toward deviant sexuality and speculate that these tendencies may have been "released" by the organic trauma. On the other hand, brain lesions in early childhood produce distortions in perception and experience; the child's learning capacity is affected as a result, which, in turn, may lead to subsequent modifications in his sexual behavior.

Sociocultural determinants. Social anthropologists and ethnologists have called attention to the fact that different societies demonstrate marked differences in sexual orientation. These authors have also described the obvious implications of these diverse social attitudes for adult sexual behavior, often with particular emphasis on variations in cultural attitudes toward those sexual activities which are considered abnormal in our society. Nevertheless, no matter how permissive a particular society may be with regard to sexual behavior, certain universal attitudes toward sexuality remain unchanged. Malinowski has commented, in this connection, that . . . "the sexual impulse is never entirely free, neither can it ever be completely enslaved by social imperatives."

However, disregard of social imperatives may result in harm to the community as an entity and there-

fore constitutes a public offense. Even within the scope of one's own permissible sexual behavior, because of fear attributable to sex taboo infractions, there is a likelihood of somatic illness. The powerful sanction of public disgrace can bring on hypochondriasis or psychosomatic illness.

However, the significance of environmental factors in the etiology of perversion should not be minimized. On the basis of detailed ethnological observations, Ford and Beach suggested that "... human sexual patterns are not completely organized on a strictly inherited level. Instead, it is highly possible that practice is essential to complete arousal and particularly to satisfactory expression of sexual excitement." In other words, there is a strong possibility that an environment which is too interfering or restrictive with regard to sexual "practice" may be conducive to the development of sexual deviation. But, contrary to popular belief, the extent to which abnormal sexual behavior is tolerated is not the measure of a "healthy" environment. Rather, it is the extent to which the youth of a particular society are given an opportunity to develop in all areas, to mature for engagement in genital union with members of the opposite sex.

For example, among the Keraki of New Guinea, the young initiate must submit to pederasty (i.e., anal intercourse) with the elders of the tribe, as a means of acquiring the older men's strength and status. But these sexual relationships are charged with aggression; the genitals are not used to express harmonious, mutual love. In other words, just as culturally determined high evaluation of epileptic states does not signify the absence of underlying brain pathology, the fact that certain sexual practices which are considered deviant by our cultural standards are acceptable in other cultures cannot alter the pathological significance of such behavior. The fact remains that, whatever the cultural attitude toward such practices, sexuality which does not find expression in mature, genital union must be considered deviant.

Psychological determinants. According to classical psychoanalytic theory, the pathogenesis of sexual deviation in the individual patient can only be understood after careful study of his psychosexual development. Freud postulated that the sexual instinct was endowed with energy, which he called "libido." This energy enables the performance of physiological functions, which, in turn, permit discharge (and gratification) of the instinct. At different stages of psychosexual development, the sexual instinct will vary in source, aim, and object. During infancy and early childhood, sexual activity is "polymorphous perverse." Sexual excitation flows from diverse sources, and excitation and gratification are experienced in conjunction with such activities as sucking, defecation, and stroking. Only at a later stage in psychosexual development (usually during

puberty), do the genitals become an erogenous zone which offers possibilities for sexual pleasure infinitely greater in comparison with earlier oral and anal zone pleasures. When the penis (or vagina) draws to it the erogenicity of the other zones, the child has reached the stage of genital primacy. In the normal course of development, oral and anal urges and activities now serve a preliminary function (as foreplay) rather than a satiation function.

Concurrent with the progression of the stages of psychosexual development, i.e., oral, anal, urethral, and phallic or genital, Freud described specific phases in the development of object relationships during childhood. Initially, and for some time thereafter, the infant's sexual activities are autoerotic: the first object is his own body and its functions. In a subsequent stage of his development, the child turns to another for "object love." However, the sexual object need not be a member of the opposite sex. Furthermore, in addition to homosexual and heterosexual impulses, masochistic and sadistic impulses may find expression—further evidence of the polymorphous perverse activity which characterizes this early phase of development.

Within the framework of classical psychoanalytic theory, the origins and structure of sexual deviation may be presented schematically as follows.

Raw material. Essentially, infantile forms of libidinal and aggressive drive expressions are the raw materials of sexual deviation. Consequently, in the psychoanalytic treatment of sexual deviation, the infantile drives at each consecutive phase of development must be "worked through." As stated earlier, the deviant has regressed to that part of his infantile sexuality at which he is fixated. However, deviant sexual excitement is first experienced in association with "accidental" events of childhood, and it has been suggested that the individual's sexual reactions remained "bound" to these events. In fact, psychoanalytic investigations have shown that these childhood events may not be fixating experiences in themselves. The same event may be fixating for one individual and not for another, according to one's capacity to cope with stimulation. Furthermore, the "fixating experiences" may serve as a screen to disguise memories of the real causes for the fixation.

Phase-specific vicissitudes. Deficient mothering in the earliest (pre-oedipal) months of life is assumed to interfere with the development of a healthy ego. In subsequent childhood phases of development, the child with a disadvantaged ego is burdened by castration anxiety, which further impedes his successful resolution of the Oedipus complex. In structuring the form of the sexual deviation, the epigenetic process of coping with the castration anxiety which is an inevitable concomitant of the oedipal phase of development is of crucial significance.

Decisive etiological factor. Sexual deviation is the acted out, defensive denial of castration anxiety.

Fenichel has pointed out that when genital enjoyment is blocked by fear of castration, the deviant will try to regress to that component of his infantile sexuality which once gave him a feeling of security, or at least of reassurance, and "whose gratification was experienced with special intensity because of this reassurance." At the same time, however, other components of infantile sexuality are repressed, and the hypertrophy of this one component serves to strengthen the repression. In other words, the fact that certain associated impulses which are usually forbidden are permitted to remain in consciousness reinforces the repression of the Oedipus and castration complexes.

Finally, Fenichel has also pointed out that "... the differences in the male and female castration complex directly correspond to the differences between male and female perversions."

Nature of the deviant impulse. The deviant act may or may not elicit guilt feelings. Nevertheless, at the moment his excitement is most intense, the deviant's impulse is ego-syntonic. That is, it is something he wants to do for pleasure. Thus, deviant impulses have an instinctual character and, as Fenichel has pointed out, are "felt in the same way that normal instinctual impulses are felt by normal persons."

Self-centeredness of personality makeup. The deviate is preserved from close ties to another, remains narcissistic in object relationship because of a split in ego. One side of the ego is allied with the impulse to be gratified, and the other side is allied with that aspect of the object associated with early childhood. So true object, mature love does not occur.

Differential diagnosis. Sexual deviation may be encountered as a specific presenting problem in clinical practice. However, early in the course of treatment its implications as a symptom of a broader diagnostic category (i.e., sociopathic personality disturbance) become evident. In other words, the "end" behavior (i.e., the deviant act) and its manifest effects must be distinguished from factors which have given rise to such behavior.

The psychodynamics of the etiology of deviation as a psychopathic disturbance were delineated above. In addition, deviant tendencies may be released by organic illness, mental deficiency, or schizophrenia.

For example, in encephalopathy, impaired ego functioning may weaken impulse control and give rise to sexually deviant behavior. Again, deviation may serve a defensive or restitutional function in states of increased organismic excitability due to cerebral pathophysiology. It may be speculated that in such cases the sexual deviation absorbs or binds the anxiety lest it "explode" or manifest itself otherwise. However, once the cerebral pathophysiology is relieved, the deviation is no longer needed.

Anxiety is also prominent among mental defectives. And, among this patient population, suggestibility, particularly under the emotional stress of increased

demands on their facultative capacities, frequently gives rise to deviant sexuality.

Finally, the schizophrenic's impaired capacity for reality testing may also find expression in deviant activities. Deviant acts and fantasies are a prominent feature of the paranoid psychoses as well.

When sexual deviation accompanies a major affective disorder, it may be primary or reactive. For example, hypomanics in whom superego criticism has been suspended frequently display deviant behavior, which lasts as long as the manic phase. On the other hand, depression and suicidal behavior may be reactive to the shame of threatened exposure of the deviation.

Sexual deviation has a compulsive quality: in a sense, the deviate behavior is repeated against the conscious wishes of the patient. However, deviation is not a compulsion neurosis. By enabling discharge of a part of the cathexis of impulses which had been warded off originally, the deviate symptom, like the neurotic symptom, facilitates the warding off of other impulses; i.e., it strengthens repression. But neuroses differ from deviations in two crucial respects. First, the symptom is "desexualized" in the neurosis; in the deviations it is a component of infantile sexuality. Second, in the neurosis, discharge of the symptom is painful; in deviation, it brings genital orgasm. The compulsive symptom represents an act of undoing whose purpose is the expiation of guilt feelings. Accordingly, the superego forbids enjoyment of the activity. In contrast, in deviation, at the moment of excitation, the deviate impulse is experienced as ego-syntonic and has the quality of an instinct. The superego is defiantly seduced into permitting the costly pleasure derived from discharge of the deviate impulse. Thus, discharge becomes possible only through distortions, and Freud described deviates accordingly as "poor devils who have to pay a high price for their limited pleasure."

One final factor must be considered in the differential diagnosis of deviation. As noted earlier in this section, deviate acts occur in the life of every individual. It was also pointed out, in this connection, that deviate tendencies may be released under certain abnormal conditions, such as the deprivation of normal sexual outlets for an extended period of time and organic disease. In such instances, the deviate behavior usually disappears once the abnormal condition to which it is attributed has been corrected.

Similarly, the psychodynamics of certain stages of development are particularly conducive to the discharge of nonpathological, transient deviate sexuality. For example, during the early phases of adolescence, strong tendencies toward impulsiveness, to act out bisexual conflicts, and increased self-awareness and narcissism may give rise to sexual deviation which, however, is usually transient. Commitment to a sexual deviation is more likely to occur in late adolescence.

Management and prognosis. Various procedures

have been employed in the treatment of sexual deviation. Although no specific method is currently considered to represent an ideal solution to this problem, psychoanalysis is advocated by many workers as the most effective therapeutic approach to sexual deviation. Manipulation of the environment and group therapy have also proven helpful in some cases, although such procedures would not be expected to investigate the genesis of the problem in depth; nor can they be expected to provide lasting benefits in cases of deep-seated sexual deviation.

As might be expected, prognosis, with treatment, is most favorable in those cases where the relationship between the deviate behavior and precipitating environmental factors can be clearly established, and among individuals in early and middle adolescence. The prognosis for other segments of this patient population is generally discouraging. The symptoms of sexual deviation are pleasurable. Therefore, unless the patient is particularly anxious or depressed about his behavior, there is little incentive for him to seek treatment. Even if he is not "at peace" with his sexual deviation, he may seek treatment for his "neurotic" reactions, with the understanding that he will be permitted to keep the sexual deviation.

The sexual deviations (with the exception of male and female homosexuality) which are encountered most frequently in clinical practice are described below, with specific reference to the nature of the deviate activity, its frequency, the psychoanalytic concept of its etiology, clinical description, management of the disorder, and prognosis.

Fetishism

Definition. The fetishist achieves sexual excitement and gratification by substituting some inanimate material object (e.g., shoes, corsets) or some part of the body (e.g., a foot or a lock of hair) for a human love object. With regard to the specific fetish chosen, Kinsey felt that there might be a connection between fetishism and sadomasochistic behavior, as evidenced by the aggressive quality of some of the objects which typically arouse sexual excitation (e.g., whips, tight corsets).

Apart from such considerations, various authors have described the fetish as representative of the female, as well as the male genitalia. However, psychoanalytic clinical investigation has shown that, almost without exception, the fetish is symbolic of the penis.

Epidemiology. Fetishism is a defense against castration anxiety (as are all sexual deviations). Since the fetish is usually a penis symbol, it is logical to assume that fetishism would be demonstrated almost exclusively by males. Obviously, one would not expect a penis symbol to reassure a female of her possession of a penis. This hypothesis has been confirmed by the findings of Kinsey et al. who reported "only two or three cases" of female fetishism among the population studied.

Etiology. As early as 1927, Freud explained fetishistic deviations in males as the result of overpowering castration anxiety which originates in early childhood. For the young boy, the absence of a penis in females is a reminder that this could happen to him, and it revives his fear of castration. Consequently, he refuses to accept the fact that women have different genitalia from men. Confronted with reality at a later stage in his development, he turns away from the living object to replace it with the fetish, which stands for a female penis. Sexual excitation and gratification are possible only when he can convince himself of the existence of a female penis, for only this belief can keep his castration anxiety in abeyance.

Epigenetically, the development of fetishism presupposes that the patient was exposed to the sight of the female genitalia in early childhood, and that the anxiety provoked by this experience was so intense that there was a corresponding need to deny the perception. Thus, the ego is split: on the one hand, there is an awareness of the female genitalia; on the other hand, this knowledge is denied. This split in the ego serves another function as well: belief in the existence of a female penis wards off incestuous impulses.

Traumatic experiences in early life are believed to accentuate and contribute to the fear of genital mutilation, and the subsequent development of fetishism.

One such fetishist patient had had an operation on his penis for phimosis at the age of 3. Lorand has described another patient who was operated on for pes varus as an infant and had his foot in a cast for months.

Clinical description. The fetishist cannot become completely involved in a heterosexual relationship. Yet, he is unhappy with his sexual way of life; he is frequently depressed and moody and, at times, may drink excessively. Nevertheless, he is usually well liked by both men and women and has many friends. In fact, the fetishist's reserved attitude makes him attractive and "interesting." The fetishist is interested in establishing social contact with women, and his conversation may be very seductive, but he rarely proceeds beyond this point; i.e., genital contact is avoided.

The fetishist may also present a passive, shy facade, which conceals a violent temper, obsessional trends, and feelings of general distrust. Typically, he shows a high degree of sensitivity. The tendency toward denial, which is a prominent feature of fetishism, may lend a prepsychotic quality to his behavior.

For the female fetishist, kleptomania may be a source of sexual excitement. Frequently, such patients compulsively steal and accumulate objects which have no material value, but which have unconscious sexual significance.

Prognosis. The success of treatment will depend

on the strength of the fetishist's desire to change, that is, for a normal heterosexual relationship. Fetishists who were well motivated along these lines have been cured of their symptoms.

Management. Any therapeutic technique which serves to reassure the patient is helpful. However, psychoanalysis is the most effective treatment method because it exposes the oedipal and pre-oedipal factors which gave rise to the castration anxiety the patient tries to overcome through fetishism. Within this frame of reference, the techniques used in the psychoanalytic treatment of fetishism will not differ significantly from those employed in the treatment of any other severe neurosis, except that greater tact and flexibility will be required of the analyst. In general, treatment will focus on strengthening the patient's ego, so that he is better able to control the discharge of impulses, and on uncovering and "working through" repressions and early fixations, so that the patient will no longer find it necessary to resort to infantile modes of sexual expression.

Transvestitism

Definition. The transvestite achieves sexual excitation and gratification from wearing the clothes and enacting the role of the opposite sex.

Epidemiology. In Kinsey's sample transvestitism was most prevalent among men: "There may be a hundred anatomic males who wish to be identified as females, for every two, or three, or half dozen anatomic females who wish to be identified as males." (However, other authors have pointed out that in about a dozen primitive societies, females customarily dressed as males and assumed the role of the male in their social organization.) Kinsey further stated that "The data shows that only a portion of transvestites have homosexual histories." However, the clinical evidence indicates that, not infrequently, transvestitism is part of a triad, along with fetishism and homosexuality.

Etiology. Although there is some disagreement as to the etiology of transvestitism, it is generally accepted that constitutional predisposition is a necessary (but not sufficient) precipitating factor. Psychoanalytic theory postulates that, in essence, transvestitism has its origins in the oedipal and pre-oedipal phases of development, that it represents a psychic regression to infantile sexuality. More specifically, according to psychoanalytic theory, the aim of transvestitism is, once again, to deny the threat of castration. The transvestite, like the fetishist, overcomes his castration anxiety by clinging to the belief that the female has a penis. However, he carries this denial one step further by identifying with the phallic woman. Thus, the difference between homosexuality and transvestitism lies in the fact that, whereas the homosexual identifies with the mother by imitating her object choice, the transvestite identifies with the mother by imitating "her being a woman."

Fenichel has pointed out that the transvestite act has two unconscious meanings. The first of these is object-erotic and fetishistic: "The person cohabits not with a woman, but with her clothes; the clothes representing, symbolically, her penis." (And Kinsey has speculated, in this connection, that the female clothing may also encourage a rape fantasy.) Secondly, the transvestite act has an unconscious narcissistic meaning: "The transvestite himself represents the phallic woman under whose clothes a penis is hidden. Transvestites who are exhibitionistic about displaying their female attire show their symbolic penis in the same manner and for the same reason as the true exhibitionist actually shows his penis. Behavior of this kind presupposes a rather narcissistic orientation."

The female transvestite cannot, of course, convey the illusion that she possesses a penis, simply by putting on a man's clothing. She "plays at being a man." The difference between the male and female transvestite, then, is that although the male "plays at being a woman," he can prove to himself (through masturbation) that he has not lost his penis in the game. The female cannot reassure herself in the same way; she can only pretend. In other words, the female transvestite displaces her envy of the penis onto an envy of the masculine appearance. Fenichel further suggested that male transvestitism has "a more serious character; female transvestitism has a pretending character."

Other authors have emphasized the importance of the bisexual disposition in the etiology of this sexual deviation. More specifically, a preeminent factor in the psychopathology of the transvestite is the confusion which has surrounded his sense of sexual identity from the earliest phases of personality development. For example, it is quite common to find that, as a child, the male transvestite liked to dress up in his mother's or sister's clothes, that the female transvestite dressed up in her father's or brother's clothing. While this may be a transient phenomenon in normal childhood, in the transvestite the impulse to emulate the opposite sex remains unmodified.

Disturbances in object relationships, while not unique to transvestitism, are also typical of the early history of these patients. Thus, we find that, almost without exception, the male transvestite was the center of his mother's attention during the crucial phases of his development, and the mother was often quite seductive. Sleeping with mother or sister, observing mother in the bathroom, watching her body, taking baths with her, are all part of the traumatic sexual overstimulation to which the transvestite was exposed in early childhood.

In transvestites we also see an especially strong fear of being rejected and abandoned. Any frustration by mother is experienced as an abandonment. At the same time, there is an insatiable craving for love and affection. Wearing female undergarments enables the male transvestite to achieve the bodily

closeness to mother which he yearns for. And, it serves another function as well: by dressing in women's clothing, he is able to repress his incestuous impulses.

Clinical description. Clinically, the transvestite resembles a borderline schizoid personality. Because, above all, he is afraid of being found out, the transvestite is moody and depressed, secretive, taciturn, and distrustful. Many of these patients have heterosexual relationships. But prior to a heterosexual engagement, the male transvestite frequently dresses up in private in female underwear, an elaborate robe, and applies heavy makeup. Once he has adopted the female identity, he is able to reach orgasm through masturbation. He then changes into his regular attire and is ready to resume his "normal" life.

Prognosis. As mentioned earlier, transvestite patients usually display fetishistic and homosexual symptoms as well, which, in itself, is discouraging in terms of their general prognosis. Treatment is further complicated by the fact that patients in this category are extremely reluctant to alter their deviate behavior.

Management. Theoretically, transvestitism belongs in the category of impulse neuroses and can be treated effectively as such. In fact, however, transvestites are not suitable candidates for the deep analytic therapy which would be required to get at the root causes. For one reason, as mentioned above, transvestites are rarely motivated to seek treatment for their deviation. Secondly, it is particularly difficult, because of their nature, to expose and work through the deep-seated ego disturbances which underly this disorder.

On the other hand, while they are not eager to change their deviate behavior, the transvestite may feel the need for therapy because of the anxiety and depression which are typical in such cases, and psychopharmacological agents may help to control these reactions. Again, when the transvestite has come into conflict with his environment, relief from symptom exaggeration can sometimes be achieved. For instance, the transvestite may learn to control his penchant for exhibitionistic "dressing" and to confine his deviation to the privacy of his home.

Masochism and Sadism

Definition. Krafft-Ebing coined the term "sadism" after the Marquis Alphonse François de Sade, French revolutionary and 18th century novelist. The term "masochism" referred to the sexual practices of Leopold von Sacher-Masoch, the 19th century Austrian novelist. Schrenk von Notzing called both sexual deviations "alogagnia," meaning pleasure in pain; sadism was an active alogagnia, and masochism a passive alogagnia.

In current psychiatric practice, sadism is defined as the attainment of sexual excitation and gratification by inflicting pain upon the sexual object; the masochist achieves sexual excitation and gratification by enduring pain inflicted upon the self as an object.

Epidemiology. Many anthropological studies of other societies have emphasized the violent character of their sexual act. Thus, for example, Høleberg observed that the Sirinos bite and scratch each other during the sex act: "Charabi women spit in their lover's face during coitus, and an Alpinay woman bit a piece off her partner's eyebrows." Malinowski described similar practices among the Trobriand Islanders. Other authors have also pointed out that male mammals of many species attack the female during coitus. Zuckerman has described the male baboon's aggressive attitude, and Hamilton observed the aggressive behavior of the macaque monkey during intercourse.

With regard to our own society, Kinsey found that among the sample he studied, "Fewer females and more of the males erotically responded to sado-masochistic stories. Three percent of females had a definite and/or frequent response as compared with ten percent of males who did."

Etiology. Detailed descriptions of the psychodynamics of sadism and masochism are rare in the psychiatric literature. However, psychoanalytic investigations have shown that, once again, the definition of sexual deviation as a means of warding off castration anxiety is applicable to these phenomena as well. More specifically, the sadist is able to rid himself of the fear of castration and achieve sexual pleasure only when he is able to do to others what he is afraid may be done to him. The masochist's ability to achieve orgasm is similarly disturbed by anxiety and guilt feelings, which can only be alleviated by his own suffering.

Freud demonstrated that sadism and masochism are complementary phenomena. He concluded, on the basis of clinical evidence, that masochism is not the manifestation of a primary instinct but originates from sadism. Because the sadistic impulses toward the object are unacceptable, they are turned around and directed against the self (the ego) instead.

As mentioned above, the masochist is denied sexual gratification because of castration anxiety and concomitant guilt feelings. Fantasies of being punished as a means of alleviating these guilt feelings are very common among this patient population. For example, among women, fantasies of being humiliated, enslaved, and of being whipped, driven, and denuded by the "slave trader" are frequently encountered in clinical practice. In other words, as Fenichel has pointed out, the masochist "shifts the emphasis to the tensions of forepleasure and builds up elaborate fantasy structures, a procedure that often makes masturbation more gratifying than the actual realization of deviate activities which could not fulfill all the anticipated details... the complicated fantasy system tries to overcome the fear that blocks the capacity for end pleasure."

Childhood feelings of abandonment and rejection by the parent create feelings of rebellion, as well as

hate and resentment. Defending himself against these as well as against his castration anxiety, the masochist symbolically castrates himself, thereby saving himself from real castration. The sadist, on the other hand, symbolically "identifies with the aggressor," and "castrates" his victim to prove to himself that he is the castrator and not the castrated.

Clinical description. The clinical features of masochism have been described in greater detail in the literature than have those of sadism. Typically, the masochist feels helpless, worthless, depressed, and guilty. Clinical studies have shown, too, that masochists often show a tendency to addiction.

Variations in masochistic behavior have also been observed in this patient population. For example, the "moral" masochist seeks humiliation and failure, rather than physical pain. Moreover, the connection between his masochistic activities and fantasies and sexuality is not always readily apparent. Clinical investigation will show, however, that for the moral masochist enjoyment of humiliation symbolizes being the father's sexual object, who is beaten by the father initially, and later beaten by destiny.

Clinical observation of this patient population also serves to confirm Freud's hypothesis that both sadistic and masochistic strivings regularly appear in the same person. A male alcoholic patient who was extremely sadistic toward women in his social relationships became extremely masochistic and submissive in his sexual practices. He could perform intercourse only after his sexual partner had urinated in his mouth.

Another patient constantly read the type of magazines which deal with torture fantasies, and flagellation. At times, he fantasied that he was torturing a female victim; at other times, he was tortured by his sexual partner. During such fantasies he used to masturbate. Although he was able to engage in sexual intercourse, he found his masturbatory torture fantasies more gratifying than genital union.

Prognosis. When the sadomasochist seeks treatment on his own initiative, his prognosis is good.

Management. The fact that the masochistic patient demonstrates a need for self-punishment which is due to excessive unconscious guilt is readily apparent. Treatment must devote itself to the reduction of this unconscious guilt. Quite apart from the sexual implications of his sadomasochism, the patient must be made aware of the range and strength of his aggressive impulses. For only then can he recognize the relationship between the repressed aggressive impulses, which have their origins in earliest childhood, and his later sadistic drives with their erotic implications.

Exhibitionism

Definition. Exhibitionism, which is one of the more common sexual deviations, was first described by the French neurologist, Lesègue, in 1877. By defini-

tion, it is an impulsive action which consists of the exposure of the genitalia as a means of achieving sexual excitation and gratification.

Epidemiology. Exposure of, and the desire to look at the genitals is normal in young children, and these activities, often occur in conjunction with sexual exploratory games. Thus, Kinsey reported that "It is not impossible that nearly all boys have some pre-adolescent genital play with other boys or with girls. . . . For about 20 per cent of the boys who do engage in such play heterosexually, the exhibitionism is the limit of the activity."

In later life, genital exhibitionism, as a sexual deviation, does not exist in women. And none of the cases in female samples studied by Kinsey derived erotic satisfaction from public display of their genitalia. On the other hand, the exposure of nongenital parts of the body for the purpose of forepleasure is more common among females than males.

Etiology. According to psychoanalytic theory, the underlying psychodynamics of exhibitionism may be summarized as follows. Exhibitionism serves as a reassurance against castration anxiety in several ways. First, by exhibiting his penis, the exhibitionist says to his audience, "Reassure me that I have a penis by reacting to the sight of it." Second, particularly when the exhibitionist performs before little girls, he is saying, unconsciously: "Reassure me that you are afraid of my penis, that is, that you fear me." Finally, exhibitionism may be a magical gesture: "I show you what I wish you could show me." The mechanism here is similar to that involved in transvestitism: the deviate seeks assurance that the female has a penis in order to alleviate his castration anxiety.

Clinical description. Although exhibiting the penis is aimed at excitation, it does not generally end in orgasmic gratification. The exhibitionist gets final relief from his sexual excitement and tension by masturbation, usually manual, although his fantasies concerning the exhibitionistic experience may lead to spontaneous orgasm by seminal emission.

The exhibitionist seeks exposure, and he must roam the streets. At home, he is insecure and lonely. There is an obvious lack of self-control with regard to aggressive drives, which, in turn, implies a maladjustment in his relationship with early environmental authority figures. Sadistic and masochistic drives are geared for discharge of rebellion. Exhibitionists are repetitious transgressors of moral and social taboos. Consequently, they keep reinforcing a strong sense of guilt and need for punishment. Frequently, they risk being apprehended by repeatedly returning to the scene of their "crime," until they succeed in getting caught.

Prognosis. Because the exhibitionist rarely seeks therapeutic help voluntarily but is usually referred by the court for therapy, his prognosis is generally unfavorable.

Management. Psychoanalysis is an effective treatment method, especially for young individuals, provided the exhibitionist's desire to change is strong enough.

Voyeurism

Definition. Voyeurism was first described by French authors as a means of achieving sexual excitation and gratification by watching nude women or a man and woman engaged in intercourse.

Epidemiology. Kinsey reported that 30 per cent of the men and 19 per cent of the women in his sample preferred coitus with at least some light. Hamilton found that 20 per cent of the females and 65 per cent of the males he studied had done actual peeping. However, the percentages for the population as a whole are probably higher. For instance, strong interest and pleasure in examining pornographic pictures and films, which are quite acceptable in many social circles today, would actually be considered a sexual deviation.

Etiology. Sexual curiosity and libidinal excitement as a result of the sight of the love object are part of normal sexual development. In early childhood this sexual curiosity focuses on the parents; the adult voyeur is given to spying on strangers. Nevertheless, the voyeur is fixated on an expression of his early curiosity, which aroused his castration anxiety, such as witnessing the primal scene or the sight of the adult genitals.

As always, behind the castration anxiety there is a great deal of aggression. Deviant voyeurism aims at avoidance of the "complications" of the love relationship—the dependence and the frustrations—and, at the same time, it expresses the voyeur's resentment and hatred of the object. The sexual deviation is also an act of defiance and rebellion against the superego.

In fact, no sight can actually provide the voyeur with the reassurance against castration anxiety which he is striving for. As a result, either he develops an insatiable urge to see more and more, again and again; or his interest in watching genital activity is displaced onto forepleasure activities and even pre-genital activities.

Clinical description. In case histories, one finds that, typically, the voyeur suffered severe frustrations and rejection during the pre-oedipal and oedipal stages of his development. As an adult, he feels that his deviation is an attempt to recreate exciting, pleasurable childhood scenes with his mother. Watching forbidden exciting scenes reminds him of past pleasures, i.e., of watching his parents in their bedroom or toilet.

Prognosis. Voyeurs can be helped when they come for therapy on their own.

Management. The voyeur is frequently motivated to seek treatment because of difficulties in heterosexual relationships. At other times, his fear of being discovered and punished by the law is a focal point for

initiating treatment. In any event, voyeurs respond to psychotherapy. However, their unconscious need for punishment usually requires a psychoanalytic approach.

Incest

Definition. The word "incest," derived from the Latin, *incestum*, meaning low, poor, not chaste, commonly refers to coitus between members of the same family—father-daughter, brother-sister, mother-son—although anthropologists have extended this definition to apply to genital union between members of the same tribe or clan as well. Incest between parent and child is generally considered a form of intrafamilial pedophilia, described below. Incest may also have homosexual implications when, for example, it occurs between father and son.

Epidemiology. Freud's description of the incest taboo as "one of the most powerful prohibitions of mankind" has been confirmed by subsequent anthropological and sociological studies, as have his hypotheses concerning the origins of this taboo.

Thus, for example, the majority of the societies surveyed by Ford and Beach—72 per cent of the 133 groups studied—enforced incest taboos which included a great number of relatives. These authors further stated that "among all peoples both partners in a mateship are forbidden to form sexual liaison with their own offspring." This prohibition characterizes every culture. Sibling incest is also generally condemned.

Similarly, Kinsey et al. reported that incest cases were so rare in the sample population they studied that "it would be misleading to suggest where the highest incidences lie."

Incest prohibitions are not inborn. Ford and Beach maintained that "social rules against intercourse with close relatives reflect cultural, rather than physiological, or biological, tendencies." In fact, Freud had advanced a similar view of the origins of the incest taboo many years earlier:

Thus the view which explains the horror of incest as an innate instinct must be abandoned. Nor can anything more favorable be said of another, widely-held explanation of the law against incest, according to which primitive peoples noticed at an early date the dangers with which their race was threatened by inbreeding and for that reason deliberately adopted the prohibition. There are a host of objections to this theory. ... Not only must the prohibition against incest be older than any domestication of animals which might have enabled men to observe the effects of inbreeding upon racial characters, but even today the detrimental results of inbreeding are not established with certainty and cannot easily be demonstrated in man.

He went on to say:

Respect for this barrier [incest] is essentially a cultural demand made by society. Society must defend itself against the danger that the interest it needs for the establishment of higher social units may be swallowed up by the family.

Etiology. Normal development implies the conquest of oedipal strivings, which are then replaced by adult sexuality. In contrast, the neurotic mind is characterized by its tendency to cling to oedipal wishes. In other words, because the Oedipus complex has not been resolved, strong incestuous wishes remain operative. These incestuous wishes rarely find direct genital expression because of the strong social taboos against such acts. However, their mere presence has serious implications for psychosexual development. Thus, in a paper written in 1905, Freud noted:

The closer one comes to the deeper disturbances of psychosexual development, the more unmistakably the importance of incestuous object-choice emerges. In psychoneurotics a large portion of the whole of their psychosexual activity in finding an object remains in the unconscious as a result of their repudiation of sexuality. . . . In cases in which someone who has previously been healthy falls ill after an unhappy experience in love it is also possible to show with certainty that the mechanism of his illness consists in a turning-back of his libido on to those whom he preferred in his infancy.

Similarly, the individual may manifest a wide range of distortions and deviations in his sexual behavior as a defense against his strong unconscious incestuous desires. All sexual object relationships may be inhibited and weakened as a protection against the breakthrough of these drives.

It follows, then, that the acting out of the Oedipus complex by actually breaking the incest barrier is a regressive phenomenon which implies a serious defect in ego development. Thus, in schizophrenia, for example, the desire for incestuous intercourse is frequently expressed openly, and attempts are made to act on this desire.

Clinical description. We recognize incestuous feelings as fairly common phenomena in clinical practice. Many fathers are in love with their daughters; many brothers are very much attached to their sisters; many mothers love their sons. But most neurotics have erected strong defenses against such feelings, so that the most innocent expressions of affection may give rise to anxiety.

Clinical studies show that in cases where father-daughter incest has actually been consummated, the daughters have ranged in age from 6 to 17; most often, the eldest daughter is chosen as the sexual object. The fathers in these cases maintain a facade of patriarchal competence, which hides deep feelings of uncertainty with regard to their masculinity. Sometimes they are alcoholics or drug addicts. The mothers in such cases have relegated their position as the central female of the household to their daughters.

Sibling incest, as part of exploratory sex play, has been reported fairly frequently in preadolescence. When it occurs in early adolescence, it has more serious implications as indicative of intense penis envy in girls or an acting out of the boy's oedipal wish for genital union with the mother.

Mother-son incest is rare. In known cases, the fathers were ineffective, and the mothers were unusually passive. For the most part, the sons were preadolescent at the time of the consummation of the incest. Follow-up studies have shown that in later years, these sons became "extroverts," affected attitudes of omnipotence, and were unable to sustain a marital relationship.

Prognosis. Because the breakthrough of incestuous drives implies the serious lack of impulse control which typically precedes the onset of psychosis, the prognosis for adult patients in this category is generally poor. The prognosis is more favorable for younger patients, however.

Management. Ideally, younger patients in this category should be referred to residential treatment settings (rather than foster homes, for example). Foster home placement will, in all likelihood, produce attempts to seduce their foster parents, since no effort has been made to deal with the underlying problem. On the other hand, if such patients live with a group of other patients of the same sex and approximately the same age, and proper treatment facilities are available to them, the intensity of their oedipal strivings may diminish.

Pedophilia

Definition. The pedophile requires the cooperation of a child partner of the same or opposite sex in order to achieve sexual gratification. (In this context, the term "child" is understood to include the sexually immature adolescent.)

Epidemiology. It is well known that in Ancient Greece homosexual pedophilia was common. However, for obvious reasons, precise statistics as to the current incidence of pedophilia are difficult to obtain. While police records of parents' complaints that their child has been molested do provide some clue as to the prevalence of this sexual deviation, other factors must be taken into consideration. For example, the adolescent "victim" in such a complaint may, in fact, have concealed his (or her) age, and behaved in a deliberately seductive manner. On the other hand, the practice of fellatio and masturbation of male infants by their nurses and mothers is not rare. Furthermore, children lend themselves to fondling and to lap sitting, which may be accompanied by friction with adult genitalia.

Etiology. The pedophile avoids coitus with an adult love object because of his overwhelming castration anxiety; instead, he is attracted to children who do not elicit the same anxiety because they are weak and approachable. The pedophile's fear of castration also reinforces his narcissism. It is generally agreed that love for children is usually based on such narcissistic tendencies. More specifically, unconsciously, the pedophile is in love with himself as a child, and he treats his child love objects in the same

way he would have liked to have been treated as a child.

Like the homosexual, the pedophile identifies with his frustrating mother. However, the homosexual identifies with his mother's love for men. On the other hand, the pedophile is more narcissistic than feminine. Having identified with his mother, he behaves as he had previously wished his mother to behave toward him. Consequently, he chooses as love objects young men, or boys, who remind him of himself.

Clinical description. Freud described pedophilia as the perversion of the "weak and impotent," and clinical evidence has shown that most male pedophiles are partially or totally impotent. Usually, their sexual activity consists of masturbatory and exhibitionistic behavior.

The pedophile's attempt to penetrate an infant or very young child may, of course, cause physical damage. However, the role of the child should not be minimized. For instance, Greenacre has described the youngster's seductive attitude in provoking prepuberty sexual trauma to herself. As mentioned above, when the immaturity of the young person is concealed, and her seductiveness plays a major role, a diagnosis of pedophilia would be questioned. Rather, one might be tempted to speculate that the behavior of such a child, in acting out her oedipal strivings, was more indicative of the presence of psychopathology than the pedophile's response to her actions.

Pedophilia is similar to other sexual deviations, particularly zoophilia and sadomasochism, as well as homosexuality and incest. However, zoophilia, which refers to sexual excitation by stroking and fondling animals appears to be more fetishistic and sadistic in quality; pedophilia is masochistic and bears no resemblance to fetishism. The pedophile, although he engages in elaborate secret, hide and seek games, usually does get caught. Exposure of his "naughty" behavior, and punishment by the authoritative adult, gratifies the pedophile's narcissistic identification with the child.

Prognosis. The masochism of the pedophile makes successful psychotherapy difficult. A habitual homosexual pedophile's intractability is epitomized in the statement quoted by Rubinstein: "It's worth going to prison for."

Management. Pedophilia must be differentiated from a primary disorder such as organic brain syndrome. A toxic condition or senility also may release pedophilic impulses and may be treated as such.

Once the diagnosis has been clearly established, attention to the masochistic component is essential in any form of therapy. If the pedophile's basic personality problem is a neurotic distortion, then psychoanalysis would be the treatment of choice.

Bestiality

Definition. The human being who engages in bestiality achieves sexual gratification by having intercourse with a living animal.

Epidemiology. During periods of history, and in some cultures, bestiality, or zoorasty, received religious sanction. In the last days of the Roman Empire, for example, bestiality was practiced quite openly. In Kinsey's sampling, however, intercourse with animals was the least frequent form of human sexual behavior. He further reported that it was most common in the preadolescent years (before ejaculation) and decreased markedly after young adulthood. Rural living was found to be a significant factor in the incidence of bestiality. One third of the males who lived in rural areas, and were in the upper educational level, according to Kinsey, had had sexual intercourse with an animal to the point of orgasm.

Etiology. The central consideration, as in other sexual deviations, is the reaction against the castration fear. The animal, in toto, symbolizes the phallus and asserts its presence and mastery. Identification with the small animal, in toto, gratifies the wish for tender, loving care which the helpless animal (child) requires. On the other hand, a dangerous or benevolent large animal permits identification with the parental role in the child-parent relationship.

Partial aspects of the animal, such as the hind quarters—symbolizing the male genitalia, breasts, and buttocks—quell castration anxiety by permitting regressive forms of sexual arousal. Arousal through observation of copulating animals enforces identification with the prowess of the animal.

Of major significance in bestiality is the fact that animals don't talk. The human is safe not only from rejection, but also from fear of retaliation.

Isolation from other humans has etiological and diagnostic implications, particularly with respect to schizoid personalities, who have great anxiety in human relationships. Infrahuman object relationships provide an opportunity for the mastery of such anxiety. A severely phobic, schizophrenic young virgin, dominated by an aggressive mother, was preoccupied with sadistic fantasies. She "solved" her sexual conflicts by training her large, ferocious dog to perform cunnilingus.

Clinical description. A wide variety of domestic animals have been used in bestiality. Among families who own pets, such as dogs, an excessively emotional relationship with the animal may exist. Sometimes a dog may be observed vigorously rubbing its genitalia against the leg of a child or an adolescent in the family, or even an adult. The acquiescent human's role in this masturbation is "passive," denied, sparing of the self. The other (the animal) is doing it. An active role may be played when the human masturbates the animal by rubbing its genitalia. However, this activity requires a mastering of the anxiety which surrounds

the forbidden masturbatory behavior by rationalizing it as experimentation with another.

Rubbing the human genitals against the fur of the animal is, of course, a more direct form of masturbation. Fellatio and cunnilingus are not infrequent techniques of bestiality. Dogs, cats, and even calves have been trained to lap human genitalia.

Prognosis. Farm boys are apt to overcome their bestiality when they are no longer as isolated socially and are able to establish sexual relationships with girls. Similarly, for adolescents in general, the use of an animal as a transitional object in avoidance of incestuous and masturbation conflicts is usually relinquished when success in socialization with peers of the opposite sex occurs.

Management. When the bestiality persists into adulthood, the essential diagnosis should be established. If there is an underlying schizophrenic process operating, therapy should be directed at relieving that illness. For so-called borderline personality disorders, psychoanalytic psychotherapy or psychoanalysis, where possible, is the treatment of choice.

Suggested Cross References

In this section the etiology and treatment of sexual deviations are presented from the viewpoint of classical psychoanalytic theory. For an alternate conceptualization of sexually deviant behavior see Bieber's introduction to the subject of sexual deviations (Section 26.2) as well as his discussion on homosexuality (Section 26.3). Further information regarding sexual development according to classical psychoanalytic theory may be found in Chapter 6, while other viewpoints on this topic are contained in the chapters and sections dealing with the other psychodynamic and psychological theories of personality and psychopathology presented in Area C. See Section 5.7 for a discussion of normal sexuality. For a more detailed discussion of psychoanalysis and psychotherapy, see Section 34.1 in Area G, on psychiatric treatment. See also Section 41.6 on sexual deviations in children.

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Chapter 27

Personality Disorders. III: Sociopathic Type: The Addictions

27.1 ADDICTIONS. I: OPIOID ADDICTION

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Definition

In the *Diagnostic and Statistical Manual* of the American Psychiatric Association, drug addiction is said to be symptomatic of a personality disorder and is classified under sociopathic personality disturbance but is not otherwise defined. The wisdom of such forbearance becomes apparent when one considers the various usages of terms—such as addiction, habituation, physical dependence, psychic dependence, and emotional dependence—that abound in the literature.

In the strict pharmacological sense, addiction is synonymous with physical dependence and refers to a state produced by repeated administration of certain drugs. When the drug is withdrawn abruptly, a train of transient physiological disturbances (abstinence syndrome) occurs that is specific for the drug in question and other agents with similar pharmacological actions. Traditionally, the term “habituation” or “psychic dependence” has been reserved for reference to compulsive drug use without development of physical dependence, with the obviously absurd implication that addiction and habituation are mutually exclusive.

In an attempt to resolve such ambiguities, the World Health Organization (W.H.O.) Expert Committee on Addiction-Producing Drugs has recently proposed to replace the terms “drug addiction” and “drug habituation” with the new term, “drug dependence,” which is defined as “a state arising from repeated administration of a drug on a periodic or continuous basis. Its characteristics will vary with the agent involved, and this must be made clear by designating the particular type of drug dependence in each specific case—for example, drug dependence of

morphine type, of cocaine type, of cannabis type, of barbiturate type, of amphetamine type, etc.”

Following the suggestion of Professor George H. Acheson, the term “opioid” will be used in this section to refer to any compound, natural or synthetic, with morphine-like properties, thereby avoiding the ambiguities of such terms as “opiate”—which refers to derivatives of opium, including those, like papaverine, that are devoid of analgesic actions—and “narcotic,” which in some usages refers to the general anesthetics.

Examination of these specific W.H.O. definitions reveals that common to all is a desire or need to continue taking the drug—in other words, compulsive drug use or habituation. In the cases of morphine and barbiturates, physical dependence is also listed as a characteristic of drug dependence (physical dependence does not develop on repeated administration of cocaine, cannabis products, or amphetamine-like compounds, except that transient hypersomnia may occur after abrupt withdrawal of amphetamine or its analogues), but the W.H.O. definitions make no attempt to relate physical dependence and habituation. Actually the term “drug habituation” would suffice to designate the general problem of abuse of drugs of any kind. There is evidence that under certain conditions the development of physical dependence provides a powerful basis for reinforcement of habituation. Therefore, other factors being equal, persons who abuse drugs of the morphine type are more likely to become habituated. Hence, addiction in the strict pharmacological sense is an important factor that must be considered from a practical as well as a theoretical standpoint in any discussion of the problem of abuse of drugs of this type. Accordingly, the most general appellation for persons who abuse opioids would be “opioid habitués” (who may or may not also be “addicted”). But the term “opioid habitués” is not in general acceptance, and so the words “addiction” and “addicts” will be used here in the loose but popular sense, referring to abusers of opioids in gen-

eral, with reliance on the context to clarify the particular issues discussed.

The term "abuse" implies that self-administration of the drug in question has harmful effects on the individual, society, or both. As stated by the W.H.O. committee, "With morphine, the harm to the individual is in the main indirect, arising from preoccupation with drug-taking; personal neglect, malnutrition, and infection are frequent consequences. For society also, the harm may be related to the preoccupation of the individual with drug-taking; disruption of interpersonal relationships, economic loss, and crimes against property are frequent consequences."

Community Laws and Attitudes

Though the dangers as well as the therapeutic benefits of opium were mentioned by some observers much earlier, it appears that it was the situation in China during the latter part of the 19th century that first aroused concern on an international scale. As cited by Kolb, it was estimated that there were 15 million opium smokers in that country in 1906—and as many in 1937, in spite of drastic efforts to curb the practice, including infliction of the death penalty in some cases. International efforts to curb the non-medical uses of opium and its derivatives and, more recently, synthetic opioids, began with the Hague International Opium Convention of 1912, which was followed by the Geneva Convention of 1925 and subsequent conventions and protocols in 1931, 1936, and 1948. These international agreements, monitored by various bodies—such as the Permanent Central Opium Board, the Drug Supervisory Body, the Commission on Narcotic Drugs of the United Nations Economic and Social Council, the Expert Committee on Addiction-Producing Drugs of the World Health Organization, and the Division of Narcotic Drugs of the United Nations—provide for limitation of production, importation, and exportation of opium, coca leaves, and cannabis products and control of the manufacture, sale, and dispensation of opioids with significant physical dependence-producing properties.

Federal laws. According to Isbell, the three major sources of the opioid addiction problem in the United States were: (1) symptomatic treatment with nostrums containing opium or, later, heroin, which was first thought to be nonaddicting; (2) the Civil War, with its aftermath of disabled veterans with painful conditions who were treated with morphine by the then new method of hypodermic injection; and (3) the importation of Chinese laborers to the West Coast between 1852 and 1870, among whom opium smoking was fairly common—a practice that was soon emulated by antisocial elements in the non-Chinese population. The last factor in particular seems to have given rise to the popular association of opioid addiction with crime and other vices. Though figures are unreliable, Kolb reported an estimate up to 264,000 addicts in the United States at the turn of the century, when the

population of the country as a whole was probably about 76 million.

Partly because of public indignation and partly in fulfillment of the obligations of the United States Government under the Hague Convention of 1912, the Congress passed the Harrison Narcotic Act in 1914. Though primarily intended to control the importation, manufacture, and distribution of opium and its derivatives and coca leaves and its derivatives, the Harrison Act also specified that physicians could prescribe or dispense such drugs only in the course of their professional practice and only to bona fide patients.

Subsequent laws have provided similar controls on synthetic opioids and marihuana, and penalties for violation of all of these laws have become increasingly severe. Public Law 728, passed in 1956, provides that illegal possession of opioids or marihuana is punishable by a fine of \$20,000 and imprisonment for 2 to 10 years on the first offense, 5 to 20 years on the second offense, and 10 to 40 years on the third offense; parole and probation are possible only on the first offense. Sale of such drugs is punishable by even more severe penalties, and sale of heroin to a person under 18 years of age is punishable by a fine of \$20,000 and imprisonment for 10 years to life or by death at the discretion of the jury. However, civil commitment, analogous to commitment for mental disorders, is possible in Illinois, California, New York, and the District of Columbia, under certain conditions.

Clinics. The immediate effect of the Harrison Act, with its implied prohibition (so interpreted by the Federal Bureau of Narcotics and often, though not always, upheld by the courts) of dispensation of morphine to addicts solely for the purpose of maintaining their addiction, was to channel large numbers of addicts into the illicit narcotic market. To deal with this problem, clinics were set up in a number of states for the purpose of curing addicts by dispensation of morphine in progressively decreasing amounts on an ambulatory basis. These clinics predominantly failed, and in 1921 the American Medical Association condemned ambulatory treatment of drug addiction in any form, including that practiced at clinics. As a result, the clinics were closed shortly afterward by the Treasury Department.

In 1929, Congress authorized the establishment of Federal hospital facilities for treatment of addicts and research on drug addiction. Accordingly, the United States Public Health Service Hospital in Lexington, Kentucky, was opened in 1935, and beds for addicts were made available at the United States Public Health Service Hospital in Fort Worth, Texas, a few years later.

In 1955, the New York Academy of Medicine, objecting strongly to what they regarded as the excessively punitive character of the laws concerning addicts in the United States, proposed the reestablishment of clinics for the treatment of addicts with

special safeguards to minimize self-administration and diversion of drugs for purposes other than that of cure. Although agreeing with the New York Academy of Medicine to the extent of recommending more widespread use of civil commitment of addicts, committees appointed by the American Medical Association and the American Bar Association did not favor reestablishment of clinics.

Medical code for addicts. More recently, a joint report of the American Medical Association's Council on Mental Health and the National Research Council, Committee on Addiction and Narcotics for the National Academy of Sciences, recommended a code on the use of opioid drugs in the medical management of opioid addicts. This code has been declared acceptable to the Federal Bureau of Narcotics.

The essential features of this report are as follows. Although maintenance of addicts on stable dosage levels of opioids and ambulatory clinic plans for the withdrawal of opioids from addicts are considered generally inadequate and medically unsound, bona fide research on such treatments should not be obstructed. Ambulatory maintenance can be considered ethical medical practice if, after consultation with one or more other physicians, it is agreed that withdrawal would be hazardous to life or that continued drug administration is necessary for treatment of a chronic or terminal painful condition, other than the drug addiction itself, for which no other mode of treatment is feasible. Under exceptional circumstances, ambulatory withdrawal treatment may be undertaken by a physician with special skill and experience in the management of addicted patients, provided that in consultation with other physicians it has been decided that ambulatory withdrawal is, in fact, indicated. Otherwise, it is recommended that withdrawal be carried out in a drug-free environment in specialized wards of installations for narcotic addicts. However, in dealing with a relatively small number of patients who have been well evaluated, a physician with special skill and experience in the treatment of addicted patients may carry out the withdrawal procedure in the psychiatric wards of general hospitals, in a properly selected ward of a public or private mental hospital without specialized units, or in certain general hospital wards. Addicted patients awaiting admission to a treatment facility may be treated by a physician on an out-patient basis in daily visits for not more than 10 days to 2 weeks.

The British system. In recent years, there has been much public debate in the United States about the so-called British system. In point of fact, the importation, manufacture, and sale of opioids are strictly regulated by law in Great Britain, and, at least until very recently, the opioid addiction problem there has always been very small. The total number of addicts known to the Home Office was 454 in 1960. The mode of treatment of addicts, including long term

maintenance on opioids in special cases, has been left to the judgment of the practising physician, and no government clinics have existed in Great Britain where opioids may be dispensed to "registered" addicts for the maintenance of their addiction. However, because of an unprecedented increase in the number of young addicts during the past few years, the situation is now being reappraised by a governmental commission, and some changes in the British system may result from this inquiry.

Prevalence and Incidence

The most reliable source of information on the prevalence and incidence of persons with opioid addictions in the United States is that supplied by the Federal Bureau of Narcotics, which maintains a file of active addicts. This list includes the names of persons arrested and charged with a violation of narcotics laws, obtained from police records throughout the country. After they are reported initially, such names are kept on the active list for 5 years and are then placed in an inactive list if they have not been reported again during that period. Since 1955, as reported in the Bureau of Narcotics' 1963 report, the total number of active addicts included in the list for any year has been less than 50,000 (48,535 in 1963), despite additions to the list of some 7,000 to 9,000 names each year—a phenomenon that suggests that an approximately equal number of names are dropped from the active list each year.

The ratio of males to females in the list is generally about 3 or 4 to 1 and somewhat more than half of the total number are Negroes, with Puerto Ricans and Mexicans constituting substantial minorities within the Caucasian group. Slightly more than half are between 21 and 30 years of age, and about a third are 31 to 40. Juveniles (under 20 years of age) constitute somewhat less than 4 per cent of the total; about 12 per cent are over 40. In 1963, 48.3 per cent were reported from New York State, 14.6 per cent from Illinois, 14 per cent from California, 3.6 per cent from Michigan, and the remainder from all other states. During recent years, the vast majority of all addicts have used heroin primarily, with morphine, meperidine, and other opioids following in that order.

The predominance of Negroes in the country's addict population is a relatively new phenomenon, the great majority of addicts in the 1930's having been Caucasian. Also there has been an increasing concentration of addicts in large metropolitan areas, contrasting with a more even distribution in rural (predominantly Southern) and metropolitan areas in earlier years. As judged by the characteristics of the patient population at the United States Public Health Service Hospital in Lexington, Kentucky, from 1935 up to the present time, other changes apparently have occurred. The typical addict in 1936 was a white male prisoner, 38 years of age, who had been given a 2-year sentence for illegal sale of narcotics, who suffered from some

chronic disease such as arthritis, tuberculosis, or asthma, and, who did not become addicted to morphine until the age of 27. In 1955 the typical addict was a Negro male voluntary patient in his twenties who began the use of heroin at about 20 years of age and who was relatively well physically.

Sociological and criminological aspects. The majority of present day addicts are derived from the most depressed districts in metropolitan slum areas, which are differentiated from more favorable environments not only by their greater economic privation but also by greater availability of illicit drugs, laxness of social controls, and greater prevalence of psychopathic attitudes toward law and order and goals in life. In such districts, relationships between parents and between parents and children are likely to be much more disturbed than in the typical middle class American family. Particularly in the Negro population of such districts, the mother is likely to be the breadwinner; the father, if he is present at all, is chronically unemployed. Under such circumstances, it is not surprising that delinquency is common; however, the relationship between addiction and delinquency is by no means a simple one. Sociological studies by Chein et al. and Clausen have shown that there are areas with high delinquency but low narcotic addiction rates and that, in areas where both rates are high, crimes against property tend to be greater, and crimes against persons tend to be smaller in proportionate numbers.

These and other data seem to suggest that, although narcotic addiction per se does not increase criminal activity in general, except for narcotics laws offenses, it does promote crimes directed toward financial gain. Even this inference, however, is subject to doubt because it is not possible to estimate the number of criminal acts and the types of criminal acts that would have been committed by addicts had they not become addicted to opioids. However, the salient fact remains that only a minority of slum dwellers become opioid addicts.

Sociological factors, although undoubtedly contributing greatly to the genesis of addiction, are not sufficient to explain it. Currently, it is assumed that personality factors, interacting with sociological and pharmacological factors, constitute the major determinants of addiction.

Pharmacology

Chemical structure. Opium, which is prepared from the sap of the poppy seed capsule, *Papaver somniferum*, contains two classes of alkaloids, the phenanthrene and the benzylisoquinoline, of which only the former is of interest here. Included among the phenanthrene alkaloids are morphine and codeine, the former constituting 10 per cent and the latter 0.5 per cent by weight of opium itself. The chemical structures of morphine and some of its derivatives are shown in Figure 1. Attention is directed particu-

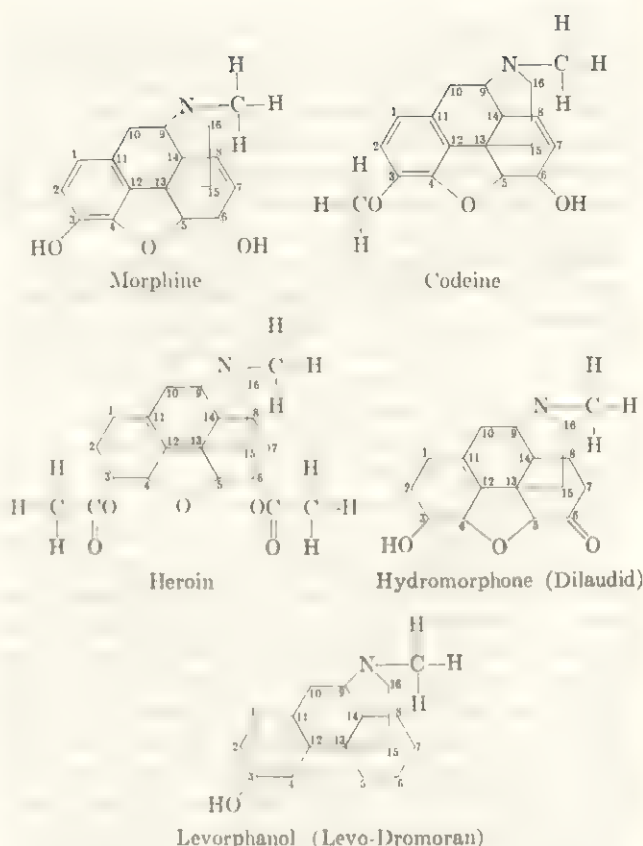


FIGURE 1. Opioids with intact phenanthrene nucleus.

larly to the hydroxy groups on carbon 3 (phenolic) and on carbon 6 (alcoholic), alterations of which alter the pharmacological properties of morphine considerably.

In general, alterations of the phenolic hydroxy group weaken analgesic activity, and alterations of the alcoholic hydroxy group augment analgesic activity. When subcutaneously administered doses are compared for analgesic activity, codeine, obtained by methylation of the phenolic hydroxy group, is only $\frac{1}{12}$ as potent, and dihydromorphinone (Dilaudid), obtained by removal of the hydrogen on the alcoholic hydroxyl, is 5 times as potent as morphine. Heroin, formed by acetylation of both hydroxy groups, is between 2 and 3 times as potent as morphine. Other potent analgesics derived synthetically from morphine include members of the morphinan series, such as levorphanol (Levo-Dromoran), and of the benzomorphan series, such as phenazocine. In contrast, certain substitutions on the nitrogen atom produce compounds that, though possessing analgesic properties, are powerful morphine antagonists; examples of these are nalorphine (Nalline), levallorphan (Lorfan), and cyclazocine (Figure 2). In addition to these agents, there are a number of synthetic compounds with morphine-like actions, the chemical structures of which bear little resemblance to that of morphine (Figure 3). Of these, methadone (Dolophine) is

roughly equivalent to morphine in analgesic activity, dextropropoxyphene (Darvon) is roughly equivalent to codeine, and meperidine (Demerol) is about $\frac{1}{8}$ as potent as morphine.

Metabolism. Most of an injected single dose of morphine appears in the urine within 24 hours, the remainder appearing in the feces (from bile) later. In its excreted form, morphine appears as the conjugated glucuronide, though free morphine is also detectable. In addition to conjugation with glucuronic acid, detoxification of morphine is also accomplished by *N*-demethylation in animals; but the importance of this pathway in man has not yet been established. Heroin is deacetylated and subsequently metabolized in the same manner as morphine. Other opioids are likewise detoxified by conjugation, but the details of their metabolism have not been fully investigated.

Sites and modes of action. The effects of morphine that are of major clinical interest are those mediated by actions on the central nervous system, though certain of its side effects are produced by actions on other structures, such as flushing and itching of the skin (especially on intravenous injection) by release of histamine and constipation by decrease of propulsive movements of the intestines coupled with spasmogenic actions on contractile movements of the intestinal tract and on sphincters.

Within the central nervous system, morphine ex-

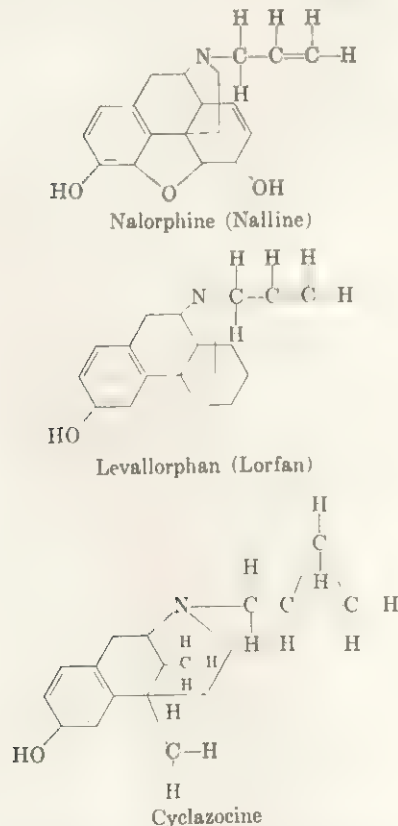
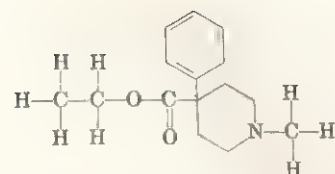
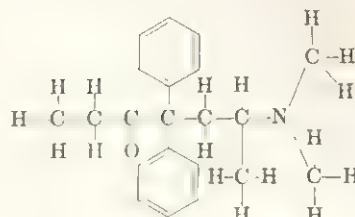


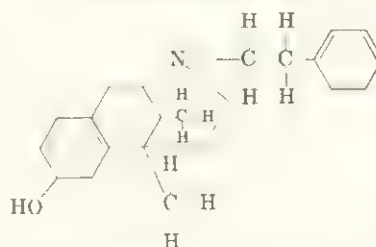
FIGURE 2. Opioid antagonists.



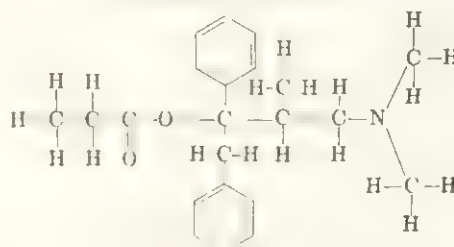
Meperidine (Demerol)



Methadone (Dolophine)



Phenazocine (Prinadol)



Dextropropoxyphene (Darvon)

FIGURE 3. Opioids without phenanthrene nucleus.

erts a combination of depressant and excitant actions at all levels of the neuraxis. In the chronic spinal dog (unanesthetized dog with complete transection of the spinal cord at the lower cervical or midthoracic level made under anesthesia months or years previously), morphine depresses the ipsilateral flexor and crossed extensor reflexes, has little effect on the knee jerk, and enhances the ipsilateral extensor thrust. This pattern of effects suggests that morphine has a selective depressant action on conduction within chains of internuncial neurons arranged in reverberating circuits, coupled with either direct excitation or release from inhibition of motoneurons. However, this pattern is more difficult to detect at higher and more complex levels of integration in the central nervous system. In addition, morphine affects spinal reflexes through augmentation of supraspinal inhibition, since the depressant effects of morphine on the tail flick in the rat and on the skin twitch in the dog are greater in the intact than in the spinal animal.

At the medullary level, morphine depresses the sensitivity of the respiratory center to carbon dioxide but enhances the sensitivity of sinoaortic chemoreceptors and vagal stretch receptor respiratory reflexes. Morphine bradycardia appears to be produced by direct central vagal stimulation and vomiting, by stimulation of the chemoreceptor trigger zone.

In the midbrain, morphine enhances the sensitivity of oculomotor parasympathetic neurons to light stimuli and probably also exerts a tonic excitant effect on these structures, since morphine constricts the pupil even in total darkness.

The actions of morphine on the hypothalamus are quite complex. Sham rage in decorticated cats and dogs is markedly reduced by morphine when such reactions are elicited by sensory stimulation but not on direct stimulation of the hypothalamus. Release of antidiuretic hormone appears to be due to a direct stimulant action of morphine on the hypothalamus. In the rat, morphine causes release of adrenocorticotrophic hormone (ACTH) from the pituitary gland through a direct stimulation of the hypothalamus but blocks release of ACTH by histamine or vasopressin. In man, the effects of single doses of morphine on ACTH release are variable, but ACTH production is depressed during chronic administration of the drug. In the dog, morphine sensitizes the anterior hypothalamus both to direct heat and to impulses arising from heated skin, thereby producing hypothermia. In animals, morphine hyperglycemia is produced by release of epinephrine consequent to a direct or indirect excitant action of the drug on the posterior hypothalamus.

In the rat and the rabbit, morphine elevates the threshold of excitation of the ascending reticular activating system. In the rabbit, it also enhances recruiting responses evoked by stimulation of thalamic intralaminar nuclei and induces spiking activity in the hippocampus. In man, single analgesic doses of morphine produce little change in the surface electroencephalogram (EEG), but chronic administration of the drug is accompanied by increasing synchronization of the EEG.

Because of certain similarities between the effects of analgesic doses of morphine and of bilateral prefrontal lobotomy on pain (reduction of the affective reaction without impairment of discrimination of the noxious stimulus), it has been inferred that morphine exerts a depressant action on conduction in frontothalamic pathways; however, direct evidence of such an action is lacking. Morphine appears to have no action on direct sensory pathways from peripheral nerves to the cerebral cortex mediated by the thalamic relay nuclei; however, it has been reported that in the cat morphine and meperidine selectively repress responses in the paralemniscal and ventral tegmental areas of the midbrain evoked by electrical stimulation of a tibial nerve.

Bearing on the reasons for the selectivity of mor-

phine action on the central nervous system is current research on the interaction of morphine with neurohumoral substances. It has long been known that morphine inhibits cholinesterase, but this action does not appear to be related to its analgesic effect. More recently it has been shown that morphine reduces the resting output of acetylcholine and the output from postganglionic cholinergic nerve endings when they are stimulated, that morphine inhibits the release of sympathetic transmitter substance from postganglionic endings, and that repeated administration of morphine results in an increase in brain concentrations of norepinephrine. *In vitro*, morphine does not affect respiratory activity at rest but does inhibit the increased oxygen consumption produced by stimulation with potassium chloride.

Tolerance and physical dependence. When a fixed dose of morphine is injected at regular and frequent intervals, certain of its effects, predominantly depressant, decrease progressively in intensity, and a larger dose is necessary to produce effects comparable in magnitude to the original ones observed. Concomitant with such increasing tolerance is the development of physical dependence or pharmacogenic dependence, which becomes manifest when the drug is withdrawn abruptly. In general, the abstinence syndrome that ensues under such circumstances is characterized by temporary hyperactivity of those functions that were previously depressed by morphine. These phenomena can be demonstrated not only in man but also in intact monkeys, dogs, and rats, in long surviving decorticated dogs, in chronic spinal dogs (also in a chronic spinal man), and even in unicellular organisms and tissue cultures.

The rapidity with which tolerance and physical dependence develop and the intensity of the dependence are, within limits, directly related to the frequency and duration of administration of morphine and the daily dose level that is finally attained before the drug is discontinued abruptly. In man, clear cut though mild abstinence phenomena can be demonstrated after abrupt withdrawal of morphine following a 2-week period of administration of 15 to 20 mg. of the drug four times daily. More intense abstinence phenomena can be precipitated much earlier during chronic morphine intoxication by injection of a single small dose of a morphine antagonist, such as nalorphine or levallorphan. In man, abstinence phenomena have been demonstrated with this technique after administration of 15 mg. of morphine or equivalent doses of heroin or methadone four times daily for 2 to 3 days. In the dog, definite evidence of tolerance can be seen during a continuous 8-hour intravenous infusion of a moderate dose of morphine, and at the end of that period abstinence phenomena can be precipitated by a single injection of nalorphine.

Studies by Martin and Eades on reflex and other responses in intact and in chronic spinal dogs during a continuous infusion of morphine and after multiple

daily subcutaneous doses for several weeks indicate that at least three mechanisms are involved in the genesis of tolerance and physical dependence: (1) relatively rapid though only partial restoration of autonomic functioning through responses of homeostatic systems to the abnormal conditions—hypercapnia, hypothermia, etc.—created by the depressant effects of the drug; (2) somewhat more slowly developing recruitment of auxiliary (normally redundant) neural circuits for the maintenance of both autonomic and somatic functions; and (3) still slower development of latent hyperexcitability of those neural circuits, autonomic and somatic, on which morphine exerts depressant effects. The first mechanism and to some extent the second appear to account for acute tolerance. The second and third appear to account for chronic tolerance in the intact animal and in the chronic spinal dog above the level of cord transection. Below the level of cord transection, acute tolerance is minimal, and chronic tolerance—the capacity for which is very great—appears to be generated mainly by the third mechanism. Although the abstinence syndromes (indicative of physical dependence) precipitated by a single dose of nalorphine in either the acutely or chronically tolerant state are very similar, that in the former state is produced by resensitization of homeostatic systems, which then respond to the abnormal internal milieu, thereby producing autonomic overactivity until the internal milieu is normalized; in the latter state, nalorphine unmasks the latent neural hyperexcitability, with consequent evocation of autonomic and somatic overactivity that persists until the latent hyperexcitability is dissipated.

Another theory of tolerance and physical dependence as detailed by Jaffe and Sharpless is modeled after the well known phenomenon of denervation supersensitization in peripheral structures, such as the nictitating membrane of the cat. According to this theory, decrease in activity of a neural aggregate over a prolonged period of time results in supersensitization of the same neural aggregate to all neurohumors that normally could excite it; when activity in the neural aggregate is restored, as by withdrawal of the depressant drug, the supersensitized neural aggregate responds excessively to such neurohumors, thereby producing an abstinence syndrome, which declines in intensity over a time course paralleling the decline in pharmacological supersensitivity.

The development of progressively increasing latent hyperexcitability or supersensitization of the central nervous system during chronic administration of morphine may be viewed as a counter-adaptation to the depressant effects of this drug. All the data strongly suggest that such counter-adaptation is developed at a cellular level, but little is known about the biochemical changes involved. Cortical slices from brains of rats treated with morphine daily for 1 week exhibit tolerance to the depressant effects of morphine on oxygen consumption stimulated by potassium chlo-

ride, but the enzymatic processes involved have not been elucidated. In rats, the development of tolerance to morphine is associated with progressive decrease in the capacity of the liver to *N*-demethylate this drug—a phenomenon suggesting that a decreased response to narcotic drugs on repeated administration may develop as a result of unavailability of receptor sites due to inactivation of the latter through continuous interaction with opioids. It has also been suggested by Collier that tolerance and physical dependence may be due to induction of new receptors that, together with the normal number of receptors, become available to neurohumors when morphine is discontinued, thereby giving rise to abnormally intense activation of the cell (abstinence syndrome) until the newly induced receptors are eliminated.

Whatever the mechanisms underlying cellular counter-adaptation to the effects of morphine may be, its complete dissipation apparently requires much more time than has been generally recognized. In man, complete stabilization of certain physiological variables is not achieved for up to 6 months following withdrawal of morphine, and in rats, as shown by Martin et al., small differences between control animals and animals previously addicted to morphine persisted for at least 6 months after withdrawal of morphine in the latter. In rats it has also been demonstrated that at least one manifestation of the morphine withdrawal syndrome can become conditioned to environmental stimuli in the classical Pavlovian manner—a phenomenon that may play a role in relapse.

Signs and Symptoms

Acute intoxication. In man, the effects of a single analgesic dose of morphine or other opioid appear to depend on a number of factors, including the subject's previous experience with the drug, certain as yet unidentified aspects of his personality, the presence or absence of pain, and the setting in which the drug is administered.

In experimental subjects without pain and without previous histories of narcotic addiction, morphine often produces dysphoria attributable to nausea, giddiness, and a subjective sense of mental clouding, although psychomotor performance on objective tests is impaired little or not at all except when speed is important.

In subjects with pain, morphine produces a negative euphoria ascribable to relief of pain or apprehension.

In certain individuals without pain and uniformly in subjects with previous histories of narcotic addiction but who are nontolerant to morphine, a single injection of the drug commonly produces a state that is reported by the subject to be unusually pleasant (positive euphoria), even though he may vomit and exhibit an alarming pallor to the observer. If undisturbed, such subjects may "go on the nod"—that

is, they may exhibit a state of semisomnolence from which they can be aroused easily—or they may exhibit “driving”—a display of unaccustomed energy in carrying out assigned duties. The sensorium remains intact, and skilled acts are not grossly impaired.

Pain perception thresholds (radiant heat to forehead, electrostimulation of tooth pulp) are not altered in a consistent manner by morphine, but analgesic doses of the drug do reduce significantly the disruptive effects on discrimination or on reaction time produced by anticipation of painful stimulation—an effect not produced by even a large dose (250 mg.) of pentobarbital. Probably related to this effect of morphine on pain-anticipatory anxiety is the finding reported by Jones et al. that single doses of morphine reduce the increment in basal skin conduction that develops during classical conditioning of electrodermal responses to electric shock stimuli.

More generally, morphine appears to reduce the range of change in psychomotor performance effected by variation of incentive level; pentobarbital increases it. At least under experimental conditions, “postaddicts” do not report increased fantasies after parenteral administration of morphine; on the Rorschach test, however, the drug has been reported to reduce constriction and to increase fantasy and inner living.

The effects of morphine on sexual experience and behavior are rather complex. Particularly on intravenous injection, many postaddicts report sensations akin to orgasm, which, however, are localized in the abdomen. Sexual desire is not increased, although male potency may be augmented by delay of orgasm.

Flushing and itching of the skin are also common after intravenous injection of morphine. Other effects of single doses of morphine, regardless of route of administration, are pupillary constriction, depression of respiratory rate, slight lowering of body temperature, and spasm of smooth muscle sphincters. In general, the effects of a single dose of morphine reach peak intensity about 20 minutes after intravenous and 1 hour after subcutaneous injection and persist with declining intensity for 4 to 6 hours, after which postaddicts report a “let down” feeling.

Comparative effects. Although heroin is more widely used by addicts in the United States than morphine, a careful study by Martin and Fraser of the subjective and objective effects of these two drugs has failed to reveal the basis for such preference. When administered intravenously in equipotent doses (1.80 to 2.66 mg. of morphine sulfate = 1 mg. of heroin), the time courses of action of the two drugs are quite comparable, as are reports of euphoria, ambition, nervousness, relaxation, drowsiness, and sleepiness. Nevertheless, postaddicts can distinguish heroin from morphine after intravenous injection (but not after subcutaneous injection). The basis for such successful discrimination is difficult to identify, except perhaps

for the much higher incidence of reports of pins and needles following intravenous injection of morphine.

The comparative effects of methadone and meperidine have not been investigated with such precision, but clinical experience indicates that the over-all effects of these agents are much the same as those of morphine, except for duration of action—methadone somewhat longer and meperidine shorter. Meperidine is also said to produce less pupillary constriction, presumably because of a peripheral anticholinergic action.

Opiate poisoning. The minimum human lethal dose of morphine is not known. Death has occurred after administration of 60 mg. of morphine, and, with vigorous treatment, recovery after intravenous injection of 760 mg. of morphine has been reported in nonaddicts. In the case of methadone, poisoning may occur after repeated injections of relatively small doses because of cumulative effects.

Regardless of the particular opioid involved, opiate poisoning is characterized by marked unresponsiveness, slow or periodic respiration, pinpoint pupils, bradycardia, hypotension, and hypothermia. In cases of very severe poisoning, the pupils may be dilated; reflexes (including the corneal) may be absent; cyanosis may be marked; and the pulse may be rapid, weak, and thready. In milder cases, opioid poisoning may be treated by vigorous and continued sensory stimulation and gastric lavage if the drug has been taken orally. In more severe cases, air passages should be cleared, an airway or trachea cannula inserted, and artificial respiration instituted.

If the patient does not respond promptly to these measures, one of the specific morphine antagonists, nalorphine or levallorphan, should be administered. Initially, a dose of 3 to 5 mg. of nalorphine may be given intravenously; if the diagnosis of opioid poisoning is correct, definite acceleration of respiration, return of blood pressure to normal levels, and reduction of miosis are invariably observed. Because the duration of nalorphine action is relatively short, the patient should be observed carefully, and additional doses of 5 mg of nalorphine should be given intravenously or intramuscularly as required until vital signs remain at acceptable levels. Restoration of consciousness is less promptly effected by the morphine antagonists and should not be a primary goal of treatment, since overdosage with morphine antagonists may develop if such is attempted. Great care must be exercised in administering morphine antagonists to physically dependent addicts who have taken an overdose of an opioid, since relatively small doses of an antagonist may precipitate violent abstinence phenomena.

Chronic intoxication. With repetition of a given dose of morphine, particularly two or more times daily, tolerance develops at varying rates, depending on the effect under consideration. Euphoria, relief of pain and anxiety (if previously present), depression of respiration, nausea, and vomiting decrease at a

relatively rapid rate. Pupillary constriction declines less rapidly, and smooth muscle spasm, with attendant constipation, persists indefinitely. Although the adrenal glands and the gonads remain responsive to appropriate hormonal stimulation, ACTH production is continuously depressed. In the sexual sphere, males become impotent, and females cease to menstruate.

Increasing the dose of morphine may partially restore the original effects of the drug, but addicts have been known to increase the daily dose to 5,000 mg. or more in an attempt to regain euphoria, with only partial and transitory success. Indeed, histories given by addicts and the results of a study by Wikler of a patient during experimental self-regulated readdiction to morphine indicate that, once a high degree of tolerance and physical dependence have been established, the prevailing mood of the addict is predominantly dysphoric, he is beset with anxiety and guilt feelings, and the chief motivation to continue use of the drug is suppression of abstinence phenomena.

Generally, addicts place a negative value on morphine abstinence phenomena and their suppression by morphine, but the experimental subject referred to above compared early abstinence phenomena with hunger and their suppression by the next dose of morphine with the pleasure of eating a good steak when hungry. According to Lindesmith, conscious recognition that his recurrent discomforts are due to morphine abstinence and that their relief can be accomplished only by an agent designated as morphine serves to identify the user as an addict in his own eyes and to initiate him into the value systems of other addicts.

Abstinence phenomena. The abstinence syndrome that develops when repeated injections of morphine are suddenly terminated is quite stereotyped. Although the patient may complain much earlier, frequent yawning, rhinorrhea, lacrimation, pupillary dilation, sweating, piloerection, and restlessness are usually observed 12 to 16 hours after the last dose. Later, muscular aches and twitches, abdominal cramps, vomiting, diarrhea, hypertension, insomnia, anorexia, agitation, profuse sweating, and weight loss develop, together with mild hyperglycemia and marked increase in urinary excretion of 17-hydroxycorticosteroids, indicative of greatly augmented pituitary ACTH production. In addition, spontaneous ejaculations may occur in the male and profuse menstrual bleeding in the female.

This constellation of signs, together with more variable behavior changes, reaches peak intensity on the 2nd or 3rd day after the last dose of morphine and then subsides rapidly over the next week, but, as already noted, a stable state may not be achieved for 6 months or longer. If, at any time during this abstinence period, a single dose of morphine is administered, all the abstinence phenomena subside dramatically, only to reappear again within 4 to 6

hours at a level comparable to that which would have been observed had morphine not been administered. The untreated morphine abstinence syndrome is rarely fatal except in patients with cardiac disease, active tuberculosis, or other debilitating illness.

In general, the abstinence syndromes following withdrawal of other opioids in patients addicted to them are similar to that of morphine. In the case of meperidine, however, myoclonic jerks or generalized convulsions, with paroxysmal activity in the electroencephalogram, may be observed prior to drug withdrawal if the daily dose level attained during chronic intoxication is over 2,000 mg. Such convulsive phenomena disappear within a few hours after the last dose of meperidine and are replaced by extreme restlessness, profuse sweating, and isolated muscle twitches—the characteristic features of the meperidine abstinence syndrome. If the patient now takes his accustomed dose of meperidine, the cycle of toxic convulsions and extreme abstinence restlessness, sweating, and muscle twitching may be repeated. In contrast, the abstinence syndrome that ensues when methadone is abruptly withdrawn from tolerant and physically dependent patients is much milder than that of morphine but persists longer, so that they are apt to complain of muscle and bone aching, irritability, poor appetite, and disturbed sleep for several weeks after withdrawal. Recent comparative studies by Martin and Fraser indicate that, contrary to earlier views, the morphine and heroin abstinence syndromes are quite comparable regarding time of onset, peak intensity, and rate of decline, provided that comparisons are made after stabilization of the patient at equipotent daily dose levels of the two drugs.

Much more rapidly developing abstinence syndromes can be precipitated in patients tolerant to and physically dependent on most opioids by injection of a morphine antagonist, such as nalorphine or levallorphan. Depending on the route of administration of the antagonist—subcutaneous, intramuscular, or intravenous—tachypnea, mydriasis, sweating, piloerection, rhinorrhea, lacrimation, and yawning characteristically appear within a few minutes. If the administered dose is relatively large, the entire morphine abstinence syndrome can be developed in violent form shortly thereafter. In the case of morphine, the precipitated abstinence syndrome begins to decline after about 45 minutes. During this time, it cannot be suppressed by injection of opioids; in fact, the precipitated abstinence syndrome may be intensified by these agents. The precipitated methadone abstinence syndrome is comparable both in time course and in intensity with that of morphine, contrasting with the lower intensity and more prolonged time course that characterizes the methadone withdrawal syndrome. In contrast, the morphine antagonists are far less effective in precipitating abstinence phenomena in patients tolerant to and physically de-

pendent on meperidine at stabilization dose levels of less than 3,000 mg. a day.

Diagnosis. Detection of needle marks and bluish phlebotic scars in the antecubital fossae or elsewhere on the body may indicate that the subject has used opioids from illegal sources in the past, and the presence of miosis and some degree of drowsiness should suggest that the subject is under the influence of opioids at the time of examination. If the subject has used opioids within the previous 24 hours, their presence in the urine can be demonstrated by chemical or chromatographic tests.

Physical dependence on opioids can be established only by demonstration of the typical abstinence syndrome. This may be accomplished simply by repeated observation of the patient over a period of 24 to 48 hours in a drug-controlled environment or more rapidly by administration of a morphine antagonist. Most commonly, *N*-allylnormorphine (nalorphine, Nalline) is used for this purpose. This drug should be given subcutaneously, and the first dose should not exceed 3 mg. If mydriasis, tachypnea, sweating, yawning, piloerection, lacrimation, and rhinorrhea are not displayed within 20 minutes after the first injection, a second dose of 5 mg. may be given. If such signs are not elicited within 20 minutes after the second injection, a third and final dose of 7 mg. may be given. If this dose also fails, the test is considered negative. The results of the Nalline test cannot be considered positive unless the pattern of precipitated abstinence signs is characteristic; mere dilation of the pupil, for example, may conceivably occur in an anxious but nonaddicted person who is receiving an injection to which he is not accustomed.

Natural History

In a study by Rayport on 1,500 consecutive admissions to the United States Public Health Service Hospital in Lexington, Kentucky, during a 4-month period in 1952, it was found that 29 per cent of white and 1.2 per cent of Negro patients stated that they first received narcotics from a physician, frequently enough to become addicted, in the course of treatment for painful illnesses. Such an onset of addiction is also commonly reported by physician addicts, but a large number of these patients state that they began to use opioids, most often meperidine, for reduction of fatigue under the stresses of medical practice. Most commonly, however, addicts ascribe their initial use of drugs to curiosity.

Typically, the initial phase of drug abuse begins in the late teens or early twenties and is characterized by experimentation with drugs of all sorts, including alcohol, amphetamine, cocaine, barbiturates, marijuana, and heroin and other opioids. For reasons that have not yet been clearly delineated, a number of such individuals find the opioids most rewarding and eventually use drugs of this class in preference to the

others. Cocaine is also highly valued, but, because of its propensity to produce alarming degrees of anxiety or hallucinatory states, users of cocaine usually combine this drug with heroin and claim that the combination ("speedball") enhances the effects of the heroin content. According to Chein et al., many users of opioids engage in the practice repeatedly but at highly irregular intervals, thereby avoiding the development of tolerance and physical dependence. Others, however, rapidly become both tolerant and physically dependent, and with these processes a new phase of drug abuse begins.

Under prevailing social conditions, the addict's life is now dominated by the pharmacologically engendered need for the drug, which can be acquired only through "hustling"—more or less frantic activity concerned with locating sources of supply, making the necessary contacts, evading the police, securing the necessary funds for purchase of the drug by illegal or legal means, changing residence frequently to avoid detection, etc. Successful hustling, however, is not without its rewards, since the successful "hustler" is highly esteemed by addict society. Failure of drug supply, arrests for violation of the narcotics laws or for criminal offenses, and pressures from family or friends often interrupt this way of life, but in most cases hustling for drugs is resumed shortly after "cure."

There is some evidence that the alternating sequence of cure and relapse is not interminable. Winick has called attention to the sharp increase in the rate at which names of addicts between 35 and 40 years of age are dropped from the list of active addicts of the Federal Bureau of Narcotics. According to Winick, the proportion of dropouts at each age is not the same as the proportion at each age in the current addict population, indicating that, for some reason, addiction is a self-limited illness—average length of addiction estimated at 8.6 years—for a large number of addicts. Conceivably the drop-off between 35 and 40 could be due to early death, prolonged incarceration in penal or mental institutions, or acquisition of more effective skills in evading the law, but the possibility remains that physical and psychological maturation may effect a cure of narcotic addiction without benefit of formal treatment. These divergent hypotheses remain to be resolved by further research.

Etiology

The interactions of sociological, personality, pharmacological, and conditioning factors in various phases of the habituation process are summarized in Table I.

Sociocultural factors. As already noted, the majority of present day addicts in the United States are derived from the most depressed slum areas of the large metropolitan centers, in which illicit sources of drug supplies are more available than elsewhere and

TABLE I
Dynamics of Drug Abuse: Instrumental Conditioning Paradigm^a

Phase	Discriminative Stimuli	Reinforcement Processes				Behavioral Phenomena	Drug Effects
		Schedules	Sources				
			Primary	Secondary	Auxiliary		
I. Episodic intoxication (euphoria)	More frequently, bad associates; less frequently, medical contingencies	Occasional	Anxieties (homeostatic, sexual); curiosity; boredom; anhedonia	Anomie; hostility	Effort factor	Experimenting with drugs	Objectively unwarranted sense of "unusual well-being"; indifference; elation
II. Pharmacogenic dependence (addiction)	Bad associates	Continuous or aperiodic	Mainly homeostatic and sexual anxieties induced by cellular counter-adaptations to repeated doses of addicting drugs	Status in addict society	Effort factor (intensified)	Progressive increase in dosage (tolerance); "hustling" for drugs	Gratification of craving
III. Relapse after cure (habituation)							
Early	Medical and law enforcement contingencies	Extinction by satiation (not nonreinforcement)	Same as in phase II, but decreasing after peak	Hostility; guilt	Generalization of anxiety	Abstinence syndrome	Relief of abstinence distress
Late	Bad associates; sensorial effects of drugs	Variable	Conditioned sources of reinforcement, generated mainly in phases II and III (early)			Conditioned abstinence phenomena (fragmentary)	As in phase I plus drive (conditioned hustling?)

^a Adapted from Wikler, A. On the nature of addiction and habituation. *Brit. J. Addict.*, 57: 77, 1961.

in which prevalent attitudes toward the law and standards of behavior are more psychopathic than in more economically favored areas. Sociologists have found little evidence that systematic recruitment of young persons into the population of addicts by "pushers" plays a significant role in the genesis of drug addiction. Rather, most addicts blame "bad associates" for their introduction to drug use, meaning thereby that they were impelled to experiment with drugs through identification with others who were already addicts.

The importance of availability of opioids is illustrated by the relatively high incidence of addiction among physicians and related professionals, who constituted 1.8 per cent of all admissions to the United States Public Health Service Hospital in Lexington,

Kentucky, in 1955. It is estimated that 1 or 2 per cent of 1st year medical students will become addicted to opioids at some time in their medical careers.

Personality factors. As in the cases of other conditions they purport to explain, psychoanalytical writings, such as those by Fenichel, on drug addiction have described the behavior of opioid addicts in terms of regression and fixations at pregenital, oral, or even more "archaic" levels of psychosexual development. More operationally, postaddicts at the United States Public Health Service Hospital, Lexington, Kentucky, have been found to yield Minnesota Multiphasic Personality Inventory (MMPI) profiles that are characterized by significant elevations on the Pd (psychopathic deviate) and Ma (hypomanic) scales, with lesser elevations on the Sc (schizophrenic) and D

(depression) scales. These profiles, however, do not differentiate postaddicts from institutionalized alcoholic patients and juvenile delinquents without alcoholism or narcotic drug addiction.

In more conventional though less precise descriptive clinical terms, other investigators have stressed passive dependency as a dominant trait among opioid addicts. Wikler and Rasor have suggested that such individuals prefer opioids to alcohol and other drugs because the opioids facilitate their preferred mode of dealing with stressful conditions, namely, by promoting indifference and withdrawal. Gerard and Kornetsky compared the personalities of institutionalized young opioid addicts with those of nonaddict acquaintances living in the same slum area in New York. Although these investigators found what they considered to be a higher incidence of incipient or overt schizophrenia among the addicts, the control subjects were far from normal by conventional standards. This finding emphasizes a point made by Clausen, namely, that conventional concepts of normality and abnormality in relation to personality characteristics may not apply, at least without considerable qualification, to the population from which the majority of addicts are drawn. Studies on the personality traits of nonaddict siblings of addicts may be of value in determining whether or not there are actual differences, but the causal relationship of such differences to the genesis of opioid addiction can be elucidated only by longitudinal prospective studies on a large sample of the population in areas with high narcotic addiction rates.

Pharmacological factors. Wikler and Rasor have emphasized the specificity of choice of drugs for repeated use by those who eventually become habitual opioid addicts, and these authors have attempted to relate such specificity to the demonstrable specificities in the pharmacological actions of the opioids.

From a psychodynamic standpoint, the most relevant actions of single doses of opioids lie in their capacity to reduce drives generated by *primary* needs—relief of pain and other physical discomfort, reduction of sexual urges and of hunger, the first two being of greatest importance in our society, contrasting with the action of alcohol and barbiturates, which do not reduce such drives but reduce inhibitory control of behavior directed toward satisfying needs directly.

In this writer's view, the genesis of physical dependence by repeated injections of opioids provides a new *organic need* that is drive-inducing, the reduction of which is positively reinforcing (pleasurable). Furthermore, such drive induction provides the addict with a motive for sustained activity directed to a goal, namely, the acquisition and self-administration of opioids in an ever recurring, cyclic manner—an asset that presumably was lacking prior to addiction. In this view, physical dependence-producing drugs (such as the opioids, barbiturates, and alcohol) are

capable of producing sources of reinforcement that add to those already present in the personality structure of the future addict, a property not shared by drugs (such as cocaine, marihuana, amphetamine) that do not produce physical dependence.

Conditioning factors. Emphasizing the central role of physical dependence, both in perpetuating continued use of opioid drugs and in relapse, Wikler postulated that abstinence phenomena may become conditioned in the classical Pavlovian manner to environmental contingencies that are temporally contiguous with the occurrence of such abstinence phenomena. Occasionally, addicts report that long after cure they experience discomforts that can be interpreted as conditioned abstinence phenomena when they return to the environment in which they had previously become addicted and frequently were acutely abstinent.

Experimentally, Wikler has demonstrated classical conditioning of a morphine abstinence sign in the rat. Also, as has already been noted, cyclic occurrence of abstinence phenomena and their relief by the next dose of the drug during periods of maintained morphine addiction should, at least theoretically, lead to reinforcement of drug-seeking behavior. This has been demonstrated experimentally in animals by several investigators. It has also been reported that, when so reinforced, drug-seeking behavior in rats persists after withdrawal of morphine. In other studies, however, it has been shown that, following withdrawal of morphine after a period of addiction, the physiological state of rats continues to deviate from normal for 6 months or more and that postaddict rats that have not had reinforcement training during addiction also consume significantly larger quantities of an opioid drug than nonaddicted control rats.

Tentatively, at least, it must therefore be concluded that, regardless of the roles played by classical conditioning of abstinence phenomena and operant conditioning of drug-seeking behavior during maintained periods of addiction, previous physical dependence per se plays a very important role in the genesis of subsequent relapse.

Treatment

Although the practicability and the long term consequences of maintenance therapy are currently being investigated experimentally in some research centers, notably by Dole and Nyswander, the generally accepted aims of treatment are drug withdrawal and rehabilitation of the patient, with the end in view of enabling him to lead a useful and reasonably satisfying life without medically unwarranted use of drugs.

Drug withdrawal. To achieve the goals of this phase of treatment, confinement in a drug-controlled institution is always desirable and in most cases essential. Immediately after admission, a complete medical and psychiatric history should be taken, and

a careful physical examination should be made. In particular, the history should contain a detailed account of all drugs taken by the patient, including dosage, frequency, and route of administration. It is especially important to ascertain if and to what extent the patient has been taking barbiturates and nonbarbiturate sedatives in addition to opioids, since severe barbiturate-type withdrawal phenomena (convulsions, delirium, hyperthermia) may terminate fatally. For maximal safety, chromatographic analysis of a urine sample for these drugs should be made routinely if facilities are available, regardless of whether or not the patient admits use of drugs of this type. The concomitant use of cocaine, drugs of the amphetamine series, or marihuana presents no special problem in management, since abrupt withdrawal of these agents is not followed by an abstinence syndrome. Opioid addicts rarely use alcohol concomitantly, but if such usage has been the case, the treatment program of choice is that described below for combined opioid and barbiturate addiction. Regardless of the drug history obtained, a careful search should be made of all body orifices, clothing, and accessories for concealed drugs.

If opioids alone have been used by the patient, two methods of withdrawal have proved equally successful: rapid reduction and methadone substitution.

Rapid reduction. Initially, the patient is stabilized for 2 or 3 days on a dose and frequency of subcutaneous injection of morphine just sufficient to prevent the appearance of opioid abstinence phenomena. Generally, morphine can substitute adequately for any opioid, although in the case of meperidine, some difficulties may be encountered. The size of the dose and the frequency of injection varies with the amount and nature of the drug to which the patient has become addicted, but it is rarely found necessary to administer more than 30 mg. of morphine subcutaneously every 6 hours. Because addicts tend to exaggerate the amount of drug they had been using, overdosing with morphine may occur, and treatment for opioid poisoning may have to be instituted, as described above.

After the initial stabilization period, withdrawal by rapid reduction may be accomplished over a period of 5 to 10 days, depending on the general health of the patient and the severity of such withdrawal phenomena as may occur. Reduction may be made on a dose-to-dose basis or on successive days, keeping the four daily injections at the same dose level. When the dose schedule has been reduced to 10 mg. of morphine four times daily, 30 mg. of codeine may be administered, together with smaller amounts of morphine, for 1 day, and codeine alone may be administered in decreasing amounts for an initial day or two.

General supportive therapy, including intravenous infusions of 5 per cent glucose in saline, warm continuous flow baths, aspirin for aches and pains, and small doses of barbiturates for sleep should be pre-

scribed when indicated. If the patient is well nourished and his dietary intake is adequate, vitamins are unnecessary, but they should be administered if deficiency exists.

After the initial 5- to 10-day period, one or two small "pick up" injections of morphine (6 to 10 mg.) may be given if the rapid reduction procedure has been attended with considerable physical discomfort. However, such pick ups must not be continued indefinitely. The time schedule for rapid reduction may be extended in cases of active pulmonary tuberculosis or cardiac insufficiency or other debilitating disease, according to the judgment of the physician.

Methadone substitution. Initially, the patient is stabilized on a dose of methadone in flavored aqueous solution given twice daily by the oral route, the dose just sufficient to suppress opioid withdrawal phenomena. For this purpose 1 mg. of methadone can be considered equal in abstinence-suppressing potency to 3 or 4 mg. of morphine or 1 mg. of heroin or 0.5 mg. of hydromorphone. If uncertainty as to the accustomed dosage of opioid exists, a first trial dose of 10 mg. of methadone and subsequent doses adjusted in accordance with the patient's response may be given. In most cases 10 to 20 mg. of methadone twice daily by the oral route suffices.

After stabilization of methadone is accomplished, this drug may be withdrawn by progressive reduction of the dose over a period of 3 to 10 days. When properly carried out, withdrawal by methadone substitution is attended by only minimal signs of autonomic disturbance, but, beginning 3 or 4 days after the last dose of methadone, the patient may complain of vague aches and pains, weakness, loss of appetite, and disturbed sleep for several weeks. As in the case of withdrawal by rapid reduction of morphine, supplementary therapy may be required.

As already mentioned, withdrawal of meperidine may present some difficulties. This is because smooth substitution of morphine or methadone without excessive sedation is difficult to accomplish, especially when the patient has been addicted to dose levels of meperidine that produce toxic convulsive phenomena. In such cases, the patient may be stabilized on meperidine itself by reducing the total daily dose to levels that do not produce convulsive phenomena, at the same time increasing the frequency of injection to every 2 to 3 hours in order to prevent reappearance of meperidine abstinence phenomena. After successful stabilization has been accomplished for 2 to 3 days, meperidine can be withdrawn by rapid reduction in the manner employed for withdrawal of morphine by this method.

Special problems also occur in the management of patients addicted to both opioids and barbiturate-type drugs. In such cases, the patient is first stabilized both on barbiturates and on morphine or methadone. Stabilization on barbiturates is accomplished by administering pentobarbital orally in doses that are

just sufficient to produce a mild degree of intoxication as manifested by the presence of nystagmus, mild ataxia, and perhaps some slight slurring of speech. Stabilization on morphine or methadone is accomplished in the manner already described. The stabilization dose schedule of pentobarbital is then continued without change, and methadone or morphine is withdrawn by rapid reduction; only thereafter is withdrawal of pentobarbital undertaken. This is accomplished by very gradual reduction of the dose of pentobarbital at a rate not exceeding 100 mg. a day. Should even minor barbiturate abstinence phenomena develop—such as tremulousness, sweating, insomnia, anorexia, postural hypotension—further reduction is suspended until these signs have disappeared, after which the pentobarbital reduction schedule is resumed at the same rate. Depending on the dose level and duration of addiction to barbiturates or non-barbiturate sedative drugs, withdrawal of these agents may take a month or even longer.

Rehabilitation. Because of evidence already cited indicating that opioid abstinence deviations persist for 6 months or longer after drug withdrawal, continued residence for at least several months in a drug-controlled institution is deemed essential. During this time, physical defects, if present, can be corrected and occupational therapy provided in anticipation of the patient's eventual return to normal society. Many patients are amenable to group psychotherapy and a smaller number to individual psychotherapy. During this time, also, plans should be worked out for follow-up counseling, employment, and, if possible, change of residence for the patient if his previous home environment has been one that would be conducive to renewed contacts with addicts and sources of drug supply. After discharge from the institution, some patients may benefit from association with groups such as Addicts Anonymous or Synanon.

Results. It is generally agreed that the short term results of treatment of opioid addicts are very discouraging. In a follow-up study by Hunt and Odoroff on a large group of addicts returning to New York after treatment at the United States Public Health Service Hospital in Lexington, Kentucky, it was found that "more than 90 per cent of the patients followed became readdicted and did so within six months after discharge from the hospital."

However, substantially better results have been observed by O'Donnell in a group of 266 opioid addicts discharged from the United States Public Health Service Hospital in Lexington, Kentucky, who were residents of rural areas in that state. Of this group, 144 had died, but of the surviving 122, 50 had abstained from drugs completely for periods of 2 to 18 years.

The prognosis also seems to be better in the case of physician addicts, provided they are placed on probation for a number of years after treatment and are

required to report to a supervisory board for the purpose of presenting evidence of continuing abstinence from medically unwarranted drug use. In California, where this procedure has been in effect since 1948, the incidence of successful completion of the probationary period and restoration to medical practice has been very high—92 per cent for the years 1948 to 1952.

Explanations for the generally disappointing results of treatment of opioid addicts usually emphasize the acknowledged difficulties inherent in attempts to alter basic personality characteristics. This may be conceded, but theoretically, at least, it should be possible to reduce or eliminate the roles played by conditioning factors in the genesis of relapse. For this, some method of extinguishing conditioned abstinence phenomena and the reinforcement of drug-seeking behavior by the rewarding effects of the drug itself will have to be devised.

In this connection, a proposal has recently been made by Martin et al. based on the experimental finding that stabilization of postaddicts on relatively small doses of the powerful morphine antagonist cyclazocine renders them highly resistant to the euphoric as well as the physiological effects of morphine and heroin, even when these drugs are administered in doses far greater than those that the average addict is likely to obtain on his own initiative. Furthermore, postaddicts continuously maintained at a stabilization dose level of cyclazocine (2 mg. per 70 kg. body weight twice daily by mouth) do not develop a significant degree of physical dependence on morphine, even when the latter is given subcutaneously four times daily in amounts and over a period that would definitely produce physical dependence if cyclazocine has not been administered concomitantly. Thus, a postaddict stabilized on cyclazocine would not experience euphoria should he administer morphine or heroin to himself after discharge from the hospital, nor would he develop physical dependence on these opioids if he engaged in this practice repeatedly. If conditioned abstinence should occur when the postaddict returns to his drug-significant environment, he would not be able to relieve the discomforts associated with such phenomena by self-administration of opioids. According to conditioning theory, the "immunization" provided by cyclazocine should, therefore, promote extinction of drug-seeking behavior by eliminating its rewarding properties. The impact of such a form of treatment on the over-all problem of opioid addiction depends on the degree to which postaddicts will voluntarily cooperate in the program, but there is no reason to doubt that at least some patients would do so. The results of further research with this method of immunization will be eagerly awaited.

Suggested Cross References

Also see Sections 27.3 and 27.2 on alcoholism and addiction to other drugs, respectively. Fundamental

neuropharmacological and neurophysiological concepts are further discussed in Section 2.3 and in Sections 2.5 to 2.9, respectively. For a discussion of laws pertaining to narcotics addiction see Chapter 48 on forensic psychiatry. Section 41.7 contains information regarding addictions in children.

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27.2 ADDICTIONS. II: NON-NARCOTIC ADDICTIVE AGENTS

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The various problems in defining drug addiction and habituation have been discussed in the previous section. In this section the term "drug dependence" is interchangeable with what the layman calls "addiction."

All the drug dependencies represent a group of illnesses with many features in common. These are not just chemical diseases but involve a complex interaction of physiological, pharmacological, personality, and socioenvironmental factors.

History

Alcohol and narcotics have been used for their psychic effects for thousands of years. Man has also used other substances in a hedonistic way, for example, tobacco, betel, Indian hemp, and some of the hallucinogenic drugs. But it is only in comparatively recent times that a large variety of non-narcotic, non-alcoholic drugs of potential dependence has been available. Bromides began to be used in medicine about 1830 and were introduced in the treatment of epilepsy in 1857. Thereafter, the complication of excessive sedation by bromides began to be observed. In 1930, Diethelm reported that 40 per cent of patients admitted to the psychiatric wards of The Johns Hopkins Hospital could be shown by laboratory tests to have

taken some bromide, and 2 per cent had toxic symptoms.

Barbiturates were introduced in 1903, and as recently as 1938 some physicians claimed that there was no resulting physical dependence. Yet the literature contained reports that barbiturate addicts could develop convulsions or psychoses when deprived of their drug.

A similar history could be listed for many of the nonbarbiturate sedative drugs. Most of the newer substances to be listed below have been introduced as non-dependence-provoking or non-habit-forming. Although this is true at the ordinary recommended dose, it seems clear that there will always be some people who will keep increasing the dose as tolerance develops.

Epidemiology

The occurrence and distribution of this condition are not known. Probably the incidence of dependence on drugs is higher now than at any previous time in history, reflecting availability of drugs, social attitudes about drugs and tranquilizers, cultural tendencies to regard tension as abnormal and freedom from anxiety as desirable, and problems of a psychological nature in the individuals involved.

Physicians. The tendency for members of the health professions to become addicted to narcotics is well recognized. Less well known is the high incidence of dependence on drugs other than narcotics. The availability of such medications is only part of the reason. In addition, the psychological makeup of those who enter the medical and allied professions must be taken into account. It is unwise to overgeneralize, but at least it is reasonable to note the tendency for many such people to avoid the role of patient whenever possible. Many physicians who are treated for addiction to drugs show strong reaction formations to intense dependent drives. Such people prefer to avoid seeking help. When illness forces them to do so, they tend to accept this state of affairs very reluctantly. This results in a preference of some physicians for self-medication rather than help from others. Thus begins a vicious cycle: under conditions of fatigue, anxiety, pain, or even disappointment, the physician turns to something he can swallow. By thus relieving his symptoms, he avoids, for the time being, a more overt expression of oral regression.

A good rule for a physician to live by is never to medicate himself, whether with tranquilizers, barbiturates, or something stronger. If medication is necessary, its being prescribed by and controlled by a colleague will largely circumvent the danger of becoming drug-dependent.

Patients. Lewin has pointed out that the medical student's first patient is a cadaver. "Intended to be a prototype of all future patients in certain rational respects, the cadaver easily comes to be the student's ideal of a patient in all respects." Lewin goes on to

state that doctors know unconsciously that sick people are aggressive, either to the environment or to themselves. Counter-aggression on the part of the doctor has to be sublimated. For example, the doctor uses medications that can be poisonous in excessive amounts. Likewise, he can overtranquilize his patient. It is important, therefore, to keep in mind that excessive medication can be contributed to by the physician. It may be the end result of counter-transference reactions within him.

Characteristics

The development of tolerance to and dependence on the addicting substance are important characteristics of addiction, as is the phenomenon of withdrawal reaction, which occurs when a drug to which an individual is addicted is discontinued.

The withdrawal or abstinence syndrome shows a particular group of features characteristic of the drug involved, including psychic and physiological types of response. The abstinence syndrome can be relieved by administration of the drug itself or by another one of similar pharmacological activity. The condition is really an acute brain syndrome associated with drug withdrawal. The American Psychiatric Association classification does not at present provide for this, although it does recognize brain syndromes associated with drug intoxication.

Many drugs capable of inducing dependence produce psychotoxic effects as well, especially in higher dosages or in chronic administration. This is particularly true of alcohol and the drugs to be discussed here, in contrast to narcotics, where addicts may show little change other than marked reduction of aggressive and primary biological drives.

Barbiturates

The barbiturates are probably the most significant group of substances involved in drug dependence other than narcotics and alcohol. They also represent a typical group of central nervous system depressants. Much of what can be said about barbiturates could be repeated about other sedative drugs.

Etiology. Although barbiturate dependence has undoubtedly existed for over 50 years, its recognition has mainly come in the last 25. It is certain that barbiturates and other drugs do reach dependent persons by illegal routes, but it is also clear that physicians contribute to this problem by carelessness, by lack of vigilance or knowledge, and sometimes perhaps by a psychological counter-transference reaction to the patient. The barbiturates can be a useful symptomatic treatment, but prolonged reliance on them for the suppression of symptoms in the absence of a fuller diagnosis is completely unjustified. Likewise, willingness to write repeated prescriptions or the failure to limit the number of times that a prescription can be refilled may be a major error on the physician's part.

Personality factors. Characteristics that suggest

vulnerability for the development of dependence on barbiturates are greatest in patients with a history of dependence on other substances, including alcohol. The use of barbiturates for the treatment of alcoholics is unjustified; in fact, they do not really constitute a treatment. They are occasionally useful in the management of alcohol withdrawal, but better drugs, such as chlorthalidazine, are available.

Can a person without underlying psychopathology become dependent upon barbiturate drugs? Clinical experience suggests that dependence occurs only in the emotionally maladjusted person. These people are seeking relief of unbearable feelings of tension and anxiety. The drug becomes an escape route in preference to finding more personal forms of adaptation. Typical sources of mental anguish for such people can be intrapsychic conflicts over aggressive, sexual, and dependent wishes; feelings of inadequacy and of being overwhelmed; and the symptoms of specific psychiatric syndromes.

Often the patient can be characterized as a passive-aggressive personality, passive-dependent type. A history of a weak or absent father and an indulgent but rejecting mother is common. A tendency to be manipulative of others is often observed as the patient seeks gratification from the environment.

Although dependency on barbiturates is a fairly specific process, all types of psychiatric disorganization may be found underlying it. Thus, it is important to give the patient careful individual study and a specific therapeutic program, in the absence of which the potential for repeated relapses is very considerable.

Characteristics. Barbiturates, like alcohol, have a disinhibiting effect. This may give rise to release phenomena, such as the expression of aggression or dependent wishes that might, under sober circumstances, provoke too much guilt to be carried out.

When there is much behavioral change during intoxication, the physician should study this carefully. For example, the occurrence of belligerence during intoxication and not at other times points to the existence of conflicts about the expression of aggression. Taking a history from a family member can often help by revealing the existence of such behavioral changes.

Some patients begin with barbiturates, usually the short-acting ones, for anxiety or insomnia and gradually increase the dosage. Others try to balance barbiturates against stimulating drugs, such as amphetamines, with gradual increase of dosage a frequent result.

A daily dosage of seven or eight capsules or more, each capsule 100 mg., cannot be discontinued suddenly without great discomfort and possibly dangerous complications. Isbell (1950) found that subjects taking 800 mg. or more daily of pentobarbital or secobarbital developed weakness, tremor, and anxiety in all cases after withdrawal; 75 per cent showed convulsions; and 60 per cent showed a picture similar to delirium tremens. Those taking 600 mg. daily developed anxiety,

tremor, and weakness; those taking less than 400 mg. daily had only minor symptoms. Thus, physical dependence occurs in cases of abuse and not within the usual dosage range.

Diagnosis. This has to be based on the patient's mental confusion, intellectual impairment, personality changes, and motor incoordination. Some patients become aggressive, but many simply show dullness and excessive drowsiness. Electroencephalograms may show increased β waves of 15 to 30 cycles per second.

One cannot depend entirely on diagnosing intoxication from sedation and lethargy, which often disappear after a few days following any increase in dosage. More important is a thoroughly detailed neurological evaluation and a careful administration of a mental status examination. Only in the most extreme instances will disorientation be found; however, slight but distinct impairment may be detectable in almost all other areas of mental functioning and may supply the necessary clue to suggest the diagnosis of drug intoxication.

Virtually all patients show extreme reluctance to reveal the nature of their symptoms. Typically, they understate the amount being taken, and no effort should be spared to obtain details from their family or drug store in order to determine the correct daily intake. Certainly the patient should be hospitalized for withdrawal, and an attempt should be made to explain to him the importance of knowing his daily intake in order to stabilize him at this level before withdrawing slowly and safely. Unfortunately, many of these people are suspicious and confused, and so cooperation cannot be counted upon.

In a general hospital, some cases first reveal themselves by apparent acute anxiety symptoms, delirium tremens, or the occurrence of a convulsion. Underlying a barbiturate coma may be a barbiturate dependence. Sometimes as a result of accidental or intentional overdosage, the patient may be hospitalized, with all drugs being stopped. Then, around the 2nd or 3rd day, the withdrawal syndrome fully appears.

The syndrome resulting from abstinence must be recognized for what it is in order to institute effective treatment. If untreated, the condition usually lasts for at least 4 or 5 days and involves much delirium, with insomnia, confusion, tremors, hallucinations, delusions very much as in delirium tremens of alcoholism, and, sometimes, convulsions. Clinical improvement is usually seen after a prolonged period of sleep. The entire condition is dangerous but leaves no apparent residua after recovery.

The earliest sign of the abstinence syndrome is insomnia accompanied by complaints of weakness, restlessness, sweating, and shakiness. The patient may feel generally anxious and apprehensive. Some postural hypotension is likely to appear, along with muscular twitching, vomiting, increased anxiety, some fever, psychotic behavior with hallucinations, delirium, and great fear, as in delirium tremens. Convulsions usually appear 15 or more hours after with-

drawal, with the peak at 30 hours, and some seizures appearing as late as the 4th or 5th day. Psychotic symptoms typically begin later than convulsive ones, between the 3rd and 7th days.

Management. As a simple rule of thumb, a daily reduction of the total dosage by no more than 10 per cent of the established daily intake is recommended. Even this rate of withdrawal may be excessively rapid for the patient who has been taking 20 or more capsules daily. At least to begin with, he should be withdrawn at the rate of about one capsule less per day.

The ideal management of the barbiturate withdrawal is begun by knowing the patient's daily intake from the beginning and stabilizing him on this amount for at least the first day or two. On this amount he may show a mild degree of intoxication and sedation. If he begins to show abstinence signs or symptoms, the dosage is too low, usually because he understated his normal amount. If he appears excessively sedated, he has overstated it, and some downward adjustment is called for.

When the patient will not or cannot state his total normal daily dosage, a test dose is called for. This is not given to a patient who is obviously intoxicated, and it may be insufficient for the patient who is already showing the abstinence syndrome. The latter probably requires more than the test dose.

The test dose suggested is 200 mg. of pentobarbital by mouth on an empty stomach. This is not an excessive amount for a patient who has any tolerance to barbiturates, provided he is not currently showing considerable sedation. Half that amount may be used for debilitated or elderly patients initially. The patient is evaluated 1 hour later. If the abstinence syndrome is still in evidence, the same dose should be repeated at once. After 1 hour, if the patient has no tolerance to pentobarbital, he will be soundly asleep but able to be aroused. If he is awake but somnolent and showing nystagmus, some difficulty in focusing his eyes, slurred speech, Rombergism, and considerable ataxia, he is probably able to tolerate only 500 or 600 mg. daily. If he shows only lateral nystagmus without ataxia, Rombergism, or somnolence, he is tolerant to about 800 mg. daily. If he shows no intoxication 1 hour after receiving 200 mg., he is tolerant to 10 or 12 capsules daily at least.

With a patient who admits to taking a daily dose of 12 or more capsules, each capsule 100 mg., an initial test dose of 300 mg. is quite suitable. Then, if he shows no intoxication, he is tolerant to at least 16 capsules a day. Mild signs of intoxication suggest a tolerance of 1,200 to 1,400 mg., and more severe signs of intoxication suggest that his daily tolerance is 1,000 to 1,200 mg.

The results of this study enable initial prescription of barbiturates for the management of the case. For patients requiring a total of less than 12 capsules daily, an administration schedule of four times a day

is adequate. Those taking a total daily dosage above this may require medication every 4 hours.

An attempt must be made to get the patient to a state of mild intoxication. Frequent observations should be made to enable a flexible schedule to be followed. For example, if severe intoxication is observed, the next dose of pentobarbital should be reduced by at least 100 mg. Likewise, if some of the physical signs of withdrawal are apparent, rather than just the patient's professed anxiety and apprehension, the next dose may have to be increased by the same amount.

Once the patient's tolerance level has been established and he is clearly in a state of comfort, the plan must be to withdraw the drug at the rate of no more than 10 per cent of the total dosage per day. A few patients, such as those showing an epileptic diathesis or severe debilitation, may have to be reduced at an even slower rate. The bedtime dosage should be maintained longest.

A potential complication with all such patients results from their having secreted private supplies of medication on their persons or among their property at the time of admission. If the clinical picture seems to vary inexplicably and not in relation to the dosage being given, the patient's possessions and room should be searched again. Another possibility always exists, namely, that family members or friends are bringing in additional supplies. Restricted visiting may be necessary.

Convulsive seizures will not occur on the schedule outlined above, except possibly in epileptic patients. If a convulsion does occur, the patient should be rapidly intoxicated by giving him 100 or 200 mg. of pentobarbital by mouth or intramuscularly every hour. Once his tolerance level has been reestablished, reduction should proceed again at a slower rate.

There is no substitute medication, as there is with narcotics addiction, on which barbiturate-dependent patients can be placed and then withdrawn. On the regimen outlined above, the need for additional medication, such as phenothiazines, does not occur.

All patients require general supportive measures, restoration of electrolyte balance, proper hydration with intravenous fluids, administration of vitamins, and a good balanced diet. Nurses should be aware of the potential of convulsive seizures in such patients. When these have occurred, either recently or in previous episodes, they should be especially wary.

The patient must be told, before discharge, of the possibility of some insomnia and irritability for several weeks or longer. He must know that he cannot ever again rely on hypnotics to induce sleep or allay anxiety. Now is the time to discuss psychotherapeutic help, with which he may acquire better ways of adapting to stress. The need for a continued long term relationship with family doctor, psychiatrist, or mental health center should be emphasized.

Meprobamate

History. The history of meprobamate (Miltown, Equanil) parallels that of the barbiturates. This drug was introduced into clinical practice around 1954, and reports of meprobamate dependence were published within 3 years. Next appeared reports of a withdrawal syndrome, including convulsions, in experimental studies in animals and in humans. The similarity to the barbiturates was then emphasized, and the importance of prescription with precaution was publicized. All this followed original publicity which stated that physical dependence and severe withdrawal symptoms did not occur. Since the early reports, the literature has repeatedly carried confirmatory case histories.

Characteristics. Toxic effects during the early stages of heavy meprobamate administration include somnolence, ataxia, some Rombergism, and systolic blood pressure drop, accompanied sometimes by complaints of dizziness and nausea. Patients rapidly adapt to the drug, and tolerance develops. Moreover, in the average ambulant patient, the dosage is usually increased at a sufficiently slow rate for such symptoms to be absent. Diagnosis of overdosage at this point is dependent on the patient's history, but the physician's suspicions may be aroused by observing some of the signs of central nervous system depressant effects, as in chronic barbiturate intoxication.

Withdrawal difficulties are rarely seen in patients taking less than six 400-mg. tablets daily and are essentially absent in patients taking only three or four tablets daily. However, the drug dependence-prone individual is just as liable to increase his intake of meprobamate as that of barbiturates.

Some withdrawal reaction will occur in 90 per cent of people taking 8 or more tablets daily if the drug is withdrawn suddenly. However, in about 75 per cent of the cases, the abstinence reaction is relatively mild, involving only insomnia, tremor, muscle twitching, anxiety, weakness, and nausea. When patients have been taking as much as 16 tablets daily, 95 per cent have withdrawal reactions. In more than half of these, the withdrawal reaction is fairly severe, involving more extreme signs and symptoms as listed above, plus convulsions in some instances and a full delirium picture similar to that following barbiturate withdrawal.

Management. Convulsions may be controlled by intravenous administration of diphenylhydantoin sodium. However, the over-all management of meprobamate dependence is best accomplished in a hospital, following a regimen similar to that used for barbiturates.

There is cross-tolerance for many of the central nervous system-depressant drugs and barbiturates. Most physicians, therefore, prefer to substitute a short-acting barbiturate, such as pentobarbital, and withdraw this. Equally good results can be obtained by reintoxicating the patient with the original medica-

tion and then withdrawing it. Again, the 10 per cent rule—that is, reduction over at least 10 days—is a useful one. Patients who have been taking only slightly excessive amounts may be withdrawn on an out-patient basis without undue discomfort if careful supervision is offered along with support.

Chlordiazepoxide (Librium)

Patients have become intoxicated and shown mental confusion on doses in excess of 80 mg. daily. One controlled study of chlordiazepoxide in 36 hospitalized patients showed the development of physical dependence. Following abrupt withdrawal from large amounts (300 mg. or more), an abstinence syndrome was seen. This involved insomnia, anorexia, agitation, nausea, twitching, sweating, and convulsions. Convulsions tend to occur considerably later than those following withdrawal of barbiturates or meprobamate. The management is similar to that described for meprobamate.

Paraldehyde

Dependence on paraldehyde is usually found among those with previous or concurrent dependence on alcohol or barbiturates. Occasionally, patients taking it for insomnia increase the dosage as they develop tolerance.

The diagnosis is based on the patient's history, the characteristic odor, the considerable disorganization to be detected on mental status examination, and the drowsiness or stupor of the patient. After withdrawal, a typical delirium picture is seen, as in the case of barbiturate withdrawal, and the condition is best treated in a hospital by reintoxication and then gradual reduction of the dosage. Again, reduction over at least 10 days is a good rule to follow for the average case of addiction to paraldehyde.

Other Depressant Substances

At present, these include chloral hydrate, ethchlorvynol (Placidyl), glutethimide (Doriden), methypylon (Noludar), methaqualone (Revonal), diazepam (Valium), dextropropoxyphene (Darvon), and ethinamate (Valmid).

A good review of addiction to various nonbarbiturate, sedative, and tranquilizing drugs is that by Essig, who pointed out that the abstinence syndrome includes convulsions and psychotic behavior and requires hospitalization. The treatment is gradual reduction of the drug in question or prior substitution with barbiturates. Anticonvulsants or phenothiazines alone are not enough for this condition. Indeed, the latter are contraindicated, as they may increase the likelihood of seizures and induce more hypotension.

Some patients take a slight overdosage of many different depressant drugs. The effect is similar to gross abuse of any one drug, but the diagnosis can be more difficult. The patient may swear that he just takes three "yellow jackets" (Nembutal) a day. Only persistent inquiry may reveal that he also consumes

several other pills and capsules of other hues. The correct treatment for such mixed addictions is to substitute pentobarbital to the point of mild intoxication, followed by gradual withdrawal as already described.

It is important to remember the sedative effect of many antihistamines, which are sometimes used in excess by drug dependence-prone patients, who abuse them for the sedative effect.

Phenacetin has been found to be associated with renal papillary necrosis. Its excessive use is found especially among those also indulging excessively in alcohol and other drugs.

Chronic excessive intake of aspirin is probably more common than is recognized. Neurological and psychiatric symptoms—agitation, confusion, memory loss, stupor, coma, paranoid ideation, and hallucinations—have been described in patients suffering from chronic salicylate intoxication.

Although there is no abstinence syndrome from bromides—perhaps because of the long period of time required for elimination of the drug, so that there is an automatic slow withdrawal—the possibility of toxic symptoms due to excessive intake of bromides is still present in some parts of the United States. Bromide-containing medicines are still available without prescription, and the existence of bromide intoxication may be missed in psychiatric hospitals' new admissions unless routine blood bromide testing is performed. Ewing and Grant recently found evidence of considerable self-medication with bromides in one Southern state.

Glue Sniffing

This subject has received considerable publicity in recent years throughout the lay press. Possibly in consequence, it has spread among teen-agers in widely separate parts of the country. Initially, it appeared in Denver, Colorado, where children were found seeking intoxication or even coma.

Characteristics. It is said that in the early stages a few whiffs of the vapor will produce a "jag." However, tolerance develops, and chronic users may have to take the contents of up to five tubes in order to experience the desired results of exhilaration, euphoria, and excitement, which are followed by ataxia and slurred speech. The phase of intoxication lasts from 30 to 45 minutes after inhalation, and drowsiness, stupor, and unconsciousness may ensue. Amnesia can occur for actions during the acute stage of intoxication. Associated symptoms are nausea, anorexia, and weight loss; school authorities report irritability and inattentiveness or even sudden loss of consciousness.

Although there is no evidence of any physiological dependence, the practice does seem to be extremely habituating. Some children may be driven to steal the glue in order to continue the habit. Many of those thus habituated share the belief that the practice may produce insanity and death, although there is no substantiation for this.

Diagnosis may be aided by the characteristic odor on the breath and by local inflammation of mucosa that has had direct contact with the glue.

From the preference of those practicing glue sniffing, it seems that toluene is the active substance of choice. A study of physical and psychological factors in 27 such children reported depression and a passive-aggressive manner of relating to peers and authority figures in all. The majority were Spanish-American of low socioeconomic status and with histories of delinquency of other forms. It was felt that the specific habit alleviated anxiety connected with sexual and aggressive drives. No positive laboratory or physical findings were reported.

There seems to be little question that a physiological adaptation occurs in that more and more of the substance is required to produce the euphoriant and exhilarating effects which pass into disorientation and coma. Unquestionably, a psychological dependence develops, so that just to remove sources of glue is insufficient treatment. Such people require a thorough psychiatric study, including investigation of the home and probably in most cases the development of a family treatment plan.

Other sniffing. Other forms of drug dependence involving sniffing include inhalation of gasoline vapor (usually brought to light because of vivid visual hallucinations), the use of pure toluene, sniffing of ether, and sniffing of lighter fluid. At times other organic solvents—lacquers, paint thinners, and enamels—have been used by various subjects.

Marihuana

This drug is known by other names, such as hashish, charas, bhang, and ganja. It is found in the cannabis plant and is often referred to as "pot" in North America. Cigarettes made from dried marihuana blossoms ("reefers") are smoked for their exhilarating and intoxicating effect. In this country, as in parts of Europe, marihuana smoking is seen in increased incidence among teen-agers and young adults, many of whom are on the fringes of society and who seem to be expressing their defiance of social mores by seeking this intoxication. However, psychiatric syndromes and character disorders of all types are to be found in such people, and marihuana smoking is symptomatic of an intrapsychic as well as a social problem.

The International Police Organization (Interpol) has reported a marked increase in the amount of marihuana being smuggled from one country to another and has expressed concern that this may be a factor in the known increase in cocaine and heroin addiction. Indeed, among narcotic addicts it is commonly found that experiences with marihuana were the prelude to experimentation with opiates.

There is no physiological dependence developed to this substance. Subjects experience disorientation, hallucinations, and a loss of the sense of time. On examination, they may show drowsiness, tremor, some

ataxia, and nystagmus. There may be increased sensitivity to pain and touch, and many subjects are talkative and outgoing with other members of the group participating in the experience.

Overdosages are associated with depressive affect in some subjects, more obvious psychotic experiences, tachycardia, diarrhea, vomiting, and severe sweating.

Very little is known of the chemistry and pharmacology of marihuana, nor are serious physical effects recognized from its continued use. Perhaps it may be true to say that marihuana, like morphine, is less dangerous than barbiturates in terms of the intoxication of the individual. On the other hand, its effect on the individual's behavior, social conscience, and ambitions and its tendency to lead to other addictions cannot be ignored.

Cocaine

The chewing of coca leaves in South America dates back to prehistoric times. Used in its purified form by oral ingestion or as snuff or intravenously, cocaine addiction is rarely seen in this country. Apart from its relative unavailability, it can produce frightening hallucinations, which are greatly feared by addicts.

Cocaine provokes no physiological dependence, but a very high degree of psychological dependence is the rule. Initially, it is taken for the exhilarating effect, and mixed addictions to cocaine and opiates do occur.

Symptoms include nervousness and apprehension along with tremulousness. On examination, the patient may show tachycardia, hypertension, mydriasis, and needle marks over veins.

With large dosage, a toxic psychosis, including visual and auditory hallucinations, is liable to develop. Such patients may have tactile hallucinations of insects creeping over their skin (formication). Delusions of a paranoid nature may occur, and these people are liable to become violent. Withdrawal is accomplished easily in a cooperative patient because there is no abstinence syndrome, but relapse seems highly probable in the absence of thorough psychiatric intervention.

Psychedelic Drugs

The various substances that induce hallucinations and psychotic-like states are currently being used in large amounts in nonscientific settings. Lysergic acid diethylamide (LSD) is used in its pure state, and psychedelic substances have also been obtained from concoctions of morning glory seeds. Mescaline or peyote is obtained from dried cactus, and psilocybin from a mushroom. Acute toxic reactions with psychotic-like symptoms have also occurred following ingestion of stramonium and nutmeg.

Studies done by Isbell and colleagues showed that, on repeated administration, the LSD effect declined rapidly, all subjects showing tolerance within less than 7 days. Tolerance was lost 3 days after LSD was discontinued. Metabolic studies of these drugs have failed to explain their modes of action so far.

The subjects who indulge in these substances, alone or in group sessions, tend to be similar to those taking marihuana. Undoubtedly, the degree and type of drug effect is greatly influenced by the social situation and the expectations of the individual. However, there do appear to be specific effects, such as euphoria and thinking disturbance. Keeler stated that most individuals who seek the drug experience have a reaction like hypomania, with a preoccupation with their own thoughts and perceptions intense enough to have some of the quality of schizophrenic withdrawal. He described the subjects as verbalizing statements such as: "I am enjoying beautiful sensory experiences and am having magnificent thoughts and insight that I have not had before. I am intensely happy and in harmony with the universe." Studies of people who return again and again to the use of the drug indicate that they are seeking an experience that seems desirable to them by virtue of their own psychological makeup. In this sense they are different from those who show little interest in repeated use.

For such persons, these substances are habituating, although not creating any physiological dependence. In the great majority of subjects there are no psychotic experiences of a continuing type, but undesirable effects can occur. For example, a student took off all his clothes and plunged from an upper window to his death while apparently intoxicated with mescaline. Some subjects have described a feeling that they could fly while under the effect of this drug.

Farnsworth believes that people attracted to the hallucinogenic drugs are often those most likely to be harmed by them. They are reaching out to these substances because of awareness of personal problems. He goes on to describe the "hell experience" reported by various students as sensations of great fear, disintegration, and being overwhelmed. In his experience it is demonstrated beyond question that these drugs have the power to damage the individual psyche, indeed, to cripple it for life. He reported indications that habitual use of the drug led, in some individuals at least, to looseness in thinking and difficulty in communicating coherently.

The importance of these substances for experimental and therapeutic purposes cannot be denied, but their control seems highly desirable. Keeler summarized the situation, "Restriction does deprive some of a pleasant though hardly essential experience, but more importantly it protects others from serious injuries."

Amphetamines

Excessive intake of amphetamines and similar drugs for exhilarating effects has become a major problem in recent years. In various countries, legislative steps are being taken to control the supply of this medication. Patients frequently get caught up in a vicious cycle of self-administration of amphetamines combined with, and alternating with, barbiturates. Some begin as

sufferers from obesity seeking to reduce appetite, others start in group activity seeking a thrill, and some amphetamine abuse begins among those who feel the need to stay awake, such as truck drivers and students. Lemere described a high incidence of amphetamine addiction in Japan. Apparently, the substance was used extensively during World War II and was readily available after the war. He stated that chronic psychoses occurred in many of the addicts who used the drug over long periods of time and who showed experimental and clinical evidence of organic brain damage.

Before nasal inhalants were changed as to their contents, prisoners in penitentiaries would break them open and chew the wad of cellulose impregnated with amphetamines. Now the substance is usually taken in the form of pills ("pep pills," "goof balls"). Some teen-agers and young adults have used dissolved tablets for "mainlining" (intravenous injection) in spite of the fact that the needle often becomes blocked. The same is true of tablets of Dexedrine and ephedrine.

Characteristics. Tolerance to the drug develops and is accompanied by increasing feelings of tension, apprehension, insomnia, and anorexia. This often leads to the introduction of barbiturates to insure relaxation and sleep. Physical signs include tachycardia, hypertension, and mydriasis. The patient feels a state of stimulation which is followed by a let down feeling of fatigue and often depression. Although no true physiological dependence develops, many patients show much psychological dependence, feeling emotionally disabled and dulled when the medication is withdrawn. Overdosage of amphetamines is liable to be associated with hallucinatory, psychotic episodes and paranoid delusions.

Several authors have reported cases of dependence on phenmetrazine (Preludin) and diethylpropion (Tenuate, Tepanil), and associated paranoid states have been described.

Diagnosis. Diagnosis can be difficult. Many of these patients are very untruthful, and it is rare for them to volunteer details of their dependence. Chemical tests for amphetamines in urine and other body fluids are not entirely reliable but should be used to assist in making a diagnosis. The psychiatrist is well advised to retain a high level of suspicion for this condition when dealing with patients from susceptible groups, such as students and truck drivers. In particular, a combination of tension, anorexia, weight loss, restlessness, and paranoid ideation should suggest the possibility of toxic symptoms due to excessive use of one of these stimulant drugs. Aggressive and rebellious behavior on the part of a teen-ager should always arouse suspicion.

Management. Placing the patient in a hospital and observing him while taking care that he has no further access to drugs can be an important part of the management. A barbiturate abstinence syndrome may ap-

pear. Attempts should be made to discuss drug possibilities with the family. Hopefully, new regulations regarding control of these stimulating drugs will reduce the incidence of drug dependence and toxic symptoms presently being seen by psychiatrists.

New Drugs

Undoubtedly, new drugs of potential dependence will be introduced in the future with a fanfare of statements that they are nonaddicting, do not invite drug dependence, and are unassociated with development of tolerance. Thus, lulled into a sense of false security, physicians will utilize these new medications freely. The majority of patients will take them within the limited amounts prescribed and will have no trouble. A minority will seek to experience the tranquilizing or sedative effects. Eventually, the literature will reveal case reports of patients showing intoxication on the drug and an abstinence syndrome at the time of withdrawal. Then the manufacturer's literature will begin to carry statements such as, "Abrupt cessation after prolonged overdosage may, in some patients, produce withdrawal symptoms (e.g., convulsions, tremor, abdominal and muscle cramps, vomiting, sweating) similar to those seen with barbiturates, meprobamate, and Librium (chlordiazepoxide HCl)." Such a statement now accompanies packages of Valium.

It seems equally probable that future antidepressant and stimulating drugs will be abused by some people as a source of "kicks." The need for controls of drug manufacture and distribution is unlikely ever to end.

Suggested Cross References

Fundamental concepts of importance to the subject of addiction—specifically dependence, habituation, addiction, tolerance, and withdrawal—are discussed in Wikler's section on opioid addiction (Section 27.1). Alcoholism is discussed by Chafetz in Section 27.3. Chlordiazepoxide and meprobamate are also discussed in Denber's section on tranquilizers (Section 35.1), and amphetamine is discussed in Cole and Davis's section on the antidepressant and stimulating drugs (Section 35.2), both in Area G, on psychiatric treatment. The psychedelics and marijuana are discussed in Mandell and West's section on hallucinogens (Section 5.4) in Area B, on the basic behavioral sciences. Clinical syndromes due to bromide and barbiturate intoxication are also described in Hoff's section on brain disorders associated with toxins in Section 20.2. Treatment of some of the acute intoxications mentioned in this section is also discussed in Section 33.2, on psychiatric emergencies. For information regarding addictions of children see Freedman and Wilson's section (Section 41.7) in Area H, on child psychiatry.

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Definition

Precise definition is the cornerstone of scientific effort and communication. Yet in the study of alcohol problems and alcoholism, which concerns members of many disciplines, there is no scarcity of definitions, although there is a lack of agreement and communication.

The standard nomenclature of the American Psychiatric Association includes alcoholism in the personality disorders—addiction category. Some have used the term “alcohol addiction”; others prefer “chronic alcoholism”; still others refer to “abnormal drinking,” “inebriety,” “problem drinking,” “alcoholism,” “pathological alcoholism,” or “alcohol problems.” In spite of the wide diversity of opinions and labels, Keller, among others, has pleaded that each writer explicitly and clearly state what he means. Keller went on to offer his own modification of the widely used World Health Organization definition, which states that “Alcoholism is a chronic behavioral disorder manifested by repeated drinking of alcoholic beverages in excess of the dietary and social uses of the community and to an extent that interferes with the drinker’s health or his social or economic function.”

Although widely quoted, this is a less than ideal definition for the following reasons: (1) The definition is descriptive and symptomatic rather than etiological. (2) The physiological, psychological, and social phenomena it embraces are integrated at varying levels, lending themselves to qualification. The fact that qualitative judgments must be made pushes the observer more in the direction of moralist than scientist. (3) The sociological aspect of the definition implies a greater concern with group deviance than with individual discomfort, signifying that much destruction from the use of alcohol must occur before difficulties can be noted.

Classifications. Jellinek attempted to illustrate the complexities of alcohol problems by devising a new classification of alcoholic persons in terms of “Alpha, Beta, Gamma, Delta, and Epsilon alcoholism.” “Alpha alcoholism” was described by Jellinek as “a purely psychological continual reliance on the effect of alcohol to relieve bodily or emotional pain.” Although society may view the drinking as beyond the norm because the time, place, amount, and effect are beyond the implied conventions, drinking in this group does not lead to uncontrolled drinking or an inability to abstain. Most consequences of the drinking pattern involve the family: financial or work crises, lowered productivity, and perhaps nutritional deficiencies. Withdrawal disturbances and signs of progression are not in evidence. Alpha alcoholism is viewed not as a disease entity *per se* but as a medicinal use of alcohol, taken to deal symptomatically with underlying pathological discomfort. Jellinek admitted that often there is progression to more

27.3 ADDICTIONS. III: ALCOHOLISM

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The attraction of man to alcohol has existed throughout history. Countless fruits have produced, by countless techniques, many forms of alcoholic beverages. Always, too much of this good thing led to excesses and inebriety, and the struggle within society for and against the use of alcohol was waged.

Primitive societies early identified intoxication with religious fervor. During intoxication, primitive man expanded the limits of his reality, gained a sense of increased power, obtained ecstatic sensations, and was able to converse with his gods. But even as alcohol freed him from the bonds of his inner self and his outer reality, the transcendental state of intoxication caused a decreased capacity for battle and an increased vulnerability to attack. Therefore, laws and limits had to be introduced. Since the use of alcohol needed to be controlled, perhaps in the earliest dawnings of our ancestry, the first moral attitudes for and against drinking arose, reflecting themselves in a concern for alcohol problems and alcoholism.

The confusion engendered by moral attitudes and their effects on definitions of alcoholism has always plagued interested observers and even today prevents our reaching more complete understanding of alcoholism.

serious drinking patterns, and he further complicated his definition by noting that Alpha alcoholism can often be referred to as "problem drinking" or as implying a physical dependence on alcohol.

"Beta alcoholism" represents to Jellinek that form of alcoholism wherein physical complications often occur—such as polyneuropathy, gastritis, and liver cirrhosis—but where there is no physical or psychological dependence on alcohol. Here Jellinek was admittedly describing certain societies in which nutritional deficiencies are common and heavy alcohol use is part of social custom. Withdrawal symptoms are uncommon among this group.

"Gamma alcoholism" represents a most serious form of alcoholism. Here is seen increased tissue tolerance to alcohol, withdrawal symptoms, and loss of control. Gamma alcoholism indicates a definite progression from psychological to physical dependence associated with marked behavioral alterations. The intrapersonal and interpersonal destructive changes in this form of alcoholism are great; this form of alcoholism is said to represent the patient population of alcoholism clinics and Alcoholics Anonymous groups in the United States.

"Delta alcoholism" is like Gamma alcoholism, except that the Delta alcoholic person cannot refrain from partaking of alcohol even for a day or two.

Unfortunately, Jellinek's attempt to bring order out of disorder tends to isolate and categorize alcoholic persons further into static groups, and his classification system is not widely used.

Determining illness. The question of changing the determinants of illness is not as simple as it seems, and large treatises could be written on this subject alone. Many individuals believe that, from a pragmatic view of determining who is ill and who needs help, one of two situations must exist: (1) the individual recognizes some discomfort, dysfunction, or difference within himself for which he seeks correction, or (2) society recognizes some dysfunction, difference, or deviance in an individual or group and insists on correction. By such a practical division, the individual who has, for example, actively hallucinated for years but who is not uncomfortable or unable to function as a result of this and whose condition is accepted by society is not deemed ill. He is designated as ill at that moment when he or his society recognizes the discomfort.

The attitude expressed above is also present in views about alcoholism. The use of alcohol has been an integral part of most societies during their recorded histories, and there is no evidence to indicate that drinking alcohol will, in the foreseeable future, disappear. Since the consumption of alcoholic beverages is common to many and since the response to alcohol is so variable from individual to individual and even within the same individual from time to time, the exact point on the drinking continuum between health and illness cannot be determined.

Proposed definition. Here, alcoholism will be defined as a chronic behavioral disorder manifested by an undue preoccupation with alcohol and its use to the detriment of physical and mental health, by loss of control when drinking is begun, and by a self-destructive attitude in dealing with personal relationships and life situations. Alcoholism results from a disturbance and deprivation in early life experiences and the associated related alterations in basic physicochemical responsiveness, from the identification by the alcoholic person with significant figures who deal with life problems through an unhealthy preoccupation with alcohol, and from a sociocultural milieu that causes ambivalence, conflict, and guilt in the use of alcohol.

This definition provides the latitude necessary for a more complete understanding of alcohol use and alcoholism. For example, the emphasis on the chronic behavioral aspect in the definition does not allow the designation of alcoholism for the occasional unhealthy use of alcoholic beverages common to most drinkers at one time or another. At the same time, the definition of *chronic* is not determined by a set number of responses, since the entire philosophy underlying the determination of alcohol problems at the present stage of knowledge must be delineated on an individual basis.

The fact that the definition focuses on *preoccupation* rather than on amount or excesses is also important. Too often the heavy emphasis on excessive use of alcohol is a means of self-protection for the social system devising the criteria of alcoholism. What is excessive to one individual at one time may not be excessive to another or to the same individual at another time. In this sense, the militant teetotaler who has never tasted alcohol but who is constantly uncomfortable in the presence of alcohol or others using it is preoccupied to a sufficient degree to produce his own dysfunction and difference and could also be thought of as suffering an alcohol problem. (The psychiatrically sophisticated will see the analogy to phobic impairments of function in other psychiatric syndromes.) The few militant teetotalers who have permitted themselves to be studied by this writer report their common fear that, were they to start drinking, they would be unable to stop.

The reference to loss of control in the definition describes both psychological and physiological responses. The militant teetotaler or moralist who destroys the property of others or infringes on their rights in order to impose his fear of alcohol has lost as much control as the individual who, under the influence of alcohol, responds behaviorally in a pattern inconsistent with his usual behavior. Intoxication does not have to occur, and often does not, in individuals who lose control, although the drugless intoxication of the reformer is often not very different from those intoxicated by alcohol.

The self-destructive component of the definition is

important. Man is a social animal, and his ability to relate emotionally to others is a measure of his psychological development. Furthermore, his ability to function, take care of himself, and adapt to his environmental stresses and needs constantly tests his emotional stability. If, for example, he withdraws and spurns contact with others, does not function and produce, cannot respond to the frustrations common to existence, craving only immediate gratifications, he is emotionally underdeveloped and unstable. When he responds behaviorally so that all efforts of progress or improvement toward emotional stability are thwarted or further potential for emotional growth and life is threatened, his behavior is considered self-destructive. Alcohol can further a pattern of self-destructive responses.

Etiological implication. In terms of the etiological components of the definition, the disturbance and deprivation of early life experiences are common in, but not exclusive to, alcohol problems. The stage of emotional development at which the disturbance and deprivation occur determines the severity of the emotional maladaptation that occurs as well as the potential for correction. It seems strange in an enlightened age to have to restate the fact that the mind-body dichotomy does not exist but that emotional responses have their associated physiological responses and vice versa and that, consequently, disturbances involving early deprivation produce altered physicochemical responses in an individual. Just as environmental influences physically affect the direction and development of genetic matrices, so does the individual respond psychologically. The countless highly individualized events that mold our personalities also result in highly individualized physicochemical patterns. This is true whether or not one is considering alcohol problems, other psychiatric disorders, or normal development.

From this vantage point it is not difficult to see that there is no single personality configuration in alcoholism but rather, as experience has shown, alcohol problems may and do occur in any and all types of psychological disorder. Therefore, alcohol problems or, considered collectively, alcoholism, develops not as an isolated phenomenon but as one manifestation in a total complex of disturbances.

The unhealthy preoccupation with alcohol as a manifestation of problems of inner or outer adjustment is dependent on two other factors. The first is that the individual depends on an identification with a significant person whose reliance on alcohol in order to deal with life problems is unhealthy. It is not necessary to elaborate on the common psychological fact that the young learn both healthy and unhealthy patterns of response through the process of identification. For that reason, study after study has shown that offspring drink like their parents: heavy drinkers produce heavy drinking children, abstainers produce abstainers, and moderate drinkers produce moderate

drinkers. The high incidence of alcohol problems in the family constellations of alcoholic persons further confirms these observations.

The second factor leading to unhealthy preoccupation with alcohol concerns the particular cultural attitude toward alcohol and its use. There are many cultures where alcohol is used early and often, and these cultures do not by any definition (except those that contend any imbibing of alcoholic beverages indicates a problem) suffer any significant alcoholism. The fact that societies exist that use alcohol and do not suffer alcohol problems does not mean that these societies do not contain their share of emotional problems or abnormal physicochemical responses. What it does indicate is that these societies produce environments where problems are manifested by other symptoms or means rather than by unhealthy alcohol preoccupation.

Experiences to date emphasize the idea that in cultures where there is marked *ambivalence* regarding the value and place of alcohol, where drinking is done in conflict and in guilt, the potential of incorporating an unhealthy preoccupation with alcohol into a troubled psychophysical adaption pattern is great. Where drinking is unambivalently integrated into the socialization process of a society, where it is intimately interrelated with moral symbolism and repeatedly practiced as a group activity, conflict is minimal and so is alcoholism.

Epidemiology and Social Consequences

Beyond the problems of definition lie the social consequences of alcoholism, which are extensive. The obvious deterioration of physical and social integrity of the skid row habitué is well known. Much less apparent are the effects of alcoholism on persons in other socioeconomic settings from which the majority of such persons are drawn: the loss of income, the loss of potential and of productivity, the rupture of families, the physical impairments, and the contagion factor hinted at above. The enormous cost to the community of alcohol problems is inestimable. Courts, hospitals, clinics, agencies, industries, families, and individuals are constantly expending energies and resources on behalf of alcoholic persons.

The formal resolution of the Committee on Alcoholism of the Council of Mental Health of the American Medical Association in 1956 stated that "the profession in general recognizes this syndrome of alcoholism as an illness which justifiably should have the attention of physicians." This reflects the sensitivity of the subject, for there are few conditions on which physicians have had to vote so late in the game as on whether this problem is the responsibility of the medical profession. The American Psychiatric Association in 1965 issued a position statement on alcoholism, taking the stand that psychiatrists and other physicians should extend to alcoholic persons the same care afforded to other ill persons. These attitudes of the

care-taking professions, which merely reflect the attitudes of the public at large, emphasize the difficulties of ascertaining accurate information about the incidence of alcoholism. Moralism, disdain, and disgust toward alcoholic persons will always cloud attempts at deriving a clear picture of alcohol problems.

Incidence. Of 80 million users of alcohol in this country, it is estimated that there are 4.5 to 5 million alcoholic persons. No true census is available, and epidemiological studies are rare. Most figures are based on the Jellinek formula (discredited by Jellinek himself) or on fancy or fright, depending on the motives of the issuing authority. A further complication of alcohol problems is the role played by legal statutes. The Federal Bureau of Investigation, for example, in its Uniform Crime Reports, finds that the crime of drunkenness represents more than 40 per cent of all arrests and is, therefore, the nation's major single crime. The State of Massachusetts arrests and commits to jail more people for the crime of drunkenness than for all other crimes combined. As many as a third of the patient populations of tuberculosis sanatoriums and mental hospitals suffer from alcoholism as a complicating diagnosis of all admissions. Chronic disease institutions, public welfare recipients, delinquents and their parents, divorcees, sex offenders, and others in similar categories consistently provide a higher percentage of alcoholic persons than should be expected in terms of the general population.

The problem of learning about the true incidence of alcohol problems is best illustrated by examining the ratio of male to female alcoholic persons. The most commonly quoted figure is $5\frac{1}{2}$ to 1. However, recent clinical observations suggest that more women than men are seeking treatment. The impression that there are more male than female alcoholic persons could arise from the easier detection of the illness in men. Men cannot hide as easily as women, since they must go out into the world and to their occupations, where society may recognize a disturbance or dysfunction due to alcohol; a woman, however, may remain protected in her home and for long periods escape social or even family detection. Families, friends, business associates, physicians, and others protect the patient against recognizing a difficulty until the destructive consequences are so great that deception is no longer possible. For this reason, it is hard to say how true the male to female ratio figures are. Also, since the climate surrounding alcohol problems is finally changing, one cannot say whether there is a rising incidence of it or whether people are asking for help more readily in an understanding environment.

Moralism and alcoholism. The recognition of the moral overtones in what is really a medical-social issue has an ancient history. As long ago as 2285 B. C., a man was banished from China for creating an intoxicating drink from rice. In the 16th century, Sebastian Franck reminded his readers in

On the Horrible Vice of Drunkenness that "More men are drowned in the glass than in the sea." Thomas Trotter, the Edinburgh physician who in 1778 completed a study on the disorder of alcoholism, wrote: "Mankind, ever in pursuit of pleasure, have reluctantly admitted into the catalogue of their diseases, those evils which were the immediate offspring of their luxuries. Such a reserve is indeed natural to the human mind; for of all deviations from the paths of duty, there are none that so forcibly impeach their pretensions to the character of rational beings as the inordinate use of spiritous liquors."

In 1784, Dr. Benjamin Rush published *An Inquiry into the Effects of Ardent Spirits on the Human Body and Mind*, in which he concluded that there were no beneficial effects to be derived from alcoholic beverages. He implied from the beginning that there was a direct relationship between individual control of drinking and personal character and morals. This conclusion was emphasized by the strict regulations imposed against the sale of alcoholic beverages to the irresponsible individuals of low status—indentured servants, Indians, and ex-convicts. The use of alcohol was thought to breed dissolute habits and threaten the spiritual life of individuals and of communities, although no voice was raised against the alcohol trade itself, which helped build the great fortunes and power of our important Colonial families.

About 1825 the American temperance movement became active. At first its efforts were directed against immoderate use of alcoholic beverages and abstinence from ardent spirits, but by 1850 alcohol in any form was identified with Satan, and total abstinence was demanded on moral grounds for all who aspired to the "good life." Thereafter, the battle lines were drawn between the organized temperance movement, supported by many church leaders, and the alcoholic beverage industry, which had organized to defend its position in the middle 1860's. As a result of this struggle, the problems of the individual with alcohol difficulties were submerged.

Moralistic pronouncements from the clergy and others only served to isolate further the person who suffered from alcoholism. The public could only deduce that, since the authorities contended that the excessive use of alcohol inevitably induced physical deterioration and disease, the individual had two choices: to abstain completely or to drink under control. The fact that for some individuals drinking under control was impossible was ignored, and any individual who sought help only to relapse was considered insincere in his attempts to lead a wholesome life. The conclusion of Dr. Thomas Trotter in 1804 that alcoholism was a disease of psychogenic origin was ignored. He said, "In medical language, I consider drunkenness, strictly speaking, to be a disease; produced by a remote cause, giving birth to actions and movements in the living body, that disorder the functions of health." He went on to write: "It is to be remembered that a bodily infirmity is not the only thing to be corrected. The habit of drunkenness is a disease of the mind."

In 1830, the Connecticut Medical Society recommended the establishment of an asylum for the care and treatment of inebriates, and 3 years later the superintendent of the state hospital in Worcester, Massachusetts, made a similar recommendation. In Binghamton, New York, in 1864, the New York State Inebriate Asylum was opened, financed by private funds. But these efforts were few and far between, meeting with the approval of only a limited number of physicians and eliciting almost no support from the public.

The great movement of the 19th century in this field was that of the Washingtonians. Begun by a group of habitual drinkers in 1840 who decided to take the pledge of abstinence, the effort spread with great enthusiasm and emotionalism within months throughout the United States, with thousands joining. Even people who had no drinking problems took part, but the movement gradually disappeared. In its wake, however, the Washingtonians left "homes" in several cities where the medical side of inebriety could be treated. Unlike the practice in state mental institutions, patients were treated

without restraints, were allowed to go about the city, and were regarded as men of honor rather than as degenerates.

In 1870, a number of state hospital superintendents and other physicians interested in alcohol problems founded the Association for the Study of Inebriety, leading to establishment in 1876 of the *Quarterly Journal of Inebriety*.

The early years of the 20th century saw the establishment of the Emmanuel Movement and the Peabody program for reeducating alcoholics. But the period of national prohibition between 1920 and 1933 produced a situation where the alcoholic person, lost in the turmoil, became the responsibility primarily of county jails and psychopathic hospitals, and ancient prejudices again impeded scientific effort.

Nature of Alcohol

Ethyl alcohol. Whenever people talk about alcoholic beverages, they are, in effect, talking about ethyl alcohol. Although a large number of compounds may be chemically designated as alcohols, ethyl alcohol is the common denominator of beverage alcohol, whether it is wine, beer, mead, or whiskey. Other alcohols are less suitable because they are not so rapidly oxidized by the body. Methyl or wood alcohol, for example, is no more intoxicating than ethyl alcohol, but, because its oxidation rate is so slow, periods of intoxication are greater, as is its potential for cumulative effects. Furthermore, the products of metabolism of ethyl alcohol are harmless to the body, but the oxidation of small amounts of methyl alcohol produces toxic substances that damage nerves, especially the optic nerve, leading to blindness. An amount of ethyl alcohol that disappears from the body of a drinker in 1 day would be present for a week if methyl alcohol were substituted.

Ethyl alcohol in its pure state is a colorless liquid with little odor but a strong stinging taste. The characteristic alcohol breath comes from the odor of the aromatic oils resulting from an alcohol and water mixture rather than from the alcohol itself. Most alcoholic beverages contain at most about 50 per cent pure ethyl alcohol.

Physiological effects of alcohol. The fate of alcohol in the body is an interesting phenomenon. Alcohol lifted to the lips, from the initial sniff, gets into the blood stream in small amounts through the lungs. Most foodstuffs must be first digested by elaborate chemical means before they can be absorbed and exert their influence—not alcohol. Alcohol can only provide its effect by entering the blood stream and being transported to the brain, where it brings its major influence to bear. No matter how great the amount, unabsorbed alcohol in the alimentary tract is without local effect. At what speed the alcohol leaves the stomach and small intestine to be absorbed depends on many factors: the amount and type of food in the stomach, the type of beverage consumed and its concentration, the circumstances under which it is being drunk, the emotional state of the drinker, and his individual constitutional state.

Mechanics of absorption. Foods in the stomach, especially fats and proteins, are excellent delayers of

alcohol absorption. Experienced drinkers know only too well the differing effects the same amount of alcohol causes with and without food in the stomach. Drinking water before partaking of alcohol will increase absorption, as will carbon dioxide; for that reason, champagnes are notorious for causing rapid and heightened effects. Beer contains foodstuffs that delay absorption, and for that reason more beer is consumed to achieve an effect.

The body has certain protective devices against being inundated by alcohol. For example, again unlike other foodstuffs, alcohol can be absorbed into the blood stream directly from the stomach. No more than 20 per cent of the alcohol can reach the blood from the stomach—otherwise the effects would be disastrous and dangerous. If the concentration of alcohol becomes too high in the stomach, mucus is then secreted, and the pyloric valve closes. This slows absorption and prevents the alcohol from passing into the small intestine, where no important restraints to absorption are available. Thus, in the imbibitor who has consumed immoderate quantities, a large amount of alcohol remains unabsorbed for hours. Further, the pylorospasm often results in nausea and vomiting and the production of an unpleasant memory not at all conducive to further excessive drinking.

Once alcohol is absorbed into the blood stream, it is distributed to all the tissues of the body. Since it is uniformly dissolved in the water of the body, those tissues containing a high proportion of water receive a high concentration of alcohol. However, since human bodies contain essentially similar amounts of various tissues and water, it is possible with some accuracy to predict, from the concentration of alcohol in the blood, the total amount of alcohol present in the whole body.

The National Safety Council has adopted the concentration of 0.15 per cent of alcohol in the blood as evidence of intoxication with respect to the operation of a motor vehicle. Most people would show definite and obvious signs of intoxication at 0.25 per cent of blood alcohol concentration—a level requiring in the average adult the downing of approximately 12 ounces of whiskey within a few hours. What these measures of concentration do not indicate is what the behavioral responses of the individual will be to a given concentration at a given point in time.

The attention paid to the mechanics of absorption is important because alcohol is more intoxicating when it is being absorbed than when it is being destroyed or oxidized. For this reason, the rate of absorption has a direct bearing on intoxicating responses. All things being equal, the same amount of alcohol sipped slowly will have a much lowered effect than when gulped rapidly.

Mechanics of elimination. Immediately following absorption, destruction and elimination begin. The kidneys and lungs excrete about one tenth of the total alcohol ingested unchanged; the rest undergoes

oxidation. Although other foodstuffs liberate their chemical energy in relation to the energy needs of the body, the rate of oxidation of alcohol is independent of these requirements and proceeds at a fairly constant rate. Thus, the average person oxidizes $\frac{3}{4}$ ounce of whiskey an hour. If his rate of sipping is equivalent, he does not accumulate alcohol in the body or become intoxicated.

Alcohol's oxidation provides heat and work energy, but its calories cannot be stored. However, because excessive consumers receive so many calories as a consequence of their alcohol intake, other foods go by the board. Although the alcoholic person may satisfy his calorie requirements, he ignores his nutritional needs. The ultimate results are nerve degeneration and deficiency diseases. Previously, many deficiency diseases common to alcoholic persons were thought to be due to direct damage by alcohol on bodily tissues.

No method yet known can hasten the disappearance of alcohol from the body beyond the leisurely pace noted above.

Effects on the brain. The prime action of alcohol that concerns us here is its action on the brain, where it is a central nervous system depressant similar to other anesthetics. Those parts of the brain affected and the degree of impairment depend on the concentration of alcohol in the body, the experience of the drinker, and the surroundings in which the drinking takes place. Whatever part of the brain is most anesthetized, the disturbed behavior is manifested in those organs controlled by the affected brain part—by thick speech, clumsy movements, and poor coordination.

At a level of 0.05 per cent of alcohol in the blood, more recently learned responses are depressed, diminishing inhibition and restraint and coloring judgment. At a level of 0.10 per cent, older brain centers are narcotized, and motor and speech activity is impaired somewhat. To varying degrees, these are the states people are seeking when they drink to be stimulated. The stimulation is illusory and is the result of the altered quality of behavior produced when alcohol removes prevailing inhibitions and restraints. The world looks brighter, and a splash of color is applied to a sometimes stark reality. The harshness of self-judgment and criticism is for a moment removed, and one's fellow man looks less threatening.

However, at 0.20 per cent, impairment of function is more gross: the motor area of the brain is profoundly affected. The world is viewed from the horizontal. At 0.30 per cent, sensory perception is severely impaired, and the person is stuporous. At 0.40 per cent, perception is obliterated, coma exists, and the individual is anesthetized. At 0.60 or 0.70 per cent, those primitive centers of the brain controlling breathing and heart beat are affected, and death ensues.

Throughout this entire phylogenetic retrogression of the brain from its most recent to its most ancient

centers of development, the concentrations of alcohol in the body are much too low to cause any direct permanent damage to the tissues. What is seen is a functional effect of alcohol on reversible brain activity; when the alcohol disappears, so does the effect—except at the 0.60 to 0.70 level.

Other physiological effects. Many alcoholic persons are intoxicated much of the time, but alcoholism is not the only effect of intoxication. Prolonged copious use of alcohol may produce withdrawal symptoms. Because alcohol affects the pituitary gland, chronic states of intoxication may result in disturbances of growth and development, sexual cycles, and mineral and water balance.

The liver is affected by alcohol and is the main site for detoxification of alcohol in its metabolism. A reversible fatty infiltration of the liver is thought to occur with alcohol ingestion. What relation, if any, this plays in the production of liver cirrhosis is not yet known. The tremendous shift of water from within the cells to the extracellular spaces and the corresponding alteration in salts distribution may also be responsible for a variety of bodily malfunctions.

Chronic states of intoxication, a state of physiological and psychological disequilibrium, produce not only a disturbance of the external environment, but a disorganization and disruption of the internal physiological environment. The prolonged disturbance of homeostatic mechanisms in the chronically intoxicated may result in persistent damage to tissues and organs of the body.

Alcoholic Psychoses

The relation between alcoholism and the implied alcoholic psychoses is not so clear as was formerly assumed. In many cases alcohol is merely the means by which severe long standing personality problems are brought to the surface. In other situations, the interplay of psychological and physiological factors is such that the matter becomes more complex. In Korsakoff's syndrome and chronic alcoholic deterioration, for example, the psychosis is not due to the toxic effects of alcohol per se but may be due to a deficiency of thiamine. Even here, the underlying personality structure colors the picture. Alcoholism may be but a symptom—a relatively obvious one—of a schizophrenic or manic-depressive psychosis.

Blackouts. Although the term is commonly used among alcoholic persons, the occurrence of blackouts is infrequent in the total alcoholic population. Blackouts refers to a *total* amnesic state the chronic sufferers of alcoholism may in time develop. The patient has no recall of his activities or behavior when he has blacked out, although to the disinterested observer the individual is reasonably intact. Whether this phenomenon is a drug-induced amnesia attack or an acute dissociative response is unclear. One patient, a successful pharmacist from the Midwest, once, after drinking heavily, "came to" in a hotel in Los Angeles

surrounded by "friends" he had met on the way and whose transportation and accommodations he had paid for. He could never remember having met them, and they were unaware that he was heavily under the influence of alcohol.

Pathological intoxication. This term is seldom used. It was the rubric applied to a group of borderline patients who, even with a small intake of alcohol, would develop a transitory mental state much more severe than ordinary intoxication. The onset of pathological intoxication is dramatic and sudden. Consciousness is impaired. The individual is confused and disoriented and suffers illusions, transitory delusions, and hallucinations of sight. There is greatly increased activity, impulsive and aggressive, often to the point of destructiveness. Rage, anxiety, and depression are the emotional components, and suicidal attempts are frequent. This disorder may last for a few moments, a day, or more. It terminates in a prolonged period of sleep, with amnesia for the episode on awakening. The general consensus is that persons with hysterical or epileptoid temperaments are more prone to these outbursts; they have high levels of anxiety and tension, and alcohol may cause sufficient disorganization and loss of control to release aggressive impulses.

Delirium tremens. Delirium tremens (D.T.'s) is an acute psychotic state usually occurring after a prolonged, copious, and severe period of drinking. Delirium tremens is rarely seen in people under the age of 30 or in those who have not suffered serious alcoholism for 3 to 5 years. An attack was once thought to be the result of a sudden deprivation of alcohol, but this is not entirely true. A lowering of the blood alcohol level is known to produce delirium tremens, as do acute injuries or infections. The delirium is usually preceded by restlessness, irritability, an aversion to food, tremulousness, and disturbed sleep with terrifying dreams. Occasional illusions or hallucinations become more frequent. The patient is terrified; there may be threatening insects and animals, visual hallucinations of movement, and walking animals from which the patient, in his frantic terror, attempts to escape. Tactile and olfactory hallucinations—bugs crawling on him or gases being pumped into his room—are frequent. Auditory hallucinations, on the other hand, are rare. Although the mood of apprehension, irritability, and terror is usual, euphoria, silliness, or amusement with the telling of tall tales may at times be seen. Confusion with disorientation for time and place is common; attention is fleeting; motor activity is marked and sleep impossible.

Physical examination reveals congestion of conjunctivae and face, with dilated pupils slow to react. A coarse tremor is almost always present and is increased by muscular tension. A tremulous tongue, lips, and face are often seen in fully developed cases. The pulse is rapid, irregular, and weak. Temperature

is elevated, the skin moist, perspiration free, reflexes heightened, and speech indistinct. Epileptiform seizures may occur.

Etiology and course. The nature of the factors that produce delirium tremens is not definitely known, but the condition is thought to be due to a disturbed metabolic state. Pathological changes of both a degenerative and inflammatory nature may be seen with an edematous brain, degeneration of nerve cells, and an increase of glia with some round cell infiltration. Punctuate hemorrhages and degeneration of myelin sheaths are frequent findings.

The course of delirium tremens usually runs 3 to 10 days, with recovery preceded by prolonged sleep, clearer consciousness, and disappearance of hallucinations (at night, brief periods of delirium may recur). Prognosis depends on the physical status of the patient and the presence or absence of concurrent disease. Patients with delirium tremens either recover, die from heart failure and pneumonia, or go on into a Korsakoff's psychosis.

Treatment. The treatment of delirium tremens involves withdrawal of alcohol and placing the patient in bed under excellent nursing conditions. Constant reassurance and the avoidance of physical restraints are most advisable. Morphine should be avoided. Many a patient has died struggling against bodily restraints or the effects of deep sedation. In this writer's experience, 8 to 12 cc. of paraldehyde every 6 hours (reducing the paraldehyde dosage gradually as necessary) with 25 to 50 mg. of chlorpromazine (Thorazine) three or four times a day is the best combination for producing calm and sleep in the delirious alcoholic patient. Nutritional needs must be carefully tended to with a high caloric, high carbohydrate diet supplemented by multivitamins. Care has to be directed toward proper electrolyte-fluid balance. Emphasis on the need for first rate nursing care cannot be stressed enough.

Acute alcoholic hallucinosis. The prevailing view is that this condition represents a liberation of an underlying personality disorder as a consequence of alcoholic intake. Many observers see a close relation to schizophrenia, and some believe this disorder is a schizophrenic reaction released by alcohol. Patients who have suffered chronic alcoholic hallucinosis have in time become obviously schizophrenic.

As with delirium tremens, acute alcoholic hallucinosis usually follows a prolonged drinking bout. In contrast to the visual hallucinations and clouded consciousness of delirium tremens, in this reaction auditory hallucinations of a threatening nature appear in a clear sensorium. In men, the voices of the hallucination commonly accuse or threaten the patient with homosexual attack; in women, the accusation and threat commonly involve promiscuity. Although illusions and olfactory hallucinations are common, visual hallucinations are rare. Ideas of reference and the acquisition of an elaborated delusional system are

frequent, with the patient often responding to his ideas. Often the patient tries to involve the law in his defense or use other means of protection against the terrifying attacks. Although hallucinating, the patient is oriented to time and place, fits his hallucinations and delusions into his real environment, and, even after he recovers, can recall vividly the events, feelings, and ideas of the psychotic episode. The mood of the patient is one of apprehension and fear, frequently accompanied by anger or depression. Suicidal attempts are common.

The treatment of alcoholic hallucinosis is to hospitalize the patient, withdraw alcohol, and provide medication to calm the patient. Thorazine, trifluoperazine (Stelazine), and antidepressants are useful, depending on the mood and behavior of the patient. Adequate nutrition and vitamins should be supplied.

The usual course runs 5 days to a month, but recurrences are common if alcohol is resorted to again. Korsakoff's syndrome rarely follows alcoholic hallucinosis, but frank schizophrenia, as noted, is common.

Alcoholic paranoia. This category represents another attempt to emphasize the alcoholic complication instead of the larger underlying problem. Patients who have been so diagnosed are those who never in their premorbid period established meaningful heterosexual relationships and show the same impairment of personality development and resultant psychopathological processes seen in other paranoid psychoses. Alcohol use weakens repression, and forbidden homosexual impulses rise to the surface and are defended against by a paranoid delusional system.

The clinical picture is characterized by delusions of jealousy, associated with suspicion and distrust. Projection is intense, and people in the environment are accused of that which is stirring in the patient. Questions of his own masculine role are often intensified by alcohol-induced impotence, and a panic-like state frequently occurs.

The prognosis is not good, although the patient is more comfortable and less delusional when hospitalized. Return to the original environment results in a recurrence of symptoms in most cases.

Wernicke's syndrome. Wernicke's syndrome is a rare, although once common, condition mainly seen in chronic alcoholic patients. It is due to vitamin and other nutritional deficiencies especially thiamine. It begins with delirium and consists of ophthalmoplegia, memory loss, confabulation, apathy or apprehension, clouding of consciousness, ataxia, and, at times, coma. It results from neuronal and capillary lesions, particularly in the gray matter of the brain stem and structures near the third and fourth ventricles.

Korsakoff's syndrome. Described in 1887 by the Russian Sergei Korsakoff, this syndrome may or may not be preceded by an episode of delirium tremens. Korsakoff's syndrome consists of amnesia, confabulation or falsification of memory, disorientation as to time and place, and peripheral neuropathy. Although

generally accepted as a condition of chronic alcoholism, it is mainly the result of nutritional deficiency, especially of thiamine and niacin. The resultant degeneration is mainly in the cerebrum and peripheral nerves, in contrast to the brain stem destruction of Wernicke's syndrome. Often, signs of Korsakoff's syndrome are present with signs of Wernicke's disease or pellagra.

At first glance, the Korsakoff patient may appear clear, and the severity of his mental disturbance may not be apparent. Although he may be able to deal with immediate events, those requiring memory are beyond him. The memory loss is progressive, and he responds to his amnesia by a lightness of attitude and a confabulation based on fiction. The direction the fictions take can easily be suggested by leading questions and can vary from day to day. Disorientation as to time, misidentification of people, and a superficially jovial mood are common. The confabulation and mood are defenses against the patient's confronting himself with his defective functioning. The accompanying polyneuropathy is most marked in the lower limbs, with pain and tenderness over the nerve and with absent knee jerks.

Many patients lose their symptoms after 6 to 8 weeks and return to almost their former level of mental functioning. In others the syndrome is not completely reversible, improvement takes longer, and recovery of memory is not complete. Some patients always retain a certain degree of intellectual, emotional, and esthetic impairment. Neuropathy clears quickly and usually completely.

Treatment consists of the withdrawal of alcohol and the institution of a regime of 20 to 50 mg. of thiamine chloride daily for a few days, followed by powdered yeast in iced milk three times a day. A diet rich in all nutrients should be liberally provided. Rest for the symptoms of neuropathy is advisable.

Alcoholic deterioration. In some patients who have suffered from a prolonged period of chronic alcoholism, one begins to see a gradual disintegration of personality structure, with emotional lability, loss of control, and evidence of dementia. The cause of the structural damage is due to brain damage from avitaminosis rather than the direct toxic trauma of alcohol. The underlying pathological change is the result of a diffuse degeneration of nerve cells in the cerebral cortex. The symptoms are related to the underlying personality structure associated with the general findings of any dementia.

Personality Factors

As has been stated earlier, there is no single personality configuration in alcoholism, nor is there a predetermined course through which alcoholic sufferers pass. Although the literature contains many descriptions of the stages of alcoholism, these tend to describe a retrospective composite of clinical experi-

ences with a large number of patients; since such a group has had diverse features, common responses are filtered out, and a stage of alcoholism is born. The truth is that little or nothing is known about the natural history of alcoholism. Nothing is known about the rate of spontaneous remission, the number of patients who reach a level of disturbance with alcohol and become stable, the incidence of patients who have a violent onset and rush toward a disastrous end with the speed of a raging malignancy. Until recently, when scientists began a more systematic study of alcoholism, the field consisted to a large degree of unscientific pronouncements and dogmas, the results of which continue to hamper new studies. Research findings that dispute the established notions are attacked in many ways—the most damaging of which is the contention that, if the new findings against the preconceived notion do exist, the patient cannot have been a true alcoholic.

Bearing these limitations in mind and remembering that in any case each patient must be studied and understood as an individual problem, one may look at the two broad categories of alcoholic persons: the reactive and the addictive.

Reactive alcoholic persons. Patients designated as reactive alcoholic persons are those who appear to have become preoccupied with alcohol only after being overwhelmed by some external stress. The picture of the dejected, disappointed individual heading for alcohol to wipe away the ugliness that has arisen from without or from within him is familiar. Unfortunately, in many cases the temporary relief prevails, and avoidance of facing fear is prolonged. In other cases, the alcohol intensifies the depression, and the individual, unaware of the causes of the deepened depression, consumes greater amounts of alcohol. With prolonged use of increasingly greater amounts of alcohol, physiological dependence on it occurs, and the person continues to drink heavily to prevent withdrawal symptoms.

Other reactive alcoholic persons may use alcohol to blur perceptions in the presence of an emotionally threatening milieu—such as surrendering to a homosexual overture and blaming alcohol for the response—or to support a system of defenses where acting out of the alcoholic person's repressed conflicts is possible—the latently hostile and aggressive person may overtly manifest these feelings but be utterly unaware of his response.

The most common reactive situation leading to a preoccupation with alcohol is that found in individuals who need to break down psychological barriers, for example, the lawyer who must have a few drinks before he can address judge and jury.

In reactive alcoholic persons, retrospective examination of their life patterns generally reveals that premorbid adjustment has been reasonably satisfactory. They have fulfilled their obligations to their families, to themselves, and to society. Goals have been achieved in their educational pursuits, occupational efforts

have been rewarding and stable, and they have been useful members of a social order. Their histories reveal reasonable progress toward realistic goals. The usual unhealthy encounter with alcohol has a determinable onset, it runs a course consistent with great tension release, and termination of the bout is related to a great effort of control exercised by the individual. The reactive alcoholic person may have one or more such periods of alcoholic distress; he may, in some cases, get so sufficiently involved with his preoccupation with alcohol that no other part of his life is important.

Because of the stigma attached to alcohol-related conditions, meaningful help is not readily forthcoming. Society finds it all too easy to associate its own drinking behavior and responses with those of the reactive group. As a consequence, the person with a reactive alcohol problem must become so ill and so disturbed that his alcoholic state becomes overt and his difficulty sufficiently perverse to be recognizable.

Addictive alcoholic persons. The addictive alcoholic person, on the other hand, shows gross disturbances in his prealcoholic personality, with marked evidence of inadequate and unsatisfactory interpersonal relations. There have been poor adjustments to family or school. Goals are seldom reached and, if they are, only at the expense of unwarranted time and effort. Occupational instability is common. The rate of marriage is similar to that of nonalcoholic persons, but marital disintegration is uncommonly high in patients with addictive alcoholism. Patients in this category have been fascinated with alcohol from their first encounter; the onset of drinking bouts is indeterminate, without apparent reason, continuing until the individual is physically unable to continue. Most striking in the total pattern of responses is the self-destructive component. This self-destructive aspect in the addictive person pervades his entire existence, from his dealing with people and things to his dealing with himself and his immediate environment.

The addictive group is so self-destructive and so different in drinking behavior from the general responses of society that society finds it easy to label this group "alcoholics." The main impetus of efforts to control alcohol problems, therefore, is directed here. In other words, the more malignant the condition, the greater the deficits, the lesser the potential for recovery—it is in these areas that the greatest effort has been expended against alcoholism to date. To those individuals who are less disturbed, with fewer deficits and with a greater potential for recovery, care is denied by ignoring the problem until the destruction is great enough to fit the addictive image.

Interpersonal relationships. In describing the interpersonal relationships of alcoholic persons, writers often state that most alcoholic persons do not form emotional and meaningful relationships. This implies a goodness or poorness of interpersonal relationships, which is not the entire picture. Alcoholic persons form

relations, but they tend to be rigid and stereotyped and subjectively unrewarding. Discomforting feelings and responses are denied; aloofness, feelings of omnipotence, invulnerability, and a lack of dependency on others is common. An all consuming hostility, associated with an inability to achieve satisfactory sexual adjustment, and depression as the all pervading mood disturbance are frequent findings in people with alcohol problems. Most often, though, alcoholic persons do not get from the relationships they form just what they want, nor do they make others pleased, satisfied, or happy. These responses are related to the disturbance and deprivation early in life and the resultant object loss.

Psychosexual development. Object loss, dependent on the stage of psychosexual development during which it occurs, produces insatiable demands by the individual on his surroundings and the people who frequent it. During early life, object loss may result in primitive excessive demands that cannot be satisfied and interpersonal relationships that cannot succeed. At their failure, rejection is encountered, reawakening the feelings of the original loss and rejection. The intensity of these feelings is so great that an all consuming hostility threatens the individual, and he can only deal with this by a self-destructive (rather than murderous) pattern, one facet of which is his preoccupation with alcohol.

At later stages of psychosexual development, a less intense disturbance and self-destructive pattern is possible: only specific traumas reawaken feelings of deprivation and disturbance, with resulting self-limiting responses.

The gratification of sexual activity, the type of interpersonal relationships, the intensity of hostility, and the pervasiveness of the self-destructive effort are similarly related to the level of development at which the impediment to psychological growth occurred. In this way, the earliest deprivation can only be gratified by oral satisfaction through incorporation and destruction of the love object, instituting the need eventually to find another object. For this reason, people with alcohol problems look for love in whatever, wherever, or whoever will provide it. This has resulted in much homosexual fantasy and activity in the lives of patients, misleading theoreticians into incriminating homosexuality as the cause of alcoholism.

The mechanism of denial is a patient's manner of dealing with life by denying feelings of isolation and inferiority, the absence of self-respect, and lack of sexual satisfaction, along with a dependence on alcohol and other external agents for security and care. Alcohol becomes one external means by which the alcoholic person can easily but with fickleness achieve control over his feelings of fear, helplessness, and deprivation. The denial works most intensely to guard against depression.

Depression as the prevailing mood in alcoholism is not surprising. Object losses, isolation, anxieties, ungratified sexual impulses, unrealized goals, and thou-

sands of feelings, real and fantasied, plague the sufferer so that relief must be sought. Hopelessness, sadness, and feelings of futility, failure, and worthlessness are sporadically or continuously present. Depression becomes so unbearable at times that only a bout with alcohol or a more direct suicidal attempt is the outlet. For this and other reasons, relapses can and do occur in the most highly motivated and determined people.

Etiology

Psychoanalytic theories. Psychoanalytic formulations on alcoholism received their impetus from Freud, who first believed that alcoholism was the result of strong oral influences in childhood. Alcohol provides a mood alteration and a consequent redirection of thought processes, providing the impetus for regressive levels of thinking and for achieving gratification from thinking unrelated to logic. Alcohol hence provides an escape from reality. Jelliffe emphasized the escape theory by pointing to the "autoerotic ecstasy of dreaming" provided by alcohol, and Parland equated escape in alcoholism with escape in homosexuality.

Menninger advanced the self-destructive drive as the prime component of alcoholism. Addiction was considered the means used by those individuals who unconsciously have a powerful urge to destroy themselves, an urge derived from the child's feeling of having been betrayed by his parents. Menninger contended that the conflict involves the child's intense rage, in which he wishes to destroy his parents yet fears losing them. Later in life, alcohol becomes the means to achieve gratification and revenge: hostility experienced via antisocial behavior while under alcohol and the resultant sober punishment to alleviate guilt. Therefore, Menninger sees alcoholism as a form of chronic suicide, unconsciously employed to avert the greater self-destruction of the parents and ultimately oneself.

Knight formulated the psychodynamics of alcoholism as follows:

His [the alcoholic's] childhood experiences have given him a personality characterized by excessive demands for indulgence. These demands are doomed to frustration in the world of adults. He reacts to the frustration with intolerable disappointment and rage. The reaction impels him to hostile acts and wishes against the thwarting individuals for which he then feels guilty and punishes himself masochistically. As reassurance against guilt feelings and fears of dangerously destructive masochism and reality consequences of his behavior, he feels excessive need for affection and indulgence as proof of affection. Again, the excessive claims, doomed to frustration, arise, and the circle is complete. The use of alcohol as a pacifier for disappointment and rage, as a potent means of carrying out hostile impulses to spite his parents and friends, as a method of securing masochistic debasement, and as a symbolic gratification of the need for affection is now interweaving itself in the neurotic vicious cycle.

Knight sees as the family configuration an overindulgent and overprotective mother who tries to soothe the infant by repetitive patterns of oral gratification in the presence of an inconsistent father. The child, as a

result of overgratification, cannot develop self-control, reacting with rage when frustrated. This capacity for rage and oral pacification is intensified by an inconsistent father, who unpredictably gratifies at one time and denies at another. This pattern of dependency, rejection, and insatiable desire for indulgence becomes an intimate part of the personality, associated with profound feelings of inferiority and guilt. Puberty produces an intensification of masculine prowess, and drinking is identified as manly. Emotional conflict of any origin in these people results in an impulsive response to frustration, which causes rage and thereafter guilt, requiring masochistic repair, which is provided by the pharmacological effects of alcohol, reinforcing irresponsible behavior. The ultimate result is to feed back an insatiable desire to be cared for, frustration, and the continuance of an addictive cycle.

The McCords emphasized an inconsistent satisfaction of dependency needs in the family background with confusion in self-image and conflict over satisfaction of dependency in the personality. Their formulation also contains emphasis on the cultural pressure placed on the definition of sexual roles and the creation of a facade of independence. Alcoholism, according to the McCords, develops with the collapse of the false self-image and the "emergence of repressed dependent traits."

Lisansky discussed psychological predispositions to alcoholism and assumed that

...etiological conditions in very early life experience are not highly specific among individuals who later become alcoholics. ... So much frustration has been imposed by his social environment in early life that he is wounded psychologically and remains stunted or arrested in various aspects of ego growth and function.... The predisposed individual has developed the following traits with which he enters his adult years: (a) an intensely strong need, drive, impulse toward dependency; (b) weak and inadequate defense mechanisms against this excessive need, leading to, under certain conditions; (c) an intense dependence-independence conflict; there is also (d) a low degree of frustration or tension tolerance; and (e) unresolved love-hate ambivalences.

Adler attributed the cause of addiction to powerful feelings of inferiority related to a perpetual state of insecurity and a desire to escape responsibility. An alcoholic addiction may be heralded, according to Adler, by marked shyness, a preference for isolation, impatience, irritability, anxiety, depression, hypersensitivity, and sexual inadequacy. Adler incriminated overindulgence and excessive coddling, leading to an inability to face the frustrations of adulthood, and the subsequent use of alcohol as a method of countering the demands of society.

Rado considered any drug craving as a manifestation of a single disease, pharmacothymia. Rado believed that certain individuals contained the potential to respond actively to the pleasurable effects of a drug. Therefore, he believed that it was not the drug but the impulse to use it that made certain individuals, who respond to the frustrations of life by great tension and

heightened intolerance to pain, resort to the use of alcohol. Rado stressed that alcohol provides a magical effect that brings about an increase in self-esteem and mood. As he writes,

A magical movement of the hand introduces a magical substance, and behold, pain, suffering are exorcised, the sense of misery disappears and the body is suffused with waves of pleasure.... All elatants poison sexual potency.... The pharmacogenic pleasure effect discharges the libidinal tension associated with these fantasies. The pharmacogenic pleasure process thus comes to replace the natural sexual executive.

In later writing, Rado deemphasized the replacement of sexual pleasure by pharmacothymic pleasure and placed more stress on the adaptive aspects of addiction.

Schilder believes that alcoholism arises from insecurity developed as a result of parental associations wherein the child is pushed deeper and deeper into an insecure emotional abyss by ridicule and passivity, by threat and corporal punishment, and by degradation. The child displaces the threats arising from the parents to the community at large, resulting in a heightened social tension and insecurity. Then in the adult, alcohol lessens this painful social situation and generates feelings of social acceptability and security during inebriation. When the alcoholically induced mood disappears, the original feelings return with renewed vigor, thus creating the need to drink again. As a result of this social insufficiency, the alcoholic person cannot develop close relationships with other people. Consequently, he develops a love for his own body, similar to what he wishes to receive from others—expecting special favors, appreciation, and love. Alcohol provides the feeling of being lovable and loved.

Others like Strecker and Lolli offer variations on this theme—a vulnerable individual rendered so by early life deprivation for whom alcohol provides magical relief from tension, depression, aloneness, hostility, and the myriad conflictual feelings that constantly plague the alcoholic person in a to and fro movement toward and away from alcohol. Crucial to all these theses is the implication of a specific characterological matrix of alcohol addiction.

Psychological theories are only partial answers since they do not weigh the physiological and sociocultural effects of alcohol use, nor do they explain why people with life experiences and emotional configurations similar to those they describe do not develop alcohol problems.

Learning theories. Learning theorists and conditioned reflex formulations have also made contributions to the thinking about alcoholism. The learning theorists, in general, would involve a drive setting responses into motion, responses that are also influenced by cues from other stimuli insufficient in strength to be drives. Whenever a response is unrewarded by a reaction that lessens the drive, the response tends to disappear, letting others appear. In other words, the extinction of successive nonrewarded responses pro-

duces so-called random behavior. When, however, a response is followed by a reward, the relation between cue and this response is strengthened. Consequently, in the presence of an identical drive and other cues, this response will be more likely to occur. This strengthening of the cue-response connection is the essence of learning.

Dollard and Miller pointed out that alcohol results in a temporary reduction of fear and conflict. It is the attempt to adapt to fear and conflict by alcohol, followed by the state of misery at its withdrawal, that produces the addiction cycle.

Shoben feels that readily available release from anxiety arising from the first drinking experience is the method by which reinforcement principles operate in alcoholism. The Skinner school of conditioning follows similar lines of reasoning: The diminution of anxiety by alcohol, practiced repetitively, becomes highly overlearned. Since the relief from anxiety is rapid in contrast to other learned patterns, a conditioned reflex—drinking—becomes preeminent over other behavioral responses, becoming nonadaptive and in time perpetuating the anxiety to which it was a response.

The classical studies of Masserman and Yum show that in the normal or preneurotic cat, alcohol resulted in excitement and exaggerated movements, disintegration of conditioned responses, and the display of fewer complex or more recently learned responses. As the effects of varying doses of alcohol disappeared, prior learned responses returned by stages. In neurotic cats alleviation of neurotic behavior was observed with alcohol (later learned neurotic patterns disintegrated). Therefore, alcohol produced in neurotic cats the same primitive goal-directed responses as in the normal cats, and, as the effect waned, neurotic reactions reappeared.

When offered milk, other fluids, and alcohol, neurotic cats chose alcohol more often than the normal cats did. With the receding of the neurotic patterns, however, their desire for alcohol abated. With the reintroduction of stimuli that produced neurotic behavior in the cats, preference for alcohol again occurred. Masserman and Yum concluded that the organism had to satisfy a need before "behavior directed toward its recurrent satiation became adaptively patterned."

The fact that alcohol pharmacologically is a cortical depressant which offers a blurring of anxiety-creating apperceptions and can provide prolonged tension release can result in addiction. Masserman later went on to write:

It is impossible to state the effects of any drug on any organism without considering the latter's genetic characteristics, past experiences and biological status, and its perceptions about motivations toward and evaluations of its current physical and social milieu. Clinical considerations indicate that these qualifications and contingencies as to all pharmacological action apply particularly to the problems of alcoholism in humans.

Conger tested his assumption that the Masserman-Yum observations represented simply an approach-avoidance conflict and that alcohol directly reduces the fear that motivates avoidance. Conger showed in albino rats that the alcoholized subjects resolved the conflict of approaching food and being shocked, whereas the nonalcoholized avoided the food-shock end of the experimental alley. Conger further showed that the resolution of the conflict is a result of the reduction in fear rather than a heightening of the hunger approach. He concluded that alcohol diminished the learned drive for fear-motivated avoidance. Furthermore, Conger feels that alcohol tends to decrease the strength of learned drives by leaving primary drives essentially unaffected. The differential reduction of fear is the crucial reinforcement that makes the learning of the drinking response so efficient in the alcoholic person.

Heilizer extended Conger's theory of approach-avoidance conflict in alcohol use. He discussed alcohol and its similarity to food and contended that "Food becomes a goal when the unpleasant sensations specifically associated with hunger occur; alcohol becomes a goal when unpleasant sensations of almost any variety occur." At the risk of simplifying a complex conflictual model concerning drinking behavior, Heilizer emphasized alcohol use *not* for its effect but because alcohol itself is "intrinsically positively valenced." Therefore, alcohol is used in approach rather than avoidance as Conger contended.

The animal studies reported on here and others under way offer meaningful information for understanding the development of alcoholism. What they cannot provide, as is the case with the psychological theoreticians, is the answer to *why* in certain drinking cultures alcohol is fitted into psychological, learned, or conditioned responses and results in alcoholism while in other drinking cultures it is not.

Physiological theories. In examining physiological components in the etiology of alcoholism, one is not here discussing either the physiological derangements of acute alcoholic intoxication, the metabolic and nutritional deficits of chronic alcoholism, or the well described physiological aberrations resulting from abrupt withdrawal of alcohol after prolonged, copious use. Of concern here are those theories that pertain to physiological factors creating and maintaining the addictive cycle.

Nutritional deficiencies have been incriminated as important links in the alcoholism chain. Westerfield reported that a restricted food intake of rats resulted in a marked increment in the voluntary intake of alcohol, and Mardones isolated a deficiency of vitamin B as increasing the intake of alcohol by rats. To Mardones this finding confirmed the genetotropic theory of Williams as to the etiology of alcoholism.

Williams formulated his theory because rats deprived of B vitamins select a solution of alcohol in preference to water. He holds that genetically determined and enzymatic defects impair the metabolism of

carbohydrates, rendering them ineffective as a source of rapid energy. Alcohol, serving as a replacement source, is craved primarily for this effect. Williams goes further and tries to relate this genetotropic theory to differences in cultural incidences of alcoholism by attributing them to hereditary differences in the intactness of metabolic mechanisms for metabolizing carbohydrates. What he does not demonstrate or explain is the apparent change in cultural incidence levels of alcoholism in acculturation phenomena. Williams believes that abundant satisfaction of every nutritional need abolishes the appetite for alcohol. He further contends that consistently good nutrition from childhood on seems to lessen the likelihood of the development of alcoholism. People who become alcoholic at an early age are those, according to Williams, with unusually high requirements for specific food factors, and their deficiencies reveal themselves earlier. The apparent increase in alcoholism is related to refined foods, contributing to physiological perversion.

Popham, Wexburg, Lester, and Greenberg have strongly criticized the theories and findings of Williams. The last two showed that, by introducing a third fluid choice (sucrose solution) under the same experimental conditions, the rats took the sucrose and not the alcohol. They further emphasized that, though the intake of alcohol by rats is high in some experimental situations, rats tend to space their drinks and thereby avoid intoxication.

Himwich regards alcoholism as arising from structural physiological aberrations wherein body and brain cells function more effectively in the presence of alcohol.

Smith contends that alcoholism is a genetically transmitted metabolic defect of the adrenal glands, heavily clustered among Celtic and Scandinavian people, whereby the adrenals are more susceptible to alcohol. Wexburg has carefully reviewed Smith's work and convincingly contends that adrenogonadal hypofunction is a complication—not a cause—of alcoholism.

Other physiological theories have been advanced: the masked allergy to alcohol of Randolph; the increase of anxiety, tension, and resentment factors in the blood of alcoholic persons reported by Fleetwood and Diethelm; thyroid deficiencies; and toxic products of alcohol metabolism producing direct addicting effects on the cortex.

The wide gamut of physiological theories merely reflects the difficulties of finding single cause modalities for highly complex behavioral disorders and the inherent difficulty of extrapolating from the controlled experiments of animals to the speculative conclusions concerning alcoholism in humans. What physiological findings do show us is, like the psychological evidence, that it is the effect of alcohol that is sought by the alcoholic person rather than the fulfillment of a structural deficiency state.

Sociological theories. Sociologists have made important contributions to the understanding of the

etiology of alcoholism. Horton studied 77 cultures' consumption of alcohol, subsistence security, and accessibility of alcohol. He demonstrated convincingly the high degree of correlation between subsistence insecurity and insobriety. In those societies where ceremonial drinking proceeds to states of unconsciousness, sexual and aggressive impulses emerge during the drinking bout. Horton believes that alcohol has the property of reducing anxiety and that its use is differentially determined, depending on the society's basic security and anxiety as well as the availability of alcohol.

Bales relates social organization and cultural practice to alcoholism based on: "(1) The degree to which the culture operates to bring about acute needs for adjustment, or inner tensions, in its members. (2) The set of attitudes toward drinking which the culture produces in its members. . . (3) The degree to which the culture provides suitable substitutive means of satisfaction." Bales has applied his thesis to an examination of a number of cultures and finds correlations of incidence of alcoholism with his formulations.

Snyder in his systematic study of Jewish drinking patterns and Barnett in his examination of New York's Chinese reveal the anti-alcoholic potential of ritualization of alcohol use, the abhorrence of intoxication, and minority status impelling the maintaining of control and the avoidance of scandal.

Gordon, in his desire to create an epidemiological climate for alcoholism work, has proposed that *any* use of alcohol is alcoholism, with addictive processes merely the end point of the total disease continuum. Gordon used the wide range model of diphtheritic infections: no infection, inapparent infection, atypical diphtheria, typical diphtheritic, and black diphtheria (abstainers, social drinkers, symptomatic drinkers, alcohol addict, and alcoholic deterioration and psychosis). Gordon's approach and formulation along public health lines offers a potential not only for reasonable epidemiological investigation but for preventive intervention.

Many other studies of a sociological nature could be reviewed and quoted. There is no single summary formulation, beyond stating that cultural determinants are of decisive significance in alcoholism. Most important for the future is the implication that cultural attitudes toward alcohol affect the individual early in his life development, and the role alcohol will play in an individual's psychological state has been set long before he takes his first drink.

Treatment

Treatment of alcohol problems results in a number of difficulties—none innately involved with alcoholism—usually the result of the attitudes of the care-takers. Acute intoxication is an excellent illustration. No one can deny that acute intoxication is a physiological disturbance in a response to too much of a drug. In no other part of medicine is the patient denied treatment

for his ills (even though, old-fashionedly, they are considered self-induced), except for alcoholic intoxication. Many a good hospital and many a good physician have turned the acutely intoxicated patient away without examination or help. These institutions or physicians would agree that intoxication from any cause is an illness, but their operational response is discriminatory and destructive.

The extent of alcoholic intoxication, however, is so common among nonalcoholic as well as alcoholic populations that more and more leaders in the alcohol field are pleading for units wherein individuals may receive the proper treatment for an intoxicating experience. Not only would these units offer the opportunity for good treatment for a common upset, but they would yield two other dividends: (1) an opportunity for early case finding and (2) the creation of an understanding climate toward alcohol use and its complications. Non-punitive and nonmoralistic attitudes toward alcoholism and early case finding may provide sufficient impetus for progressive programs in alcohol problems.

If the toxic state in acute alcoholic intoxication is not too profound, the patient may be treated with 10 to 25 mg. of chlordiazepoxide (Librium) four times a day for 1 to 3 days without hospitalization. Where the patient remains under the scrutiny of hospital personnel for a few hours, chlorpromazine (Thorazine) or other phenothiazines may be used in doses of 10 to 25 mg. daily for 1 to 3 days.

Whenever the intoxication is severe enough to require hospitalization, the patient may be placed on a regimen of 8 to 12 cc. of paraldehyde for the first dose, gradually reducing the medication by 2 cc. every 6 hours. Paraldehyde, when combined with 25 to 30 mg. of chlorpromazine four times a day, is useful in detoxifying severely intoxicated persons. Many therapists decry the continued use of paraldehyde because of their fear that it may lead to a substitute addiction, but this has not been the writer's experience with the combined medications. Others recommend chloral hydrate in doses of 1 to 2 grains at bedtime or barbiturates for sleep, but some find this less satisfactory since there is a potential for convulsions and addiction here without the medical benefit.

The state of dehydration should be determined, and fluids should be provided orally or parenterally; 1,000 cc. of 10 per cent glucose in distilled water or 1,000 cc. of 5 per cent glucose in normal sodium chloride solution fortified with 5 cc. of vitamin B complex is effective intravenously. If the patient is unable to tolerate medication by mouth, intramuscular injection of 50 to 100 mg. of chlordiazepoxide two to four times within 24 hours or chlorpromazine in similar doses may be used instead of the paraldehyde-chlorpromazine combination if the patient shows extremes of agitation and hypermotor excitement. Thiamine hydrochloride in 200-mg. daily doses may be given intramuscularly or by mouth. When convulsions are suspected, diphenylhydantoin sodium (Dilantin) in 1½-grain doses may

be administered orally three times a day. Where indicated, 15 mg. of propantheline bromide (Pro-Banthine) in an antacid four times a day may be given, and 4 cc. of Berocca-C 500 a day for 4 days parenterally may be administered. Where complications are present—such as tuberculosis, atypical pneumonia, subarachnoid hemorrhages, pancreatitis, liver disease—specific treatment measures must be introduced.

It is believed that the proper treatment of the acute phase may have important implications for the ensuing treatment of chronic alcoholism problems. Chafetz and his associates and others have shown that motivations for rehabilitative efforts may be enhanced by the proper initial therapeutic contact. Some workers contend that the ultimate battle may be won or lost at the time of the initial contact.

There are many treatments of alcoholism. That there are many forms of treatment does not mean that treatment is ineffective but merely indicates the wide diversity of problems that have to be dealt with in the proper treatment of alcoholism. A cardinal rule of therapy, however, is that the treatment program must be tailored to the needs and resources of the individual. Some workers contend that an agency or a care-taker may have a certain treatment program for alcoholics, and, when this one approach fails, the patient is considered a failure, hopeless, and untreatable. The question of the suitability of the prescribed treatment for the needs and resources of the patient is infrequently asked.

A second cardinal rule of treatment is to remember the chronicity inherent in alcohol problems. Too often the evaluation of alcoholism treatment is based on the criterion of abstinence—permanent and everlasting. In all chronic conditions, relapses are the rule rather than the exception. The horror felt at this understandable occurrence in alcoholism frustrates and infuriates therapists and creates in patients feelings of guilt, failure, and hopelessness. Abstinence is not the only criterion for successful treatment. Family adjustment, occupational effectiveness, social adequacy, and intrapersonal contentment along with post-treatment reduction of drinking behavior may be more effective than merely imposing total abstinence on the patient, with the result that he remains miserable and nonfunctioning. The careful evaluation of treatment effectiveness must take into account the development of alternative symptoms emerging during periods of abstinence.

Whatever the treatment mode, more and more evidence indicates that the most important ingredient is the relationship of the patient with another person or group. Whether it be clinic, group, physician, psychiatrist, social worker, drug, hospital, or Alcoholics Anonymous, there must be a positive tie between patient and treatment setting. The sooner the positive relationship takes place, the greater potential for a successful encounter.

A variety of substitution therapies—vitamins, hormones, carbohydrates, tranquilizers, sedatives, drugs—

have been employed in alcoholism, but none appear to achieve a success rate above that seen with placebos, and all suggest psychotherapy as an adjunct to treatment. Where there is a recognizable deficit, proper implementation must be made, and where the therapist feels, as a result of his evaluation of the patient, that a tangible proof of his interest in the patient is essential, the prescription of medication is important.

Physiological treatment. Two physiological forms of treatment are worthy of mention: aversion therapy and disulfiram (Antabuse) therapy.

Aversion therapy. This form of treatment uses emetine or apomorphine in an attempt to create a distaste for alcohol by developing a reflex association between alcohol and vomiting. The hypothesis holds that the repeated association between alcohol and illness induced under appropriate conditions can produce a conditional response to the drinking of alcohol. Alcohol must be drunk slightly before the onset of the drug induces nausea and vomiting to introduce true conditioning, according to Voegtlin. Conditioning sessions, using the patient's favorite type of beverage, last for 30 to 60 minutes and are given on alternate days for a total of four to six treatments. Reinforcement to aversion by one or two reconditioning experiences is given any time a patient develops a desire to drink. At the end of 6 months, reconditioning experiences are administered.

Most therapists employing aversion therapy agree that there is a higher improvement rate among patients who have had a sustained relationship with the therapist before or after treatment and who are in the higher socioeconomic groups. There is also an automatic selection factor in patients agreeing to undergo this treatment voluntarily.

Disulfiram therapy. This treatment was introduced in Denmark in 1948 and swept with high hope into most treatment centers in the world. Enthusiasm has diminished more recently, but it is still an important drug in alcoholism. Disulfiram (Antabuse) is important because patients who are taking the drug have an abnormal reaction to alcohol; five to ten minutes after the ingestion of alcohol, the individual on disulfiram develops a sensation of heat in the face along with intense lobster red flushing of face, sclerae, upper limbs and chest. Along with heightened coloration, the disulfiram reactor suffers constriction in the neck, irritation of the trachea, spasms of coughing, and labored breathing. The most intense symptoms develop 30 minutes after the ingestion of alcohol. People who have consumed large amounts of alcohol become nauseous, and the flushing is replaced by pallor due to a considerable hypotension. Vomiting begins, and a feeling of uneasiness and apprehension develops, which most people find the most disagreeable symptom. The initial dose of disulfiram is 0.5 gm. once daily for 1 to 3 weeks.

Disulfiram alters the metabolism of alcohol so that a toxic product, acetaldehyde, is formed. Because di-

sulfiram is slowly metabolized, patients may be maintained on daily doses of 0.25 to 0.5 gm. and must be without alcohol for 4 days after the last dose. Alcohol in any form must be avoided while taking the drug. Most workers feel it is an adjunct to treatment and offers the greatest potential for delaying impulsive drinking episodes. Usdin et al. feel that the psychological significance of disulfiram may be as important as the pharmacological, and its effectiveness may be related to the strength of the doctor-patient relationship.

Psychological treatment. The broad range of psychological therapies have been the most uniformly advocated in alcoholism, although there is no uniformity of opinion as to which type of psychological treatment is most effective. Group and individual psychotherapy, milieu therapy, family therapy, casework, and so forth have been used in alcoholism.

Psychotherapy. As intimated earlier, the initial contact with alcoholic persons is crucial to successful treatment. In the early encounter, therapists need to be active and supportive because patients with alcohol problems anticipate rejection (and interpret the passive role of a therapist as rejecting) and are depressed. The therapist must also deal with alcohol as a psychological defense: the pharmacological effect of alcohol allows the formation of an emotional and intellectual barrier between patient and therapist, and therapeutic efforts are blunted. The lack of this barrier should not be held out as a precondition for therapy, but its removal should be an early goal for effective progress.

The goals of therapy must be consistent with the resources of the patient and his environment and should be based on an evaluation of the individual. They will vary from one person to another.

Denial, a major mental mechanism in alcoholism, must be dealt with as soon and as often as it becomes recognizable. Therapists must guard against their own unconscious denial mechanisms fitting into those of the patient. Hostility toward drinking or alcoholic persons by the therapist will easily be noted by the patient and will be used as a counter-therapeutic force. Therapists must be prepared to have the therapeutic bond tested again and again and cannot hide behind the screen of the patient's lack of motivation when relapses become threatening to the therapist and not a part of his understanding of the therapeutic process.

Depressions can be countered by the active, supportive role of the therapist, as already noted, and at times by the addition of antidepressant drug medication where necessary.

Regardless of the therapeutic modality employed, sophisticated therapists view the problem not in terms of an isolated individual but in terms of the dynamics of an individual who is part of a social system. This often includes treating members of a family or a marriage partner, recognizing forces in the environment that operate in a negative therapeutic manner. Ther-

apists dealing with alcohol problems cannot use rigid approaches but must be daring and inventive with each patient and circumstance.

Alcoholics Anonymous. This loosely organized voluntary fellowship of alcoholic persons is a well known organization of self-help available to alcoholic patients. Its goal is sobriety, and its greatest impact has been in pointing out to noninterested professionals that alcoholic persons can be helped. Alcoholics Anonymous waged the fight and furnished the interest when others hid behind moralism and pessimism. It imparts comradeship, since all members suffer the same disturbance; it encourages introspection and confession of a superficial nature; it gratifies dependency needs via group identification or by caring for new intoxicated members; and switching from alcohol to Alcoholics Anonymous offers a less destructive social outlet for addictive needs. One could say much for or in opposition to Alcoholics Anonymous, but some feel strongly that its role has been and is important.

Suggested Cross References

See Area D, on neurology, for a further discussion of the neurological complications of alcoholism. In Area F, on the psychiatric syndromes, see Section 19.2, for a discussion of brain syndromes due to disturbances of nutrition associated with alcoholism. Sections 3.3, 4.2, and 4.1 deal, respectively, with the fundamental concepts of learning theory and the sociological and cultural determinants of behavior, topics that are germane to the subject of alcoholism. For a discussion of alcoholism and addiction in children, see Section 41.7.

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Chapter 28

Personality Disorders. IV: Gross Stress Reaction

28.1 GROSS STRESS REACTION. I

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Gross stress is any unusual influence or force perceived as threatening a vital goal or need of an individual or group. In its severest form, it brings about an insoluble conflict of vital goals or needs. Since an individual's group identity is an important influence on his adaptive capacity, group interaction and identity play important roles in both individual and group reactions to stress.

Stress reactions are attempts to defend or reconstitute the personality or group from disorganization. The disorganization that results from unsuccessful reactions can precipitate or extend preexisting neurotic and psychotic maladaptation. Stress reactions can break down preexisting healthy adjustments and patterns of behavior, or they may enable an individual to advance to a healthier level of adaptation. Successful or unsuccessful reactions to stress are dependent on personality development and social structure. For example, serious physical illness or community disaster is associated with the widest variation of reaction patterns. One cannot predict with certainty a specific reaction of any individual or group unless a great deal is known about the predisposing personalities and the immediate social organization. Individuals and groups are known to sustain severe stress—such as isolation, death of loved ones, and serious property loss—without breakdown of adaptive capacities, even when it is impossible to repair or replace the damage or loss. Similarly, there are frequent examples of total disintegration of adaptive capacities in the face of relatively minor stresses. These failures most often occur when the task is essential to a vital goal or need of the individual or group and when the successful performance

of the task would put the individual or group in conflict with other vital goals or needs. The most frequently cited example of such breakdown is the disorganization of a soldier in the face of the conflicting needs to avoid danger to self and to be honorably accepted by members of his peer group.

Incidence

There can be no epidemiology of psychological stresses, but rough correlations can be found between stress reactions and subcultures and between social structures and prevalences of certain types of psychological disability. For example, amok or running amok—which has been described in Malaya, the Philippines, parts of Africa, and the old Viking civilization—and latak—also described in Malaya, the Philippines, parts of Africa, and South America—seem to be two functional psychiatric syndromes rarely seen in Europe or the United States that are known to be precipitated by circumstances of acute stress. Catatonic schizophrenic patients in remission very often, and sometimes reliably, develop catatonic schizophrenic symptoms in circumstances of acute stress. The reaction to stress also depends on the age and the physiological integrity of the individual or of key individuals in groups. Inadequate nutrition, infection, exposure, incapacitating injury, and poor physical preparation are well known as predisposing to untoward adjustments to stress.

Clinical Description

Both favorable and unfavorable reactions to stress appear to take place in somewhat comparable but overlapping phases. In each phase, there is interaction between the stress and the adaptive capacities of the group or individual. Four overlapping phases have been reported in stress reactions: (1) the anticipatory or threat phase, (2) the impact phase, (3) the recoil phase, and (4) the post-traumatic phase. The second and third can extend from minutes to many hours. The first and the last may persist for the duration of life.

Anticipatory or threat phase. Most people live without a sense of imminent danger. They assume an illusion of invulnerability in which it is almost always felt that whatever is going to happen that may be bad is not going to happen to *them*. At times, the illusion has the useful function of protecting the individual from limiting his life or from living in a constant state of terror in relation to the real dangers that life holds.

Excessive awareness of a threatening danger may turn the anticipatory phase itself into a prolonged impact phase. This can contribute to progressive disorganization and maladaptation in the face of ever present situations that are potentially stressful. Maladaptations that may result are phobic, self-punishing or expiatory reactions. The excessive awareness is caused by displacement of anxiety from guilt associated with other problems to the anticipated danger. The sufferer seems to wallow in and sustain prolonged worry, with attendant maladaptive behavior.

Many individuals use only the minimal degrees of denial necessary to prevent panic and allow some preoccupation with the future and the threatening danger or stress. A certain amount of "worry-work" is then possible; the individual or group attempts to assess the threat or danger and makes an explicit inventory of all efforts, strengths, alliances, and supports it can use to meet the threat or danger. This results in such adaptive activity as training and drills to meet the anticipated stress. The training may be real or in fantasy. The degree to which the individual allows the reality of the threat to enter conscious awareness determines the reality investment in the training. Historical accounts of disasters at sea often make reference to the different individual attention paid to routine life boat drills required on all ships. At the time of a disaster, some individuals are unable to remember where their life jackets are; others find their jackets with ease and quietly go to their boat station. The previous training of the crew in such drills and the degree of discipline instilled can make the difference between saving the majority of people involved and tragic mass loss of life. A well trained crew responds automatically to commands. This brings about immediate communication and structuring in the midst of severe stress. The resort to an automatic response which every soldier is trained when his rifle jams—pulling back and releasing the bolt of his rifle—is done so quickly that it is observed to take place reliably during a heavy fire fight that otherwise might have become a disaster if more than a few rifles had jammed.

Admission of both mother and patient to the hospital a day or so in advance of tonsillectomy, the open and anxiety-free discussion of the anesthetic induction and the immediate postoperative pain, and the practiced breathing through the mask with the anesthesiologist before induction are all procedures that promote necessary worry-work prior to the facing of the trauma.

"If I do get picked to go overseas, I wonder how I'll behave," and "If *my* child were to get cancer like hers did, how would I control myself?" are familiar examples of individual worry-work with which the individual prepares in fantasy. Excessive denial or unawareness of danger deprives the individual or group of moderate worry-work and can result in overwhelming shock during the impact phase, followed by permanent psychological incapacity. Even when there are warnings of national disasters, many citizens do not prepare themselves for the disaster; they maintain a posture of denial and an illusion of invulnerability. People questioned following large disasters such as tornadoes, floods, or earthquakes have responded by saying, "I thought it was going to hit the other side of town" or "I didn't know that this area was flooded." During the bombings of London in World War II, there was no mass exodus from the city, and it was found that only a small percentage of the population were fearful and anticipated the dangers as threatening to themselves. During World War II, when air raid drills were held regularly in the New York City school system, most children took this as a matter of course and did not become upset or unduly concerned with the possibility of danger. This was true also when there were air raid practices for the city as a whole.

A small percentage of the population becomes frightened and phobic about the dangers presented and sometimes utilize magical constructs and the mechanism of "undoing." An example of this was seen during the extensive bombings of England in World War II. In some communities that had been under intensive nightly bombing, it was considered taboo to talk about the fact that the siren had not sounded yet that night or to make comments that would indicate an awareness of the lack of an air raid at that time. Magical undoing is common in stressful situations in society and not restricted to times of mass threats. Major league baseball players during a pennant drive frequently practice superstitious rituals to the amusement of the onlooker. The kind of extreme denial and illusion of invulnerability frequently seen in surgical patients is one of the major factors in the development of severe post-traumatic neurotic reactions.

Total denial of threat or disaster sometimes extends through the period of impact, even to the extent of allowing an individual to deny his own need for medical care. Wolfenstein reported the reaction of a bus driver whose bus was overturned by wind during a tornado. He felt impelled to take care of his injured passengers, despite the fact that he himself had a large portion of his thumb almost severed and hanging by a thread of flesh. The bus driver reported that his only concern was that the piece of his thumb got in the way as he tried to help his passengers and get them to the hospital. He had tried, unsuccessfully, to bite off the hanging portion of his

thumb "because it was in the way." It was not until after he had gotten all his injured passengers into the hospital and arranged for their care that he admitted his own injury, fainted, and had to be carried to the treatment area to have his injury dealt with realistically.

The anticipatory phase in which there is tolerable but sufficient worry-work is an essential preliminary to successful adjustment to psychological stress. The focus of attention is on the future.

Impact phase. During this phase, variable degrees of personality or group disintegration may occur, even in the previously well adjusted individual or group. The focus of attention is on the immediate present, and the phase lasts for the duration of the stress. Physiological reactions to immediate trauma include vasomotor response, increased secretion of epinephrine and norepinephrine, dilated pupils, increased muscular tension, gluconeogenesis, and anti-diuretic hormone and adrenocortical steroid hormone release. Neurophysiological changes may include an initial increase in alertness and a broadened attention and memory span. If the stress is overwhelming in intensity, there follows a state of decreased alertness, numbness, dulling of sensorium, narrowed attention span, obliteration of memory function, disorganization of thought content, and suspension of affective awareness. Behavior rapidly becomes automatic and in many regards tends to be conditioned by contemplated or practiced reactions to the stress that took place during the anticipatory period. There can also be a repetition of learned behavior that an individual has used in other anticipatory or impact phases.

Tyhurst has noted that 12 to 25 per cent of people in this phase are "cool and collected." One of the major devices used by this group is keeping busy with anticipated or semiautomatic behavior and helping in some way to alleviate the distress of others. It is well known that the reaction to stress can be contained and directed if there is effective leadership that organizes the group into some kind of purposeful activity and thus permits their organizational or adaptive capacities to reduce the anxiety. In situations where it is not possible to indulge in purposeful activity and where there is no leadership, panic sometimes ensues. An example of this is reported to have occurred during the Japanese bombings of Chungking, China, when there were adequate and excellent caves to shelter the entire population. The people in the caves sometimes panicked and rioted, resulting in many more injuries than resulted from the bombings themselves.

Tyhurst stated that 75 per cent of most populations react at least initially by being stunned and bewildered. Both the cool and collected and the stunned and bewildered groups gradually, if not immediately, seem to immerse themselves in activity, such as walking,

reporting, and contacting others, particularly relatives and friends.

During the impact phase, an unknown percentage of individuals lose consciousness either through syncope attacks or else by undergoing complete dissociative amnesia for events that occur during the period of trauma and part of the period of recoil. These individuals are often described as losing consciousness, even though they may have actually had a dissociative or fugue state.

Ten to 25 per cent of the population show inappropriate responses, severe confusion, or total loss of control of motor behavior. The result of these responses can range from extremely destructive or haphazard aggression to grossly inappropriate, automatic, or stereotypic behavior and catalepsy. Some individuals show severe anxiety. During the traumatic and recoil periods, the recall of behavior by this 10 to 25 per cent is variable. It seems likely that the impaired recall serves to enable the individual to relinquish responsibility for unacceptable behavior or experiences, such as trampling and assaulting.

Recoil phase. During the recoil phase, emotional expression, self-awareness, immediate memory processes, and behavioral controls begin to return but are not complete. There may still be a limited perspective and continued compulsive seeking for dependency attachments. These are manifestations of beginning reintegration of adaptive function impaired during the impact phase. These restitutions and personality reorganizations and the supportive intervention by others are of critical importance to subsequent psychological events.

There are numerous reports of individuals whose usual reaction patterns have been grossly shattered during the impact and recoil phases. Unusual adaptive responses that call on resources the individual was unaware of possessing may result in a lasting increase in self-esteem and an increased capacity for adaptive behavior in the face of life stress. The recall of acts at this time, if conforming to ideals shared by one's peer group, seem to promote some personal and group reintegration on a level that may be more secure and confident than that which existed prior to the stress. One can refer to the obvious pride and confidence shown by a child who has faced a surgical procedure "like a little man" or the obvious generation of high morale and *esprit* of a well led combat team after its success in combat.

Certain educational programs—notably, the Outward Bound Movement—deliberately confront teenagers with psychological stress in controlled situations after an appropriate anticipatory preparation. Group support and expert leadership combine to bring about an increased sense of self-confidence and group interdependence, which results in a higher level of individual adaptive capacity.

Conversely, an awareness of maladaptive behavior in difficult circumstances during the period of

recoil can result in a damaged self-image, a shattering of individual self-confidence or of group morale. This can cause permanent impairment of all subsequent performance, even in the face of minor stress. Military units have had to be broken up and the men assigned to other units after a defeat that was followed by maladaptive behavior.

Post-traumatic phase. This begins when the sense of self has been maximally reconstituted. Orientation, motor function, and affective control are re-established. At this time a more or less fixed, although specially modified, recall of the stress at the time of impact is brought to consciousness. The full awareness of the trauma is to some extent socialized by group or individual support received (or missed) during the recoil phase. Successful stress reactions during this phase involve personality or group assimilation and sharing of the emotionally charged experiences with others, such as having several good cries. Recovery seems to be spontaneous, with the intensity of emotional experience gradually waning. Frequently, very intense group loyalties and an added sense of group identity and individual self-confidence begin at this time.

Unsuccessful post-traumatic reactions seem to be characterized by permanently altered and often unfavorable concepts of the self, the group, and the outer world. Consequences of these altered concepts are chronic anxiety, depressive and fatigue states, recurrent catastrophic dreams, guilt, anger, and aggression.

Many individuals who have survived an overwhelming major disaster share in common a severe guilt for surviving and in different ways express the unconscious thought, "Others I saw dying were doing so in order for me to live." Such guilt may be displaced from pre-existing psychological problems and may be dissipated in phobic elaboration, defensive ceremonials, tics, and rigid obsessional constriction of interpersonal relationships. Sometimes, as in the Hiroshima atomic bomb disaster, there is an experienced death symbolism of individuals who regard themselves as living dead: "I almost died; I should have died; I'm dead." Such repetitious experience has been interpreted as an unconscious obeisance to and propitiation of the dead in order to be allowed to remain alive. A similar clinical picture has been described in survivors of Nazi concentration camps.

Anger and aggression are often observed in severe post-traumatic reactions, and these emotions frequently elaborate into chronic depression, chronic paranoid states, or a proclivity to explosive social aggression. Sometimes recurrent syncope, dissociation, fugue states, or amnesia occur in company with explosively aggressive behavior. The last three may be conjectured as possible waking states that are analogous to the recurrent catastrophic dream states in which trauma is painfully reexperienced.

Prevention

The best prevention of an adverse stress reaction is to ensure an adequately supported anticipatory phase or to lessen the intensity of the sudden onset of the impact phase. For example, the thorough psychological and physical preparation for an anticipated hurricane with adequate warning of the approaching storm reduces the incidence of adverse stress reactions.

An individual who is about to undergo a major surgical procedure should be allowed to establish a secure relation with the anesthetist and surgeon in the anticipatory stage. Not only should he be well informed of the trauma and care procedures he is about to receive, but he should be allowed to express and share with his doctors and relatives his anxieties and special emotions that are evoked by the anticipated threat. Most postoperative psychoses are observed when there is little or no understanding relationship with the doctor and poor relationships with members of the immediate family.

The trauma or stress itself can often be lessened or eliminated by attentive clinical care, which often involves the use of respectable amounts of morphine, barbiturates, or ataractic drugs. Patients are sometimes psychologically invalidated by finding themselves isolated and abandoned during the impact and recoil phases of a crisis due to illness.

Physicians who are reluctant to share with their patients awareness of a terminal or incurable illness often rationalize their attitude with: "In my experience, to tell a patient he has cancer deprives him of hope and inevitably leads to a severe depression and withdrawal." Actually, the doctors are afraid to relinquish the role of omnipotent healer. They frequently resort to the stratagem of a pseudodiagnosis, with which both patient and doctor can maintain an illusion of curability; for example, the patient with lymphoma is told he is being treated for an infection or anemia. Occasionally, when forced by patient or circumstances to reveal the true illness, danger, or stress, these physicians become so anxious that they react in inappropriate ways, one of the worst being abandonment of the patient. The depressions the doctors fear are traumatic, indeed, but they are the result of preventable gross stress reactions, not the result of impending loss or death.

Treatment

The aim of treatment of untoward stress reactions is identical to that of the stress reaction itself: to protect or reconstitute the personality or group from disorganization. The method of treatment is to introduce effective leadership and control as early as possible in the recoil or post-traumatic phase so as to allow the personality or the group to complete an assimilation of the affective qualities of the impact and recoil experiences as soon as possible. Leadership

has qualities and intensity of intervention that are different for each of these two phases.

In the recoil phase. Since this is a time of group disorganization or self-disorganization, *directive* leadership is indicated. Generally this entails presentation by the leader of himself as a model of alertness, self-discipline, and reduced anxiety. The disaster worker, combat leader, police officer, or doctor who is able to do this has already achieved a position from which his directions are acceptable. His technique of control of individuals or groups is to give simple matter of fact directions primarily to establish means of reliable communication between himself and the victims; to identify the adequately functioning parts of the personality or of the group for support in carrying out the direction and control; to assess the possibilities of still present danger; and to direct the more automatically controlled functions or functionaries to assist in evacuating survivors, providing first aid, making identifications, etc. The use of appropriate medication to help overcome acute panic and excruciating pain may abruptly terminate acute panic reactions and enable personality or group reintegration to begin at once.

In the post-traumatic phase. During this phase, adverse reactions are already indications of incomplete personality or group reintegration, and the personality or the group has already become maximally reconstituted; therefore, therapeutic leadership tends to be evocative, nondirective, and supportive. The aim is to enable the individual or the group to re-experience or abreact as soon as possible the affective experiences of the impact and recoil phase and to promote reliving and assimilation of the experiences. Again, the leader has to establish himself as a model of internal discipline, receptivity, and low anxiety. He encourages verbalization of the experience in a supportive environment, at the same time attempting to evoke from the victims whatever strengths and aspects of behavior tend to reconstitute the former self-esteem of the individual or group. For example, the soldier is allowed to abreact his combat experience to an empathetic and supportive doctor and is quickly returned to the scene of combat to enable him to act and behave in such a way as to regain his recently shattered self-esteem. At the same time, an individual who has been able to abreact and assimilate the affective experiences of the trauma carries, with the reassimilation, the experience of group acceptance and support.

As a general rule, the longer the time lapse between the impact phase and the time of treatment, the poorer the prognosis. In chronic reactions, one notices that the victim continues to struggle to recover through reliving the crisis. Esteem-building participation in a comparable crisis may be the only method to enable reconstitution of the original self-image, assuming that the setting of the crisis is adequately

anticipated and sufficiently supported. Contrived psychological stress in carefully controlled settings, such as with the use of certain psychotropic drugs, may be beneficial.

Suggested Cross References

Specific reactions to the stress of combat are discussed by Brill in the next section. Some of the unusual culturally determined reactions to stress, such as amok and latah, are further described by Lehmann in Section 32.1 on unusual psychiatric disorders and atypical psychoses in this area. Adjustment reactions to stress in childhood and adolescence are discussed in Sections 40.1 to 40.3, and the adjustment reactions of late life are discussed in Goldfarb's section on geriatric psychiatry (Section 47.1).

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28.2 GROSS STRESS REACTION. II: TRAUMATIC WAR NEUROSIS

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Since psychic equilibrium involves a balance between an individual's defenses and adjustment mechanisms and the stress to which he is exposed, it follows that any unusual stress or any gross increase in stress that disturbs a person's equilibrium is likely to result in some emotional, behavioral, or psychological abnormality, even in the individual who shows a normal adaptation during ordinary circumstances. This reaction may be transient or persistent. It may be any one of the known types of psychiatric disorders.

The term "*war neurosis*" is a catch-all phrase that is and was used for a wide variety of abnormal reac-

tions that occur in military personnel in wartime. In some instances the reaction is due to severe overwhelming stress, but in other instances the reaction is merely the persistent or continued manifestation of an emotional disorder that existed prior to the individual's entry into the service. Neither the American Psychiatric Association standard nomenclature nor the International Classification of Diseases includes the term "*war neurosis*." Such reactions are now classified under the term "gross stress reaction" when they are transient and clearly the result of an unusual, severe, or overwhelming military stress. When the reaction is unrelated to some severe objective stress, it is now properly classified under the appropriate type of psychiatric, psychosomatic, psychophysiological, or other type of reaction.

History

In World War I the term "shell shock" was applied to a wide variety of psychiatric disorders that developed in men in combat. Some were characterized primarily by gross conversion symptoms like paralysis, pseudoconfusion, or blindness; others were characterized by hypochondriacal, phobic, or anxiety symptoms, freezing, catatonic-like stupor, running amuck, irritability, overwhelming depression, startle reaction to noises, somatic symptoms, gross tremors, restlessness, insomnia, or nightmares or repetitive battle dreams. It was first believed that these various disorders resulted from concussive or other effects of the explosion of shells on the brain. It was not long, however, before the psychogenic nature of the condition was recognized and the term was dropped.

In World War II psychiatric disorders for which no diagnostic term existed made their appearance in large numbers of men in combat. In some instances, as in World War I, the outstanding symptom was confusion; in others, aimless flight, severe depression, irritability, paralysis, severe headache or other somatic symptoms, sleeplessness, anorexia, extreme hypersensitivity to noise, tremulousness, severe anxiety, panic, and startle reactions. In many instances, there was just the single complaint, "I just can't take it any more," or "I can't stand those shells," or "I just can't control myself any longer."

Grinker and Spiegel described and classified the varieties of regressive behavior seen in men in combat in their classic publication *Men Under Stress*. W. C. Menninger quoted a wartime broadcast Eric Sevareid made from London, which was later published in his book, *Not So Wild a Dream*. In it he vividly described some of these combat reactions.

The one [on a desolate airfield in the Gulf of Aden] who sat for three hours, unmindful of the crushing heat, his eyes fixed on a stone. He had been there eighteen months and he didn't talk to his comrades any more.... The soldier with a child's face, who stumbled from the exploding field near Anzio with not a mark on his body, but with his eyes too big, his hands senselessly twisting a towel, and his tongue darting in and

out between his teeth.... The young corporal with the radio post deep in the Burma Jungle... who rose suddenly from his bunk in the night and walked straight into the woods, walking westward.

There was great reluctance to apply diagnoses of psychoneurotic reactions or psychotic reactions (which seemed more appropriate in some), because their relationship to overwhelming stress rather than to early childhood experiences was so obvious. The man who broke down crying and could no longer function after all the men in his squad had been killed or wounded did not somehow fit into the traditional picture of the neurotic. In fact, there was a high incidence in normal men who were exposed to combat of neurotic and psychosomatic symptoms and reactions resembling those seen in neuropsychiatric casualties: nightmares, trembling, fainting spells, extreme nervousness, and upset stomachs. It seems clear that some were disabled by these symptoms and others were not.

Many men who broke down in combat improved dramatically after a few days' rest, sedation, hot food, recreation, relaxation, and sympathetic encouragement or a chance to blow off steam. Diagnoses of "combat fatigue" or "combat exhaustion" were invented for these conditions. In the Air Corps, the term "operational fatigue" was coined. It was only when these reactions did not clear up and persisted in the same or modified form that the traditional diagnoses of anxiety, depressive, conversion, psychophysiological, and psychotic reactions were entertained.

Etiology

The incidence of gross stress reactions was observed to bear a rather constant ratio to the number of men who were killed and wounded. It indicated that there was a clear cut relationship between the severity of stress—in this case real danger—and the chance of emotional breakdown. It was this that led to the conviction that every person had his breaking point, that there were limits to the amount of stress each person could tolerate. Since many of the men who broke down in combat had no discernible predisposition and had, as far as anyone could tell, been normal, well adjusted individuals prior to entering the service, it became clear that it was not just weaklings who developed emotional disorders. Some of the more understanding attitudes toward the mentally and emotionally ill that developed in the public after the war were probably related to this understanding.

Combat stresses. Combat was by far the most common stress that precipitated psychoneurotic breakdowns in World War II. The real threat to life was often associated with other severe stresses, such as lack of sleep, physical exhaustion, hunger, cold, loss of buddies, large number of casualties in one's outfit, wounds, injuries, and illness. It was difficult to tease out the exact contribution that each made. The

final stress that seemed to precipitate the breakdown was often the last of a long series of stresses that gradually wore the soldiers down to the breaking point.

How long a man was exposed to stress was crucial. If there was some end point, some relief that a man could look forward to and rely on, it made the stress more tolerable. The rotation system used for Air Force and Navy personnel, which provided for return to the United States after a specified number of combat missions or time spent overseas, undoubtedly prevented many breakdowns.

In some instances the reaction to stress was a delayed one and did not occur until after relief from combat or return to the United States from overseas. There were a considerable number of men who broke down when they were confronted with the prospect of discharge from the service and return to civilian life.

Noncombat stresses. Stresses other than combat also contributed to the high incidence of emotional breakdown in the service. Some men who were called into service had never before spent a night away from home. Others experienced economic hardship and sexual problems in the service. For others, being away from home and not being able to deal with domestic difficulties was stressful. A good deal of anxiety was produced in many merely on entering the service with all its unknowns, privations, and dangers. Homesickness, regimentation, deprivations, lack of physical comfort, change in diet, excessive physical demands, lack of sexual outlets, illness, extremes of climate, and fear of future combat were more stressful for some than others.

Some were given too much responsibility, others felt useless or frustrated because their talents were not fully exploited by the military. Some were unable to adapt to assignments for which they were not adequately trained; some were exposed to the demoralizing effect of poor leadership, lack of earned promotion or other recognition, inactivity, frequent transfers, isolation, and uncertainty about the future.

These noncombat stresses were described by W. C. Menninger in his monumental review of psychiatry in World War II:

Uncertainty, as to where and when and what, filled the mind of the average soldier after his unit received orders to move. It went with him through the staging area, onto the ship, during landing in some foreign country, and while awaiting the assignment to action. Rumors in the army were always rife, but the impending departure from the U. S. speeded and multiplied these a hundredfold. One can imagine the intense emotional feelings of the soldier at the time he was leaving his country, going to a place about which he could guess only perhaps from the nature of the clothing issued to him, facing the prospect of thousands of miles separating him from home for a long time, knowing that he would cross water, every mile of which might be infested with potential threats to life. All of these were stresses of no small moment. Stress was particularly conspicuous on a ship which was assumed to be heading for

an amphibious landing. No one knew whether the 'show' would start that day or the next or the next week. Of necessity, the men were cooped up in a small area with little or nothing to do but sit and think and wonder (although an attempt was made, where possible, to continue training aboard ship). Uncertainty became nigh unbearable through such waiting periods. Those necessary transitions sometimes lasted days and sometimes dragged into months during which no one seemed to know the why of the waiting, whether or not it was necessary, or what was to come after the wait.

Along with the uncertainty regarding the landing or possibility of combat was the uncertainty about other lurking dangers, particularly for soldiers, in the Pacific. A specific fear was of the unhealthy climate which carried with it strange tropical diseases. Every soldier became somewhat educated about malaria. He had to take atabrine as a preventive or suppressive measure. Even so, rumors developed that made this requirement more difficult to carry out. There was a widespread, groundless belief that the drug made one sexually impotent. Another rumor was that the drug made one crazy. Soldiers would hear of other new or strange diseases—hepatitis, filariasis, kala-azar, scrub typhus. Each would produce mild concern in the susceptible personality.

The constricted nature of the living area often imposed a further stress. There were literally hundreds of installations in which the soldier was limited to a small section even though on a large land area. This was also a problem when men were stationed at little outposts or on tiny islands. Leaves could not be granted for there was nowhere to go; there were minimal facilities for recreation; often there were no other white people. The effect of continued monotony, often coupled with terrific extremes of climate, uncertainty, separation from familiar surroundings and activities, and too much time for thinking, was always disastrous in its effect on morale.

In many studies, successful soldiers showed a much lower incidence of childhood neurotic traits, of unsatisfactory home situations, and of previous personality or mental disorder than did soldiers who developed psychiatric disabilities. In contrast, other researchers were impressed with the high incidence of family psychopathology, divorce, and unhappy childhoods in soldiers who, although exposed to severe stress, did not break down. It was common experience that many soldiers with apparently healthy backgrounds often became noneffective on short exposure to the stress of combat, and highly neurotic individuals often made successful soldiers.

Psychic factors. The psychic forces operating in the production of gross stress reactions varied from individual to individual. There were four significant forces in the development of the gross stress reactions of combat: mobilized aggression, depletion or loss of ego strength, loss of the ego supports in the form of leadership and group identification, and specific precipitating trauma. The ego's capacity to control the forces within the personality was decreased in varying degrees by the cumulative effect of unrelieved emotional stresses.

A state of helplessness, so often induced by the loss of a leader or separation from a buddy or the unit, tended to contribute to the development of neurotic reactions more often than had been realized at the beginning of World War II. Conflict between duty and self-preservation, complicated by the touching off of

unconscious earlier fears, played its role in the production of breakdowns.

In the face of severe stress, important factors tend to strengthen an individual's resistance to the stress: good motivation and identification with his unit or associates, good esprit de corps, fair discipline, fair rewards and punishments, the expectation of relief from the stress after some definitive time, adequate training, proper assignment, confidence in weapons or instruments, and the knowledge that creature comforts will be provided when possible. It was learned that the relatively simple technique of teaching soldiers that fear in the face of danger was normal and that fear could express itself by various bodily symptoms proved extremely helpful and reassuring to many men who had not known these things before and had assumed that they were ill if they felt afraid or had an experience of incontinence or trembling.

Predisposing factors. A study (Brill and Beebe) of the characteristics of men who broke down in service in World War II showed that they were a little older, a little more often married, and with less education than a comparable group of soldiers who did not break down. They did not differ, however, as to intelligence, civilian occupation, religion, or race. Those with family histories relatively free of psychiatric illness of any kind had a breakdown rate that was less than half of that seen in men with family histories of psychiatric disorders.

As might be expected, the preservice personality of the individual was the one variable that, in samples matched for military experience, played the greatest role in determining the chance of breakdown. The chance of breakdown for men with preexisting overt neuroses was seven or eight times that for the previously well integrated men. Those who were better adjusted in civilian life did better in general than those who had been maladjusted, whether it was in their families, school, work, or community.

It would be a mistake, however, to assume that all those who had some emotional difficulty prior to entering the service would break down. It was estimated by Brill and Beebe that, of those who served in the Army who would not have met the psychiatric criteria for entering the service had their conditions been known at induction, only one third broke down while in the service. It was not possible prospectively or retrospectively to determine who would comprise the one third that would break down. It was not possible to anticipate the stress to which each of these men would be exposed or to measure ahead of time the supporting factors they would experience.

There was a tendency to underestimate the adaptive capacities of neurotic soldiers and insufficient recognition of the pertinence of the specific nature of the stress. It was proved repeatedly that predisposed individuals were in many instances able to endure the most strenuous combat experience without decompensating.

Furthermore, psychiatric evaluation of an individual does not necessarily measure the ability of the individual to function in a group. The importance and strength of powerful compensating mechanisms was not appreciated when "off-the-cuff" opinions of suitability for admission to the service or for particular assignments were made by psychiatrists or other medical examiners on the basis of fragmentary data.

Treatment

A lesson that had been learned in World War I had to be relearned in World War II. Hospitalization of men with gross stress reactions more often resulted in chronic invalidism or disability than in cure. Treating such patients in forward areas with reassurance and supportive treatment that was geared to early return to duty was much more effective.

Grinker used narcosynthesis in the North African theatre. Amobarbital (sodium Amytal) or pentobarbital (Pentothal sodium) was administered continuously until the patient's consciousness and awareness became clouded, but he was still able to maintain contact with the physician. Resistance to recall of the traumatic experience was thus removed, and the patient was permitted and encouraged to express his feelings directly rather than by the indirect neurotic symptoms. Hypnosis was also used in a similar fashion.

For most, the best treatment was prompt treatment administered as close to the individual's unit as possible, avoidance of a hospital atmosphere, and maintenance of an optimistic attitude that the soldier would be able to return to duty in a few days. Creature comforts were attended to as much as possible. Opportunity for bathing—generally a shower—rest with or without sedation, good food, reassurance, and an opportunity to talk about fears, guilts, and experiences were generally sufficient for most men to reintegrate sufficiently to return to duty.

Ordinarily in civilian life individuals are advised by their physicians to avoid those situations that would be likely to precipitate a recurrence of their illnesses. In the service, the role of the physician as a member of the fighting force is to preserve manpower and further the achievement of the group goal rather than the individual's welfare. Consequently, a man who has recovered from a gross stress reaction is returned to the very situation that initially caused his breakdown. This is the equivalent of sending a soldier who has recovered from a wound back to duty where he may not only be wounded again but be killed. This point of view was very difficult to achieve for some physicians who identified with their patients and tried to protect them from further harm.

Prognosis

With prompt treatment in accordance with the principles outlined above, a large majority of patients were returned to duty. Where a somewhat protected

situation was required, some other less stressful assignment was arranged. Those men whose symptoms persisted and were present to a disabling degree were hospitalized for further treatment—milieu therapy, group therapy, individual psychotherapy, subcoma insulin treatment, sedation, and occupational therapy—as indicated. A fraction of this group never recovered sufficiently to be returned to duty and received medical disability discharges. Convalescent hospitals were used extensively toward the end of World War II to assist men further in readjusting prior to being discharged. Dramatic symptomatic improvement was seen in many, but there were many questions about the ultimate prognosis of the approximately 850,000 neuropsychiatric admissions to service hospitals in World War II.

A follow-up study of a random sample of men who had been hospitalized or lost time from duty because of psychoneurotic reactions showed that 90 per cent still had some symptoms 5 or 6 years later. The vast majority, of course, had returned to civilian life and civilian pursuits. Irritability, anxiety, gastrointestinal complaints, restlessness, and headache were the symptoms most commonly reported. For the most part, these symptoms were alleged to have originated in service in association with the breakdown and only to a small degree in the preservice period.

Most men described their health at follow-up as somewhat poorer than at entry into the service but better than at separation; 14 per cent reported that they were unable to work full time because of continued illness, and some impairment of adjustment was present in approximately 50 per cent of the men; about 20 per cent exhibited evidence of moderate disability, and 8 per cent severe disability on examination. The general trend for the entire group was toward improvement, and 61 per cent had either no

illness or at most a mild neurotic disorder. This was in face of the fact that only 36 per cent had sought any treatment for their emotional disorders, and only 15 per cent from psychiatrists.

It is a sobering commentary that there was no evidence that treatment had played an important role in the general improvement that occurred between separation from the service and follow-up. About 40 per cent of the men thought that they still needed treatment, and a similar percentage were drawing Veterans Administration Compensation for partial disability. Compensation seemed to be playing just a little role in the perpetuation of illness, but this may be because the average payment was quite small.

What became clear was that the psychoneurotic disorders that existed before wartime stress or were outgrowths of gross stress reactions were not static. In general, these men tended to improve.

Suggested Cross References

A further discussion of the relationship of psychiatry to military institutions and personnel is discussed by Caldwell in Section 49.1. The treatment techniques of hypnosis and the Amytal interview (narcotherapy) that were mentioned in this section are covered in greater detail in Sections 34.4 and 35.4, respectively, in Area G, on psychiatric treatment.

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THE PSYCHIATRIC SYNDROMES

Chapter 29

Psychosomatic Medicine. I: Basic Concepts

29.1 HISTORY OF PSYCHOSOMATIC MEDICINE

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The history of psychosomatic medicine cannot be divorced from the history of medicine, for interest in the close interrelationship between mind and body which is the specific concern of psychosomatic medicine is as old as the interest in medicine itself, and advances in this field antedate the era of Hippocrates. Concomitantly, the development of psychosomatic medicine has a crucial relevance for the history of psychiatry. A detailed account of its evolution within this frame of reference is presented elsewhere in this volume. The major historical trends elaborated therein are summarized briefly here.

Paleopathologists have identified skulls of primitive men with trephine holes, which suggests that early attempts were made to treat disease by facilitating the physical departure of evil spirits from the body. Sigerist further reported, in this connection, that in primitive society "there was apparently no division into physical and mental disease." Rather, medicine adopted a holistic approach to disease in man. Moreover, as noted in Table I, this trend continued: the importance of the interrelationship of mind and body was recognized throughout the periods of Babylonian-Assyrian, Greek, and Roman civilizations and during the Dark Ages as well, although the nature of this interrelationship was distorted by cultural variables.

The Renaissance signaled great advances in mathematics, chemistry, and physics, which had important implications for the progress of medicine through their specific application to microscopy, biochemistry, bacteriology, and pathology. At the same time, however, largely as a reaction to the concept which had dominated the Dark Ages of the psyche as a mystical and irrational force, it was no longer considered the proper concern of medicine and was relegated to the province of religion and philosophy instead. In other words, in contrast to the tremendous growth and progress in medicine during this period, interest in psychiatry and

the role of psychic determinism in physical as well as mental disorders diminished.

Only after Freud had made the revolutionary discoveries which led to an increased awareness of the importance of emotions in producing mental and bodily disturbances was this trend reversed. In the past 30 years, Freud's early formulations have undergone considerable modification. Today the concept of psychosomatic medicine has been expanded to refer to the unique interaction of psychological and somatic factors in producing health as well as disease states.

Definition

The term "psychosomatic" was first used by Heinrich in 1818 when he discussed psychosomatic factors in insomnia and then was popularized by the German psychiatrists Jacobi and Nasse. Over the years, the term "psychosomatic" gained considerable popularity and has come to represent a point of view about the importance of psychic factors in medicine and also to encompass a large number and variety of psychogenic medical disorders such as conversion hysteria and diseases with psychophysiological manifestations like peptic ulcer.

In 1952, the American Psychiatric Association in its standard nomenclature recognized the ambiguity in the use of the word "psychosomatic" and coined the designation "psychophysiological autonomic and visceral disorder" to designate specific disorders of various organ systems. In the standard nomenclature these psychophysiological disorders are described as follows:

The symptoms are due to a chronic exaggerated state of the normal physiological expression of emotion. . . . Such long continued visceral states may eventually lead to structural changes.

This group includes the so-called 'organ neuroses.' It also includes some of the cases formerly classified under a wide variety of diagnostic terms such as 'anxiety state,' 'cardiac neurosis,' 'gastric neurosis,' and so forth. . . .

Today in psychosomatic medicine the role of emotional factors in producing or aggravating certain organic visceral diseases, such as peptic ulcer, is generally accepted. However, the exact mechanism of the psychosomatic interaction is a subject of controversy and is discussed elsewhere in this area.

Suggested Cross References

Also see Chapter 1, on the history of psychiatry.

TABLE I
History of Psychosomatic Medicine

Date	Historical Period	Psychosomatic Orientation
10,000 B.C.	Primitive society	Disease is caused by spiritual powers and must be fought by spiritual means: the evil spirit which enters and affects the total being must be liberated, e.g., through exorcism, trephination, etc.
2500–500 B.C.	Babylonian-Assyrian civilization	Medicine is dominated by religion, and suggestion is the major tool of treatment. Sigerist: "Mesopotamian medicine was psychosomatic in all its aspects."
400 B.C.	Greek civilization	Socrates: "As it is not proper to cure the eyes without the head, nor the head without the body, so neither is it proper to cure the body without the soul." Hippocrates: "In order to cure the human body it is necessary to have a knowledge of the whole of things."
100 B.C.–400 A.D.	Late Greek-early Roman civilization	Galen's humoral theory postulates that disease is caused by "disturbances" in the fluids of the body. Medicine adopts a holistic approach to disease.
500–1500 A.D.	Middle Ages (Dark Ages)	Mysticism and religion dominate medicine. "Sinning" is the cause of mental and somatic illness.
1500–1700 A.D.	The Renaissance (16th, 17th, and 18th centuries)	Renewed interest in the natural sciences and their application to medicine: advances in anatomy (Vesalius), autopsy (Morgagni), microscopy (Leeuwenhoek). Psychic influences on soma are rejected as unscientific; the study of the mind is relegated to religion and philosophy.
1800–1900 A.D.	19th century	Modern laboratory-based medicine of Pasteur and Virchow. Virchow: "Disease has its origin in disease of the cell." Psychosomatic approach discarded, since all disease must be associated with structural cell change. The disease is treated, not the patient.
1900–present	20th century	Freud's early psychoanalytic formulations emphasize the role of psychic determinism in somatic conversion reactions ("Dora" case). These early concepts are limited to major hysterical conversions; subsequently, Alexander differentiates conversion reactions from psychosomatic disorders.

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omy in Western philosophical thought. The purpose of this section is to elaborate on the philosophical aspects of the mind-body problem.

Interactionism

The major theories bearing on the problem fall into three large groups. First, there are the theories based on the principle of interactionism, which states that the mind influences the body and/or the body influences the mind.

The earliest of such theories were those of Hippocrates, the father of medical psychology, who maintained in his famous doctrine of humors that man's temperament was determined by the relative predominance of four liquids or humors—blood, phlegm, black bile, and yellow bile. He taught that the brain was the most potent organ in the body. Although he derived the psychical from the somatic, he also astutely

29.2 THE MIND-BODY PROBLEM

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The mind-body relationship is a riddle of ancient lineage indeed. Men pondered its complexities long before René Descartes firmly established this dichot-

recognized that the emotions in turn could have physical effects.

Centuries later Descartes, considered by many to have inaugurated the modern period in psychology, produced a dualistic interactionist theory, which has profoundly influenced modern thinking on the mind-body problem. Descartes found place in his formulations for both the soul and the body. He believed in a free, insubstantial, and unextended soul and a mechanically operated, material, and extended body. He wrote that the soul "is united to all parts of the body conjointly" and that they interact at the pineal gland. The soul perceives and wills; the body is like a machine. His ideas reflected his interest in physics and the new discoveries in physiology, but he was also strongly influenced by his theological allegiances.

Also included in the first group is the doctrine of epiphenomenalism, which contends that the mental processes are but a by-product of somatic activity and are of no causal significance. This attitude, associated with T. H. Huxley among others, became very popular in the second half of the 19th century because of the development of brain physiology. It reached an extreme form in the dictum of the physiologist Moleschott: "*Kein Gedanke ohne Phosphor!*" (No thought without phosphorus).

Idealism, Materialism, and Parallelism

The second cluster of theories includes the chief monistic philosophical views, idealism and materialism, and the dualistic concept of psychophysical parallelism.

The idealists or mentalists, like Berkeley, assumed that there are only mental events in the universe. Bishop Berkeley's subjective idealism held that there is no such thing as substance for qualities to adhere to, and so there are only qualities or ideas, which can only exist for a perceiving mind. Thus, to be is to be perceived. Pushed to its logical conclusions, this theory could only end in solipsism, the conclusion that the self is the only existent thing and all reality is subjective.

On the other hand, the materialists maintained that only matter exists, and, therefore, only the body exists and is real. This philosophical attitude led the 18th century French physician LaMettrie to conclude that thought was the result of the mechanical action of the brain and the rest of the nervous system. Another 18th century French physician, Cabanis, accepted this notion and called the brain the organ of thought, secreting thought as the liver secretes bile.

Stanley Cobb, who has played an important role in the development of psychosomatic medicine in the United States, wrote that "the only philosophically sound point of view for a physician is . . . a belief that mind is a function of the brain in action, as circulation is a function of the heart, or as contraction is a function of the muscle." Cobb, however, denies that this

view is materialism, possibly because of the ethical and political overtones involved.

The great mathematician Leibnitz, starting with a complex theory of monads as the elements of all being, concluded that all monads are synchronized like watches and that the body and the soul merely constitute a special case of the synchronization of monads in general. This notion is the model for theories of psychophysical parallelism, which hold that mental processes and bodily processes run a strictly parallel course without influence on each other.

Double Aspect Theories

Finally, there is the third group of theories, which profess to offer more sophisticated and more subtle types of solutions to the mind-body problem. These theories challenge either the notion of substance or of causality or of both.

For example, there are the double aspect theories associated chiefly with Bertrand Russell and Gilbert Ryle. Russell postulates that neural events are capable of being viewed in different ways. Mind is body seen from one point of view; body is mind seen from another. Physiology sees one aspect, psychology the other. Mental and bodily terms are but two different languages describing the same phenomena. Ryle attempts to distinguish between the something and the way or style in which it exists, an obvious double aspect approach. There is also an organism-response theory, which conceives of mental processes as a distinct kind of response made by an organism interacting with its environment.

Currently Held Theories

What are the main ideas currently held in the Western world? In daily unreflective life, most people are unthinkingly interactionist. Scientists and technicians generally seek to explain human behavior in terms of physical events—neurophysiological, biochemical, etc. Among clinicians, there are those who employ psychological terms like "self," "traits," etc., but who nonetheless cling to the possibility of ultimate explanations to be found elsewhere. In this group, however, there are some who would consider an ultimate explanation in purely physical terms repugnant. Finally, among those interested in scientific method in psychology, some consider the mind-body problem as philosophically senseless and scientifically wasteful of time and effort. Others feel that recent theories, such as those of Russell and Ryle, may be a better approach to psychological theory and practice.

A quotation from a recent text on studies in science can best sum up the prevailing intellectual atmosphere: "Tough-minded scientists tend to relegate the mind-body problem to the limbo of speculative metaphysics. Perhaps after trying a bit, but with questionable success, to square themselves with the puzzle, they usually take one or the other of two attitudes. Either

the puzzle is left to the philosophers to worry about, or else it is bluntly declared a pseudo problem not worth pondering by anybody... it is truly a cluster of intricate puzzles—some scientific, some epistemological, some syntactical, some semantical, and some pragmatic" (Feigl).

Suggested Cross References

See Kaplan's section on the history of psychosomatic medicine (Section 29.1) in this chapter. Also see Mora's chapter on the history of psychiatry (Chapter 1) in Area A.

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29.3 CURRENT CONCEPTS OF PSYCHOSOMATIC MEDICINE

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The importance of a theoretical model extends beyond its academic value, for clinical transactions and research design are influenced thereby. Consequently, it is noteworthy that in the field of psychosomatic medicine, no single theoretical model is considered entirely satisfactory at present. There are basic areas of agreement; at the same time, however, a number of crucial issues are still regarded as highly controversial.

An attempt will be made in this section to review current theoretical models in this field and to summarize some of the concepts upon which modern psychosomatic thought is based.

Basic Concepts

Physiological concomitants of emotion. In 1935, Franz Alexander proposed a theoretical model to explain the mechanism of psychophysiological disorders which underlies much of the current clinical work and research in this area.

Alexander's key contribution to psychosomatic medicine was the concept that psychosomatic symptoms result from the physiological concomitants of psychic

conflict and trauma. This core concept has been elaborated and clarified as follows. Alexander postulated, first, that emotional arousal gives rise to profound physiological reactions, and he conceived of these physiological concomitants of psychological stress as crucial intervening variables in the development of psychosomatic symptoms and disease. More specifically, under ordinary conditions, the somatic concomitants of acute grief, range, or anxiety will not lead to adverse physical consequences in the healthy individual. On the other hand, however, there are certain individuals who are organically vulnerable to the physiological concomitants of affect and may develop psychophysiological disorders as a consequence of emotional arousal. Organic vulnerability is a crucial but variable factor in the genesis of psychosomatic illness. Some patients are highly vulnerable to almost any sort of emotional arousal, while others have a lesser degree of vulnerability and will develop symptoms only when the affective reaction assumes a pathological form and is excessively severe or chronically unrelieved. In general, psychophysiological disorders are most likely to develop when there is a high degree of organic vulnerability together with a substantial emotional disorder.

Differentiation of psychophysiological and neurotic symptoms. In addition, Alexander differentiated between conversion reactions and psychophysiological disorders and thereby ended the confusion which had resulted from the inappropriate application of the same conceptual models to both types of disorders. Previously, both reactions had been thought of as essentially similar neurotic conditions; however, psychophysiological disorders are no longer equated with neurotic symptoms. Admittedly, clinical examination of the psychosomatic patient often reveals that the source of the underlying emotional state can be traced to the patient's neurotic conflicts and pathological object relationships. However, the actual psychosomatic symptom does not have symbolic significance; nor does it serve as a direct defense against anxiety, two qualities which are generally thought to characterize neurotic symptoms. Indeed, it is the *failure* of psychological defense mechanisms to protect the individual against excessive affective arousal that precipitates the onset of the psychosomatic disorder. These considerations are of more than theoretical interest; they have implications for the psychiatric treatment of psychosomatic disorders.

Concept of psychic-somatic unity. Implicit in earlier theoretical models was the belief that psychic and somatic phenomena represent discrete processes. Thus, the somatic concomitants of psychic processes in themselves were often regarded as pathological phenomena. In contrast, according to current opinion, psychic and physiological variables represent different aspects of the unitary phenomenon of affect. Accordingly, physiological responses are seen as intrinsic con-

comitants of emotional arousal. Furthermore, recent evidence suggests that these physiological and psychological variables are constantly engaged in reciprocal interaction. Thus the same psychological situation that evokes an emotional response also evokes a hormonal response as an intrinsic component of the total reaction. The increased hormonal level, through its action on the brain, may then produce modifications in the individual's behavior, which in turn further affects hormone secretion, and so on.

In further support of the hypothesis of psychosomatic unity, recent research findings indicate that the brain structures which control emotions and visceral functions are identical, or closely related. Fear, anger, sexuality, as well as the functioning of viscera and glands, are all regulated by limbic and hypothalamic structures that operate on cortical as well as subcortical levels of neural organization. The precise nature of the interrelationship between physiological and psychological factors in health and disease has not yet been fully clarified. However, the study of the neurophysiological correlates of psychic and somatic functions has become the focus of increasing interest and activity, and it may be speculated that data deriving from this field will ultimately facilitate the understanding, prediction, and control of psychosomatic phenomena.

Concept of multicausality. Implicit in the earlier medical model of disease was the view that ill health was the result of the action of a single pathogenic agent on a host which remained relatively constant. In contrast, the modern model of disease invokes the concept of multicausality. More specifically, medical illness, including psychosomatic illness, is believed to result from the complex interaction of a number of determinants which operate on organic, environmental, and psychological levels. Thus, many individuals who suffer from chronic anxiety will *not* develop psychosomatic disorders, for the physiological concomitants of emotional arousal are necessary (but not sufficient) determinants of psychophysiological disorders. In other words, while psychic factors play a significant role in the etiology of psychosomatic disorders, psychic factors are not the *only* causative determinant. They interact with somatic factors, such as constitution, nutritional status, and organ pathology, to produce the final disease state.

To illustrate, peptic ulcer is believed to result from the erosive effects upon the duodenal mucosa of excessive hydrochloric acid secretion, which is a physiological concomitant of chronic emotional arousal. However, apart from the fact that he is exposed to environmental stress, the ulcer patient, in addition, has a constitutionally vulnerable duodenal mucosa, an excessive parietal cell mass, and, according to some authors, a specifically vulnerable (oral) psychological organization.

Origin of organ susceptibility. As mentioned above, psychosomatic patients are considered to be

organically vulnerable to the physiological concomitants of emotional arousal. However, there is some difference of opinion as to the pathogenesis of this somatic susceptibility. Some authors attribute organ susceptibility to physical trauma; others feel that early adverse psychological life experiences predispose to vulnerability. At present, there is a growing tendency to consider the predisposition to disease in specific organs to be constitutionally determined. The fact that there is a high familial incidence of certain psychophysiological disorders, as well as the findings by several investigators of psychophysiological tendencies very early in life, would seem to support this viewpoint. For example, Mirsky discovered gastric hypersecretion in some neonates and inferred from these data that these infants were genetically susceptible to the development of certain personality traits and to a high risk of peptic ulceration as well.

Theoretical Models

In general, the basic concepts described above are accepted by the great majority of workers in the field. However, the interpretation of these concepts in terms of certain theoretical issues and their implications for clinical practice and research are subject to continuing debate.

One such highly controversial issue in psychosomatic medicine concerns the question of "symptom choice," that is, the reason why one patient develops a peptic ulcer, for example, and another rheumatoid arthritis. In fact, current theories of psychosomatic medicine may be classified according to their position on this issue, as reflected in one of three variations of the basic model illustrated in Figure 1.

(1) According to the "specificity" model, specific psychic events lead to specific affective states and hence to specific psychosomatic symptoms or diseases. (2) The "nonspecific" model encompasses those theories which state that any (i.e., nonspecific) stimulus capable of causing psychic distress may evoke a diffuse affective state (i.e., chronic anxiety), which may then result in a psychosomatic symptom or disease, the nature of which is not predictable from the psychic variable. (3) Finally, the theories subsumed under the third theoretical model of "individual response specificity" postulate that a wide range of stimuli may evoke a pattern of affective arousal which is highly specific for each individual. Concomitantly, the type of psychosomatic symptom the individual develops will depend primarily on his specific response pattern, rather than on the nature of the stimulus. The differences in these three theoretical models are outlined in Figure 1.

A review of the voluminous clinical and experimental data which have been accumulated to support or refute each of these theoretical positions lies beyond the scope of this section. However, the concepts on which each model is based, as well as the assumptions held by the leading proponents of each regarding vari-

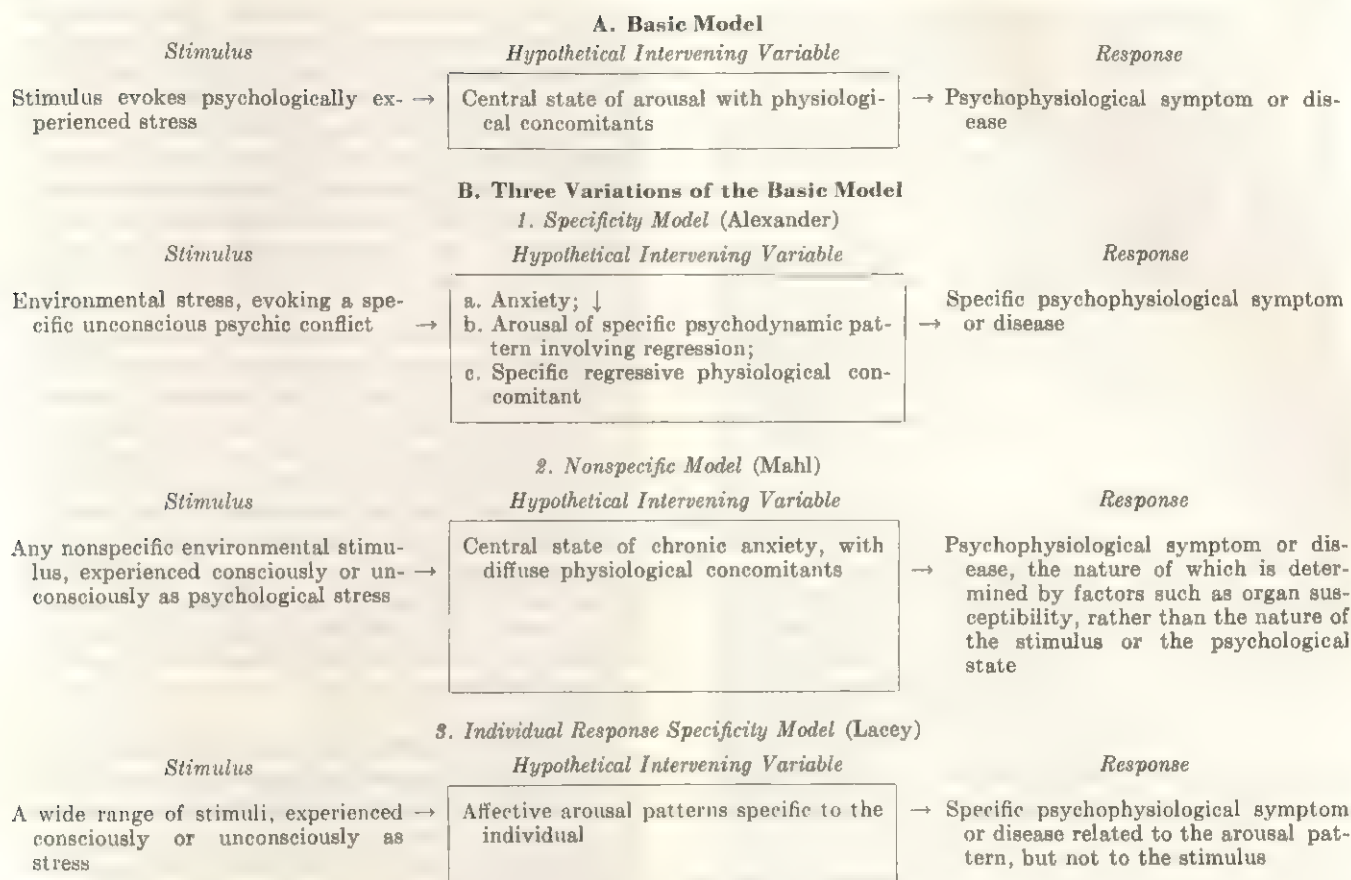


FIGURE 1. Theoretical models of the psychosomatic process.

ous key theoretical issues in psychosomatic medicine, are summarized briefly below.

Specificity model. According to this group of theories, *specific psychopathological events produce specific psychosomatic symptoms*. Leading proponents of the specificity viewpoint include Flanders Dunbar, Stewart Wolf and Harold Wolff, and Franz Alexander.

Flanders Dunbar. Dunbar attempted to correlate specific manifest "personality profiles" with the occurrence of specific psychosomatic disorders. For example, she hypothesized that the "hard, driving, executive type" of personality was particularly vulnerable to coronary artery disease. Subsequent clinical investigations have failed to support this theoretical position.

Stewart Wolf and Harold Wolff. These workers have made a significant methodological contribution to the field of psychosomatic medicine by developing techniques to enable investigation of psychophysiological correlations. By means of these techniques, Wolf and Wolff studied the relationships between various physiological and psychic parameters in healthy subjects as well as in patients suffering from a wide range of psychosomatic disorders. They observed physiological reactions in normal as well as in diseased organs, such as the colon, stomach, and nose, during various emotional states. On the basis of their

findings, they attempted to correlate pathological, physiological, and psychological variables. Wolf and Wolff also evoked a specificity hypothesis to interpret their data. For example, they suggested that specific psychic adaptational patterns of "grimly holding on" or "riddance" might account for the development of psychogenic constipation and diarrhea, respectively. There is no question that this approach has yielded valuable data. However, Wolf and Wolff have been criticized on the grounds that they have overemphasized the manifest content of behavior and neglected important psychodynamic considerations, such as unconscious motivation.

Franz Alexander. Of the group of theoreticians who ascribe to the specificity model, the most influential are those who derive their theoretical frame of reference from Freudian psychoanalysis and utilize such controversial constructs as "regression," "the unconscious," and the "stages" of psychosexual development. The quality of the patient's object relationships is emphasized as a particularly crucial psychological variable in the genesis of psychosomatic disorders.

According to Alexander, the most prominent member of this group, the arousal of specific unconscious psychopathological conflicts results in specific psychosomatic symptoms by virtue of the following

mechanism, described here in simplified form: a traumatic event evokes an unconscious neurotic conflict, which is experienced by the patient as anxiety. According to Freudian theory, anxiety is a danger signal which warns the ego to marshal its defenses against the emergence of dangerous repressed impulses and fantasies. In the psychosomatic patient this psychodynamic process involves "regression" to an earlier stage of psychosexual development and a more primitive mode of relating to objects—to the stage at which the conflict originated, or the stage at which the patient is "fixated." This psychic regression is accompanied, in turn, by specific physiological concomitants, in the form of physiologically immature (and pathogenic) patterns of arousal. Alexander termed the physiological aspects of this process "regressive innervation."

For example, according to this viewpoint, peptic ulcer patients invariably suffer from unresolved unconscious conflicts involving dependency, which have their roots in the oral period. When this neurotic conflict is reactivated by some external frustration, the patient regresses to the oral receptive stage, which is characterized by the unconscious wish to be fed by the mother. The physiological concomitant of this pathological regression takes the form of gastric hyperfunction. If such a psychophysiological constellation is chronically activated in an orally fixated patient with a vulnerable duodenal mucosa, peptic ulcer may result. But, above all, according to Alexander's school of thought, peptic ulceration cannot develop in the absence of this specific conflict; this is essentially what is meant by "specificity."

As mentioned earlier, the regression hypothesis is generally accepted by analytically oriented authors. However, the concept of *partial ego regression* was introduced recently to account for the clinical observations that all psychosomatic patients do not manifest regressive phenomena in terms of aims or objects.

Several authors have contributed experimental and clinical data to support the thesis that specific psychodynamic patterns may have specific physiological concomitants. For example, in his studies of Army personnel, Mirsky found that high rates of gastric secretion were correlated with dependency problems. Similarly, Engel's clinical studies have led him to postulate that during childhood patients who later suffer from diseases of the bowel were exposed to a specific type of pathological mother-child relationship which predisposed them to excessive physical and psychological vulnerability to the effects of object loss in later life.

In contrast, other clinical and experimental findings seem to be incompatible with the specificity position: (1) Patients who demonstrate any one of a variety of psychosomatic disorders typically present a wide range of psychodynamic problems and psychiatric diagnoses which vary from normal to psychotic. (2) Although there is some disagreement in this regard, in general,

a patient's psychological problems cannot be predicted from the nature of his psychosomatic symptom, or vice versa. (3) Furthermore, research studies have shown that certain psychophysiological reactions which are central to the specificity theory, such as gastric hypersecretion, can be predictably evoked in animals exposed to nonspecific stress. Presumably, it would be difficult to account for the occurrence of psychosomatic disorders in animals on the basis of the psychoanalytic specificity theory, which rests on the assumption that complex symbolic processes, such as fantasies and unconscious conflicts, are operative in the genesis of psychophysiological disorders. If it can be further assumed that the psychosomatic process is similar in man and in animals, then the validity of the psychoanalytic specificity hypothesis is clearly open to question. (4) Finally, the specificity theory postulates the same "specific" etiological psychic variables for a wide range of psychosomatic disorders. Thus the same psychological problem, for example, pathological dependence on and loss of a significant love relationship, is considered of crucial etiological significance in such diverse disorders as ulcerative colitis, ileitis, asthma, rheumatoid arthritis, and some of the skin disorders.

Nonspecific model. At the other end of the theoretical scale is the so-called "nonspecific" model. It is the consensus of opinion of workers who subscribe to this theoretical position that sufficient data is not yet available to warrant conclusions regarding organ choice, that is, why one patient will develop peptic ulcers, for example, and another hypertension. This school further contends that at this incomplete stage of our knowledge, hypotheses concerning the genesis of organ choice in psychosomatic disorders have a very low probability of being correct. Consequently, this group of theories deals with psychophysiological relationships in more general terms than do the "specific" concepts.

More precisely, according to the nonspecific model, *psychosomatic symptoms are causally related to psychically experienced stress in general, rather than to specific psychological factors.* Mahl's theory, which is representative of the nonspecific viewpoint, states, first, that any stressful event may evoke a state of chronic anxiety. Second, the physiological concomitants of such anxiety will be identical, whether the anxiety results from a realistic threat intrinsic to the environment, and clearly perceived as such, e.g., bombing in wartime; or an event which is threatening primarily on psychological grounds, e.g., a competitive examination in medical school; or a conflict involving a love object in which event the patient may be only dimly aware of the source of his anxiety which may best be understood in subtle psychodynamic terms.

Chronic anxiety states and psychophysiological disorders have been experimentally evoked in man and animals by a variety of stressful stimuli. Selye and Mahl, among others, have studied the physiological

concomitants of such experimentally evoked chronic anxiety states, as well as the chronic anxiety states which are evoked by traumatic life situations. Some of these investigators regard physiological reactions, such as gastric and cardiovascular hyperfunctioning, and hormonal changes, such as increased adrenal steroid secretion, as universal physiological manifestations of chronic stress; and they consider them to be crucial intervening variables in the development of psychosomatic symptoms and diseases.

As mentioned above, in contrast to the specificity model, the nonspecific theory postulates that the nature of the psychophysiological symptom cannot be predicted on the basis of specific psychological considerations. In general, psychosomatic disorders can be precipitated by any event which evokes excessive emotional reactions. However, in clinical practice the onset of such disorders is often associated with a breakdown of psychological defenses which ordinarily protect the patient from intensive emotional arousal. Such disruptions in psychological defense functioning are likely to stem from the patient's conflicts surrounding his relationships with other people—conflicts which may be “unconscious” or, at any rate, are not perceived clearly. Admittedly, psychodynamic considerations, such as regression, unconscious motivation, disturbances in object relationships, and the breakdown of psychological defenses may be important for the understanding and treatment of the patient's *psychological* problems. However, according to the nonspecific theory, such psychodynamic considerations do not exert a specific influence on the genesis of psychophysiological disorders. Rather, as mentioned above, according to this viewpoint, organ selection may depend on factors which have not yet been determined, such as constitutional organ susceptibility and early experiences which involved the learning of pathological responses.

Mahl's nonspecific concept has been criticized on theoretical grounds as being too general to be useful. However, a virtue of this approach is that it is consistent with the extensive clinical and research data that fail to support the specificity hypothesis. On the other hand, the nonspecific theory has been criticized for suggesting that the physiological concomitants of chronic anxiety are identical in all persons, under all circumstances. This viewpoint fails to account for the marked individual differences in the physical manifestations of affect that have been observed, and that seem to be of some importance in organ selection.

Individual response specificity model. The individual response specificity theory, which was formulated by several workers, including the Lacey and Malmö, differs from the nonspecific model described above in that it does not postulate a generalized affective state, i.e., chronic anxiety, which is similar in all individuals, although it may be evoked by a variety of stimuli. It differs from the specificity position as well, in that it does not assume a correlation between specific

patterns of affective arousal and specific psychodynamic or behavioral factors.

According to the response specificity model, *individuals tend to show highly characteristic and consistent physiological patterns of emotional arousal which may be evoked by a wide range of stimuli and which are associated with the development of specific psychophysiological disorders.* In other words, unless they are extraordinarily intense, affective arousal patterns are not generally diffuse, but select specific foci of activation.

While one individual may react with increased tension of the head and neck musculature to pain induced by electric shock, embarrassing questions, or a frustrating experimental task, another subject will react to the same stimuli with an increase in gastric acid secretions; there are “gastric reactors,” “hypertensive reactors,” “cardiac reactors,” etc. Moreover, some individuals show a typical hierarchy of responses and may react with different patterns in different situations. Thus, for example, a patient may characteristically respond with diarrhea to one kind of stress, such as danger of physical injury, and with a headache to sexual frustration. Malmö has presented evidence which would seem to indicate that these different response patterns are associated with specific psychosomatic symptoms and diseases: “muscle reactors” develop headaches; “cardiovascular reactors” complain of palpitations and chest pain.

Studies of individual specific reaction patterns have a bearing on the regression hypothesis discussed earlier. The emotional reactions of adult psychosomatic patients tend to show specific physiological foci of activation, in marked opposition to the diffuse and immature reactions of infants. Moreover, an individual's characteristic response pattern is established in early childhood and is highly consistent over time. It follows, then, that adult psychosomatic disorders are accompanied by firmly established psychophysiological responses which do *not* represent a return to earlier reactions. The concept of physiological regression as a necessary condition for the development of psychophysiological disorders is not supported by these findings. However, these considerations do not necessarily pertain to *psychological* regression. The return to earlier modes of adaptation in the face of stress, which is frequently encountered in psychiatric as well as psychophysiological disorders, is a separate issue.

As mentioned earlier, patterns of affective activation, and their associated psychophysiological disorders, do *not* seem to be closely related to specific psychic determinants. Consequently, they are not readily predictable on a psychodynamic basis. Moreover, the precise factors in the developmental history of the patient which determine the nature of his specific response pattern and consequent disorder are not yet clear.

The individual response specificity theory is compatible with a wide variety of theoretical orientations,

which range from psychoanalysis to physiology. In addition, although this model, in contrast to the non-specific theory, takes into account the possibility of marked individual differences in the manifestations of emotional arousal, it is consistent with the data which support the concept of nonspecificity. For these reasons the individual response specificity model has been accepted by an increasing number of workers in the field. To date, it has been applied with highly interesting results to the study of cardiovascular disorders and headache.

Current Status of Psychosomatic Theory

Each of the theoretical models described herein has yielded valuable insights and data; yet none can adequately account for all of the available data in the field. In any event, it may be fallacious to assume that any one theoretical model could satisfactorily explain psychosomatic disorders as diverse as peptic ulcer and amenorrhea, for example. Consequently, no one theoretical model has been accepted unanimously by all the investigators and clinicians currently engaged in the field of psychosomatic medicine. This diversity of theoretical predilections is reflected in the following chapter, which deals with specific psychosomatic disorders. Thus, peptic ulcer, psychosomatic skin disorders, rheumatoid arthritis, and psychosomatic gynecological disorders are discussed by Rosenbaum, Engels and Wittkower, Ludwig, and Klein, respectively, all of whom ascribe to the specificity viewpoint. This theoretical commitment is reflected by their emphasis on the role of specific psychic determinants in the etiology of the disorders with which they are concerned. On the other hand, Stunkard's section on obesity, Kapp's on pain, Reiser's on cardiovascular disorders, and Cleghorn and McClure's section on endocrine disturbances are representative of the individual response-specific and nonspecific approaches to psychosomatic problems. Although these authors differ with regard to their basic concepts of psychopathology, they share the opinion that the same psychosomatic disorder may occur in patients with varying psychiatric problems, i.e., that specific psychosomatic disorders are not related to specific psychic variables.

Suggested Cross References

The psychophysiological disorders cited in this section are discussed in detail in Chapter 30. The terms used in this discussion that derive from psychoanalytic theory, such as "ego," "psychological defenses," "regression," and "psychosexual stages of development," are defined in Section 6.1, on classical psychoanalysis. The physiological concomitants of emotional arousal, which are believed to be crucial variables in the development of psychosomatic disorders, are described in detail by Malmo in Section 29.4. Further information regarding the closely related brain mechanisms involved in emotional arousal and visceral functioning

is contained in Sections 2.7, 2.8, and 2.9 on neurophysiology and neuroanatomy in Area B, on the basic behavioral sciences. Finally, the psychophysiological disorders are compared to other psychogenic somatic complaints in Section 23.2 on conversion reactions and also in Section 31.1.

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29.4 PHYSIOLOGICAL CONCOMITANTS OF EMOTION

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Acute Emotional Arousal

Careful physiological recordings made with sensitive instruments invariably show measurable changes concomitant not only with reaction to an emotion-producing situation but with reaction to any significant change in the environmental situation. Reaction to strong and repeated painful stimulation is accom-

panied by autonomic nervous system (ANS) changes, generally (but not invariably) in the sympathetic direction, as described in the classic work of Cannon. But very similar shifts in physiological levels may be observed in persons working at a task under high incentive conditions. In fact, the degree of incentive or motivation is generally reflected in the level of physiological activation.

For reasons such as this, Duffy proposed that the distinction between emotion and motivation was dispensable. Although much can be said in favor of this point of view, it lacks general acceptance in its most extreme form. On a strictly operational basis—that is, in terms of the magnitude of the over-all physiological activation—the intensity of two reactions may be judged to be very nearly the same, but the directional aspects of the reactions will be very different, and this difference makes it necessary to retain both terms: emotion and motivation.

Intensity and direction of change. The distinction between intensity and direction in behavior, long stressed by Duffy, is of major importance. In general, the intensity of an emotional reaction may be gauged by recording various physiological measures. A strong emotion, such as that experienced by a patient discussing a sensitive topic during psychiatric interview, is reflected in the physiological recordings. In general, the stronger the emotion, the greater is the over-all physiological activation. Physiological recordings that have been successfully taken from human subjects during psychiatric interview or under similar conditions include the following measures: cardiovascular, respiratory, skin conductance, gastrointestinal, electromyographic (EMG), and electroencephalographic (EEG). ANS reactions such as these are usually in the sympathetic direction. But there are many instances of dissociative reaction. For example, the majority of subjects may show heart rate (HR) rise in a particular situation, but some subjects may actually show HR fall. Such HR fall is dissociative if, as often happens, these same subjects simultaneously show changes in the sympathetic direction in other physiological measures, such as increased respiration rate and pupillary dilation.

In reporting direction of physiological change, considerable caution is required. ANS reactions, especially cardiovascular reactions, are generally polyphasic in character: a change in one direction is followed by a compensatory change in the opposite direction. In some cases the compensatory reaction may predominate over the initial reaction. A striking example of this kind is vasovagal (vasodepressor) fainting, in which the faint itself, characterized by low blood pressure and bradycardia, is the second phase of a diphasic response, the first phase being characterized by rapid or rising HR and by rising blood pressure, especially diastolic. Vasovagal fainting has been observed in persons donating blood, in persons having a simple venipuncture, and in patients undergoing pneumoen-

cephalography. Special attention to the polyphasic character of the physiological change is especially required where the change is a distinct and relatively brief reaction to an abrupt, traumatic, or otherwise forceful stimulus. With less forceful but still effective stimulation the physiological changes are more gradual, there being a relatively slow upward shift to higher levels, as a rule. An example of such a shift in level is that seen in a psychiatric interview when a topic is introduced cautiously and then is slowly developed over a period of some minutes.

Individual differences. Individual differences in physiological reaction are of considerable importance. There is evidence that some individuals tend to show what has been called sympathetic dominance and that others tend to show parasympathetic dominance. This trait of autonomic balance has been quantified by Wenger et al. The distribution appears approximately normal, with the majority of persons showing a fairly equal balance and only a few persons showing extremely high sympathetic and a few showing extremely high parasympathetic dominance.

Still another kind of individual difference is determined by particular physiological measures that show the greatest relative changes under standard conditions of stimulation. The physiological reaction profile has been found to be highly specific to the individual, remaining quite constant for many individuals from situation to situation and from one time to the next. The Lacey's have shown that these specific individual reactions may remain significantly unchanged for 4 years. These findings in aggregate strongly support the principle of physiological response specificity.

Specificity of physiological reaction to stress is observed with remarkable clarity in patients with complaints of bodily discomfort, such as tachycardia, palpitations, precordial pain referred to the cardiovascular system, and tensional discomfort (including muscular pains and tension headache) referred to the skeletal-motor system. EMG recordings from various muscular areas over the body, for example, show highly specific correlations between sites of peak EMG reaction to stress and sites of muscular discomfort. The term "symptom specificity" was introduced by Malmö and Shagass to refer to these correlations.

Because of such individual differences and for other reasons as well, it is unsatisfactory to rely on only one or two physiological recordings in gauging intensity of an emotional reaction. Contrary to certain popular notions, neither the galvanic skin response (GSR) nor palmar conductance (PC) measure is sufficiently reliable to be *the* measure of emotion.

Situational differences. Although perhaps not as clearly supported by reliable and reproducible research findings as the principle of individual physiological specificity, there is evidence to suggest that the mean pattern of physiological reaction from a group of subjects is determined by the particular situation. For example, there is evidence that the physiological pat-

tern of reaction during fear is different from that during anger. It is clear, however, that the degree and consistency of physiological differentiation between two such states as fear and anger are not nearly so clear as the differentiation between the feeling states that are reported by the individuals experiencing these emotions.

On this basis it seems very unlikely that subjective differences between emotions are based mainly on differentiation between autonomic nervous system patterns of reaction. Effects of the total environmental situation on the central nervous system (CNS) are undoubtedly of far greater importance in the mediation of these behavioral and subjective differences. This is not to say, however, that sensory feedback from the ANS does not enter into the picture. Indeed, in the case of some psychiatric patients with somatic symptoms, when even a mild stress evokes a symptom reaction such as tachycardia and palpitations, the sensations associated with this physiological reaction can be frightening, in some cases even terrifying if there is fear of impending death.

Distressing sensations from muscles tensing under stress in patients prone to muscular discomfort in specific muscular groups were previously mentioned in connection with the principle of physiological response specificity. Figure 1 provides a typical illustration of this phenomenon. Data for the graphs were obtained from a 42-year-old female psychiatric patient who complained of muscular discomfort localized in the left thigh. While the patient was engaged in a tracking task, EMGs were recorded from various muscles

over the body; only those from the left and right thighs are shown in the illustration. Figure 1 shows that, when a loud distracting noise was presented during tracking, tension in the left thigh rose to a very much higher level than the level of tension recorded from the right thigh. As a matter of fact, tension in the thigh muscles on the right (nonsymptom) side of the body actually fell slightly under the activating condition. When tracking was performed under distraction-free conditions, no tensional difference between right and left thighs was observed.

Pathological Anxiety

The term "anxiety" is often used colloquially and in laboratory parlance to refer to acute emotional states, such as fear or apprehension. Here the term refers to pathological anxiety—that is, the emotional responses of pathologically increased intensity and duration that may be observed in certain psychoneurotic patients. Pathological anxiety (henceforward referred to simply as anxiety) may be objectively defined as a tensional state of such severity that work efficiency is interfered with and medical advice is sought. It is characterized by one or more of the following complaints: persistent feelings of tension or strain, irritability, unremitting worry, restlessness, inability to concentrate, and feelings of panic in everyday life situations. These complaints are usually found in a setting of dismay and bewilderment, with the patient striving to understand why he feels the way he does. Often there is an intensely strong urge to action in the absence of any consciously perceived goal commensurate with the high level of activation. Finally, on clinical grounds, it has long been known that anxiety patients are physiologically hyperactive; this group of patients constituted a major source of subjects for the experimental work on symptom specificity described earlier in this section.

With regard to the disproportionately high level of physiological activation in everyday life situations, the symptoms of anxiety are possibly unique among the major symptoms of psychiatric disorder. From Freud's treatment of the problem of anxiety to the present, physiological overactivation is cited as an objective accompaniment of anxiety. Although there are undoubtedly particular cues, certain situations that have special meaning or unconscious significance for each individual and so are particularly effective in triggering off the physiological overreaction in each individual case, it is just as true that there are certain relatively nonspecific stimuli that are effective in evoking physiological overreaction in a large number of individuals suffering from anxiety. In other words, the proneness to overreaction appears to involve a physiological alteration rendering the patient overly sensitive to a wide range of stimuli and situations, many of which almost surely have no connection with the etiological conditions responsible for the development of the physiological alteration in the first place.

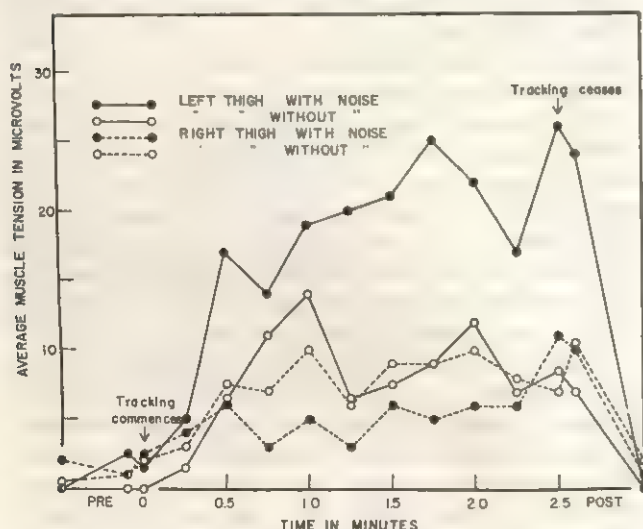


FIGURE 1. Comparison between tracking trials with and without auditory stimulation. Mean muscle tension from left thigh and right thigh were measured in a patient with complaint of tensional discomfort in the left thigh. Note that, when patient was performing the tracking task under distraction (loud noise), tension rose in the left thigh but not in the right. (From Malmö, R. B. Activation. In *Experimental Foundations of Clinical Psychology*, A. J. Bachrach, editor, p. 416. Basic Books, New York, 1962.)

Because of the current widespread use of tranquilizing drugs in the treatment of anxiety, it is now extremely difficult to obtain valid physiological data from anxiety patients. For this reason, the reliable physiological investigations carried out before the widespread use of these drugs are particularly valuable in providing relatively artifact-free data.

Startle induced by a strong auditory stimulus was found to be one very effective form of stimulation for physiological differentiation of anxiety patients and normal persons. EMG recording under these circumstances revealed no difference between patients and controls in the immediate reflex reaction to the startling sound, the differences in the EMG reactions of patients and controls coming after the primary period of reflex startle (see Figure 2). In view of results from neurophysiological experiments, a likely explanation of the abnormally high after-reaction observed in anxiety patients is that the sustained tension is due to the failure of a homeostatic mechanism located in the reticular systems. Experiments with animals have demonstrated that, by stimulating certain parts of the reticular systems, it is possible to inhibit motor after-discharge.

Examples of other kinds of physiological dysfunction that were observed in anxiety patients (compared with controls under experimental conditions) are the following: irregularities in motor action, such as finger tremor and respiratory irregularity, and autonomic nervous system overreactivity, such as reactions of blood pressure and heart rate. It is sometimes implied that GSR is specifically sensitive to anxiety, but in general this is not supported by experimental findings.

On clinical grounds it is evident that pathological anxiety is a reversible condition, although in some cases it may persist over long periods of time. Careful longitudinal physiological study of anxiety patients, following them through periods of high anxiety and later through recovery, is very much needed.

From combined clinical, psychophysiological, and neurophysiological observations it is reasonable to suggest *tentatively* that the general overreaction in anxiety may be caused, at least in part, by reversible dysfunction of central regulatory mechanisms such as the brain stem reticular system, especially inhibitory parts of this system.

Depression

The anxiety patient group is virtually unique with respect to the clear correlations between subjective pathology and objective physiological changes. These remarkably positive findings contrast sharply with findings from patients in whom depression is the primary symptom (*not* patients with depression that is *secondary* to anxiety; they are placed in the anxiety patient group). Most physiological studies of patient groups with depression as the *primary* symptom have not revealed significant average deviations from normal. One exception is salivary output, which is de-

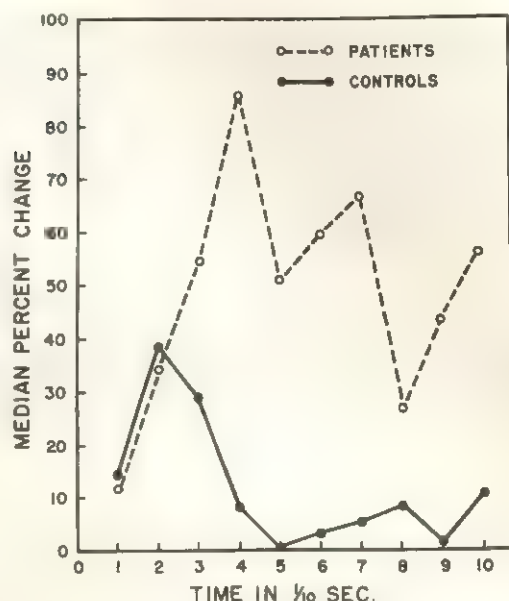


FIGURE 2. Muscle tension reaction to startling auditory stimulus. Note that the difference between anxious patients and controls occurs in the period *following* the immediate startle reaction. (Malmo, R. B., Shagass, C., and Davis, J. F. A method for the investigation of somatic response mechanisms in psychoneurosis. *Science*, 112: 327, 1950.)

creased in psychotic depression and in schizoaffective disturbances. Although further positive results may yet be obtained with different tests and measures, present evidence strongly suggests that, from the physiological point of view, primary anxiety and primary depression involve quite different mechanisms. Certainly the evidence is opposed to thinking that they are on the same continuum.

It seems likely that objective study of depression would profit greatly from further cinematographic analysis of postures and bodily movements in depressed patients. On clinical grounds it appears that objective deviations specifically characteristic of depressives may be found in careful analyses of the way in which the patient walks, turns his head and body, and so on, rather than in measurements of ANS changes. Along these same lines, further objective analyses of agitation in depression should be most useful, especially if the observations of bodily movements are combined with physiological recordings. Again, on the basis of clinical observations it would appear that agitation is a symptom that physiologically is significantly different from the condition of general physiological overactivation found in anxiety. But this still remains a question for investigation.

Suggested Cross References

Further comments on physiological concomitants of affective states such as anger, fear, and depression may be found in Cleghorn and McClure's discussion of psychophysiological endocrine functions (Section

30.9). Fundamental concepts regarding the physiology and chemistry of the central nervous system processes involved in emotional arousal are discussed by Doty in his section on the limbic system (Section 2.8) in Area B, on the basic behavioral sciences. The concept of individual response specificity mentioned in this section is discussed further in Section 29.3 on current concepts of psychosomatic medicine.

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Chapter 30

Psychosomatic Medicine. II: Psychophysiological Disorders

30.1 PEPTIC ULCER

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Definition

In current medical practice, the term "peptic ulcer" encompasses both gastric ulcer and duodenal ulcer. It is true that these syndromes have much in common; however, it is also quite probable that their differences extend beyond anatomical location of the lesion.

For one, duodenal ulcer is more prevalent in men, and in the younger age group; in contrast, gastric ulcer occurs with equal frequency in both sexes. Second, and of marked importance is the high incidence (10 to 20 per cent) of gastric carcinoma which is associated with or occurs subsequent to gastric ulcer, so that, unlike duodenal ulcer, in cases of gastric ulcer the possibility of gastric carcinoma must always be considered. Third, gastric ulcer is associated with normal or subnormal gastric secretion; in duodenal ulcer, gastric secretion (HCl and pepsin) is markedly increased. Finally, clinical evidence indicates that important differences exist in the psychological and emotional correlates of these syndromes, which further justifies their delineation as separate and unique disorders. Specifically, emotional factors are believed to play a more significant role in duodenal ulcer than in gastric ulcer, and this hypothesis is supported by Dragstedt's observations that the division of the vagus nerve abolishes fasting gastric hypersecretion in duodenal ulcer but not in gastric ulcer, and that vagotomy is ineffective in gastric ulcer. Accordingly, with relatively few exceptions, the studies described herein involved patients with duodenal, rather than gastric ulcer.

Epidemiology

Peptic ulcer is considered to be a disease of civilization; it is rarely seen among the natives of such areas as northern India or Java-Sumatra, or in the South African Bantus. Concomitantly, it is more pre-

valent in urban as compared to rural areas, among men in administrative and professional fields, and among high income groups in general, although it is by no means infrequent in lower socioeconomic groups. As mentioned earlier, duodenal ulcer occurs more frequently in men than in women, the current ratio being approximately 4 to 1, with a continuing increase of incidence in men. This difference in incidence on the basis of sex can be attributed primarily to psychological factors and is discussed in detail below in this context.

Clinical Features

The outstanding symptom of peptic ulcer is epigastric pain, which usually occurs between 1 and 4 hours after a meal, lasts for 30 to 60 minutes, and is relieved by food intake or alkalies. The pain is sharply localized in the epigastrium, and in the traditional clinical examination the patient points to the site of the pain with his finger. The pain is most intense in the afternoon and at night, usually during the hours between midnight and 2:00 A.M. The syndrome is further characterized by periodicity and chronicity, with remissions and exacerbations which may extend over a period of time ranging from 10 to 25 years. Diagnosis is made from the patient's history and roentgenological studies.

Some medical authorities also maintain that the tendency for pain to disappear "spontaneously" after 6 months to a year for a temporary period is a classic feature of the syndrome. In fact, however, when adequate attention is directed toward the psychological and social determinants of ulcer, it becomes apparent that, in most instances, "spontaneous" remission (as well as exacerbation) can be related to meaningful emotional events. Neither the disappearance of pain nor its recurrence can, therefore, be considered to represent a "spontaneous" event.

Psychological Determinants

"Specificity" hypothesis. Clinicians have long noted that their patients with peptic ulcer frequently manifest certain typical emotional states and per-

sonality characteristics. Earlier psychological studies were concerned with the description of these personality and character traits and their correlation with the ulcer syndrome. Attempts were also made to correlate acute emotional states, either experimentally induced or occurring in the natural course of the patient's psychological life, with changes in gastric functions. Alexander and his colleagues, using psychoanalytic techniques, investigated the role of unconscious conflicts in ulcer patients, and they were the first to postulate a specific type of emotional conflict in this patient population, namely, a dependent-independent one which stemmed from the persistence of intense unconscious oral receptive tendencies, on the one hand, and their repudiation by the adult ego (shame, pride) or by external circumstances, on the other.

Personality patterns. This author and his associates tested this hypothesis in a clinical study of male ulcer patients seen in a large city hospital. In general, all of the patients in the group studied demonstrated intense parasitic dependent desires, and in each case ulcer symptoms developed when these infantile cravings were denied. Apart from these universal characteristics, the patients studied were divided into three groups on the basis of their manifest personality structures. The first group of "pseudo-independent" patients reacted to deep unconscious dependent cravings by becoming ambitious and successful; that is, they characteristically utilized the mechanism of overcompensation in their actual life relationships. The second group of "passive dependent" patients expressed their dependent desires to a limited degree. And, in general, these patients appeared passive and shy, with marked trends toward feminine identification. Finally, the majority of the patients studied were assigned to the third "acting out" group. The patients in this group expressed their strong oral cravings and demands by their pathophysiological symptoms, as well as by acting out. Characteristically, they overindulged in drinking and gambling, committed acts of delinquency, and were unable to earn a living. Essentially, in terms of personality structure, these patients exemplified the unweaned suckling whose oral needs appear to be insatiable.

Thus, all of the patients studied demonstrated the same unconscious conflict (i.e., dependence versus independence). However, their overt personality patterns ranged from defensive facades of independence to attitudes of parasitic dependence.

The concept initially advanced by Alexander and his associates that ulcer patients demonstrated a specific type of emotional conflict has been supported by many other clinical studies as well. On the other hand, however, the data accumulated to date which fail to support the specificity hypothesis are equally impressive. In brief, the question of the role of specific emotional reactions in patients with ulcer and other psychosomatic diseases is far from settled.

Diagnostic validity. A research project was initiated at the Chicago Institute for Psychoanalysis in 1950 (and is still in progress) to test the validity of the specificity hypothesis based on the "blind" diagnosis of seven "psychosomatic" diseases.

The over-all results to date indicate that in 51 per cent of the cases investigated, the analysts in the research group were correct in their diagnosis of the patient's illness on the basis of psychodynamic formulations. (This finding is in marked contrast to the expected chance results of 14 per cent, or one out of every seven cases investigated.) Of the seven diseases studied, patients in the ulcer group were diagnosed correctly least often—32 per cent as compared to arthritis, which was 51 per cent. Moreover, there was a striking difference in diagnostic accuracy for male and female ulcer patients. Thus, 49 per cent of the group of male ulcer patients were diagnosed correctly, but only 16 per cent of the females. Indeed, it is interesting to note that the poorest performance of the research group involved the diagnosis of female ulcer patients. It should be noted in this connection that Alexander's psychodynamic formulations were, in fact, based on the analysis of male ulcer patients. Clearly, the applicability of the concepts derived therefrom to female patients is open to serious question.

Psychophysiological Correlations

Historical basis. Over 100 years ago, Beaumont recognized that changes in gastric functions were associated with emotional reactions, but he was concerned primarily with observations on the gastric juices, rather than the personality of his subject. However, Cannon's more recent observation that gastric disturbances typically occurred during periods of emotional crisis added great impetus to the study of the relationship between psychological variables and physiological factors. Subsequently, Wolf and Wolff demonstrated the relationship between human gastric functions and various emotional states in their now classical subject, Tom, the man with the gastric fistula. However, of particular importance in this connection was the observation by these workers that situational stresses which were correlated with disturbance in gastric function were not artificially produced but occurred in the natural life setting of their experimental subject.

Current formulations. Mirsky's studies of the etiology of duodenal ulcer, in which he attempted to correlate psychodynamic factors with the function of the peptic cells of the gastric mucosa by measuring the excretion of pepsinogen, represent the most outstanding studies in this field to date. First, patients with duodenal ulcer were shown to have a higher rate of pepsinogen excretion in the urine, and a higher concentration of pepsinogen in the blood, than do subjects who are free of gastrointestinal disturbance. Mirsky's studies of the concentration of pepsinogen in

the umbilical cord blood of neonates further revealed that the pepsinogen concentrations of approximately 12 per cent of the neonates were in the range of those found among adult patients with duodenal ulcer. And studies of identical twins support the possibility that the concentration of pepsinogen in the serum is genetically determined, at least in part.

However, the fact that an increase in gastric secretion is associated with the presence of a duodenal ulcer does not in itself mean that the former is responsible for the latter, or vice versa. A variety of studies suggest that, while gastric hypersecretion is an essential determinant in the etiology of duodenal ulcer, it is not the sole determinant. Rather, gastric hypersecretion is one of several predisposing factors. Thus, it has been postulated that high pepsinogen secretors represent that segment of the population most likely to develop duodenal ulcer if they are exposed to those circumstances which, in turn, give rise to the sequence of physiological events which result in the lesion. On the basis of this formulation, Mirsky concluded that precipitation to duodenal ulcer must be considered in terms of three parameters. The physiological parameter refers to the individual's susceptibility to the duodenal ulceration. The psychological parameter refers to the presence of a relatively specific psychic conflict which induces psychic tension. And, third, the social parameter refers to an environmental event which will prove noxious to the individual. In other words, the individual with a sustained rate of gastric hypersecretion who is exposed to an environmental situation which mobilizes psychic conflict and induces psychic tension is likely to develop a duodenal ulcer.

Experimental validation. Two sets of studies were designed to assess the interaction of the parameters described above in the precipitation of duodenal ulcer. In both studies, the degree of gastric secretion, as gauged by the concentration of pepsinogen in the serum, comprised the physiological parameter. Thus, subjects with serum pepsinogen concentrations 1 standard deviation above the mean value of the adult healthy population were regarded as hypersecretors, while subjects with pepsinogen values 1 standard deviation below the mean were regarded as hyposecretors. Subjects representative of those with the lowest as well as the highest concentration of pepsinogen in the blood were selected, to permit one group to serve as controls for the other. The style of interpersonal interactions, as inferred from psychoanalytic and psychoanalytically oriented anamnestic interviews and from projective tests and other psychological techniques, comprised the psychological parameter. In the first study by Weiner et al., exposure to 16 weeks of basic training at an army camp was the environmental situation which might prove noxious to some subjects, but not to others, and, as such, comprised the social parameter.

The hypersecretor group included a total of 300

subjects. Of these, the 63 draftees with the upper 15 per cent of the serum pepsinogen values were selected for special study. The subjects studied in the hyposecretor group consisted of the 57 men (of a total of 179) with the lowest 9 per cent of the serum pepsinogen distribution.

The first roentgenological examination of the 63 subjects with gastric hypersecretion revealed evidence of a healed duodenal ulcer in 3 cases, and an active ulcer in 1. Of these 4 men who presented evidence of duodenal lesions at the outset, 1 became a disciplinary problem and was confined to the stockade; 1 went AWOL; and 1 completed his basic training without incident; the fourth man, who had the active duodenal lesion, was discharged from the service.

At the second roentgenological examination, which was scheduled from the 8th to the 16th week of basic training, there was evidence of active duodenal ulcer in an additional 5 men who had not manifested any signs of gastrointestinal disorder at the outset of the study. All the subjects who had presented or subsequently developed evidence of a duodenal ulcer belonged to the group of 63 men with high serum pepsinogen values, and within this group 15 per cent of the men in the top 5 per cent of the distribution developed a duodenal ulcer during a relatively brief interval.

In the second long term study by Mirsky, which has been in progress since 1946, the environmental event occurred spontaneously. More specifically, a population of 1,600 children, ranging in age from a few months to 16 years, and 4,460 men and women from various socioeconomic strata were screened, and, as a rule, the 2 per cent of the population with the highest concentrations of pepsinogen in the serum were selected to comprise the hypersecretor group for special study. Similarly, the 2 per cent with the lowest values were selected to comprise the hyposecretor control group. It was assumed that all of the subjects studied would be exposed, to varying degrees, to "normal" and inevitable environmental stress. Although this study is still in progress, a fairly large number of the initially healthy hypersecretors who have been followed for several years have developed the typical signs and symptoms of a duodenal ulcer which have been subsequently confirmed roentgenologically. In contrast, none of the subjects in the hyposecretor group have developed the ulcer syndrome.

Etiological Propositions

In the studies described above the subjects who comprised the apparently healthy hypersecretor group exhibited essentially the same personality structure and the same psychodynamic patterns which had previously been described as characteristic of patients with duodenal ulcer. That is, the group of subjects with high concentrations of pepsinogen in the serum showed intense needs which were principally

oral and dependent in nature. However, the individuals in the hypersecretor group differed from each other in the manner in which they handled these persistent infantile wishes. Such differences are determined by those factors in each person's total life experiences which play a crucial role in personality development. In other words, the ego defense structure unique to each individual will determine his reaction to stressful environmental events.

The precise social event which precipitates duodenal ulcer in the susceptible individual will, of course, vary from person to person. However, these events share one feature in common; namely, they involve the activation of oral and dependency needs and the concomitant frustration of these needs. Thus, in the short term study of draftees, it was correctly assumed that separation from home and the restrictions associated with the basic training period would prove noxious to those individuals who did not possess sufficient ego strength to cope with these frustrations. Similarly, in Mirsky's long term study all the apparent precipitating events were related to the obvious mobilization of fears of loss of love and security, intensification of persistent infantile passive, oral-dependent wishes; the frustration of such wishes, and the activation of what Weisman has referred to as the passivity-activity nuclear conflict.

Role of early oral trauma. The formulation of the dependent-independent conflict in ulcer patients was based on the psychoanalytic concept of trauma during the oral phase of development. Psychoanalytic reconstruction of historical data elicited from patients with duodenal ulcer suggests that these strong dependent wishes have their origin in either parental rejection or overpermissive attitudes in early childhood. Initially, it was thought that these persistent infantile oral-dependent wishes might have a physiological concomitant. That is, they might act as a consistent stimulant to the stomach, leading to gastric hypersecretion. But Mirsky's findings suggest that gastric hypersecretion is genetically determined. This raises the possibility that oral conflicts do not arise only when the infant's oral needs are unsatisfied because of maternal deprivation. Such conflicts may also exist in cases where the mother-infant relationship was a relatively good one, and where the infant's oral drives remained ungratified because they were physiologically insatiable. More specifically, one might speculate that a mother whose ability to gratify the oral needs of her infant would be considered quite satisfactory under normal circumstances may be only partially successful in providing physiological satiation for an infant who is a hypersecretor, with the unfortunate result that such a mother is perceived psychologically as rejecting. Furthermore, the inability of this "good" mother to satisfy or to gratify her infant may induce feelings of frustration which, in turn, will give rise to hostile and rejecting attitudes. It seems likely, therefore, that the degree to which infantile

dependent wishes persist in such cases will depend upon the quantitative aspects of the mother's integrative capacity, as well as on the infant's rate of gastric secretion.

Etiology of peptic ulcer in women. It is well established that in the past 50 years there has been a remarkable shift in the sex incidence of peptic ulcer in Western civilization. Studies conducted prior to 1900 demonstrated, without exception, that peptic ulcer occurred more frequently in women. About 1910 the sex incidence became equal and since 1910 there has been a progressive rise in the incidence of peptic ulcer among men and a decrease in its incidence among women, despite the fact that the over-all incidence of peptic ulcer has remained approximately the same during this period.

Consideration of the factors responsible for this changing sex incidence has important etiological implications. Some authors have attributed this phenomenon to sociological and cultural factors. For example, in the 19th century men were better able, because of their life situation, to express both their aggressive and their dependent impulses: it was relatively easy for them to be active at work and simultaneously to be mothered and cared for by their wives at home. In contrast, while women could satisfy their dependency needs in the home, during this period they were blocked socially from expressing their aggressive or independent impulses. After the turn of the century, however, men were subject to increased social and economic pressures. Economic factors, in particular, contributed to the frustration of their aggressive drives and the mobilization of their dependent wishes. On the other hand, in this new social climate, women could express many competitive independent impulses which had been considered taboo formerly. Modern woman is better able than man to express antagonistic drives such as dependency and independence. She can be openly dependent without undue shame or guilt, or lead an active independent life, or express both drives concurrently, without the need for repression or reaction formation which is so characteristic of men.

As mentioned earlier, Mirsky's findings suggest that the concentration of pepsinogen in the serum may be genetically determined. With specific reference to the changing sex incidence, however, his observation that approximately three men for each woman in the healthy population have a concentration of pepsinogen in the serum which exceeds the mean of the population with duodenal ulcer lends emphasis to the importance of social and cultural factors. Clearly, it is highly unlikely that there has been a sudden shift in the genetic aspect of ulcer which might account for the change in sex incidence. Rather, it must be explained on the basis of psychological and sociological variables.

Several investigators have attempted to describe the psychological characteristics of the female ulcer patient and to identify the etiological factors opera-

tive in the genesis of the disease. This author and his associates studied a group of women with peptic ulcer and found that, in contrast to a group of male ulcer patients, all the female subjects studied exhibited rather severe overt personality disorders. Study findings also revealed that the majority of these female patients had been rejected by their mothers and had turned to their fathers for support. Ulcer symptoms were precipitated when the supportive figure failed them. In another study, 200 women with proven ulcer were divided into three groups: the women in the first group were described as masculine-aggressive; the second group comprised subjects who were considered immature and inadequate; and, finally, the subjects assigned to the third group appeared to accept their feminine role. It was further noted that, prior to the onset of the disease, 69 per cent of the total subject population had undergone a surgical (gynecological) procedure or event (menopause) which interfered with their sexuality, either in fantasy or reality. In the group of masculine-aggressive women who rejected their feminine role, the gynecological trauma was not a significant factor in precipitating the ulcer. In the inadequate immature women, the ulcer had developed after the death or loss of a supportive figure. In the third—and largest—group, the women had accepted their feminine role until the occurrence of the sexually threatening event. Therefore, this was considered to constitute a precipitating factor in the onset of the ulcer. In addition, the onset of the ulcer in this group was closely related to events which mobilized pregnancy fantasies and wishes (e.g., the birth of grandchildren, or pregnancy in siblings).

Treatment

The treatment of patients with peptic ulcer is the domain of the general practitioner, and the primary therapeutic concern is the medical management of the patient. Consequently, from the practical point of view, the psychiatrist's role may be a limited one. In general, he may function as a consultant in selected cases, and, occasionally, he may function as a therapist; for the most part, however, his role is that of clinical investigator.

Medical management. If it is to be effective, the physician-patient relationship must reflect the physician's understanding of the psychodynamics of this illness. Specifically, the physician must be aware of the patient's current crucial areas of conflict, so that he will be in a position to meet the emotional needs of the patient, especially during periods of stress or anticipated stress. The physician should also be aware of the fact that the repressed dependency needs of many patients can be gratified, either directly or indirectly, without necessarily inducing shame, guilt, or resistance in the patient. This can be done by environmental manipulation, such as prescribing a vacation, or enlisting the support of key figures in the

patient's environment. Above all, the physician-patient relationship should evoke a sense of security in the patient. To this end, the physician can manipulate the transference by increasing the frequency of office visits or extending the interview period, for example, and by prescribing medication, and hospitalizing the patient during periods of emotional crisis with the hope of preventing complications. If such procedures, combined with intensive medical treatment, prove inadequate, the patient should be referred to a psychiatrist for more intensive psychotherapy.

Surgical intervention. The possibility of surgical intervention must be considered for patients with intractable symptoms. As a general rule, when a great deal of the patient's psychic energy is bound by his symptoms and by the therapy (diet, etc.), the possibility that surgical intervention will produce favorable results becomes more remote. On the other hand, the less psychic energy bound in this manner, that is, when the patient derives little instinctual gratification from being ill and little secondary gain, the prognosis improves. It has been postulated that surgical intervention for the removal of intractable peptic ulcer symptoms may result in the development of new symptoms. This hypothesis was tested by Browning and Houseworth in a study of two groups of ulcer patients with intractable symptoms. One group of 30 patients was treated by gastrectomy; a control group was treated medically. After gastrectomy, only 43 per cent of the patients in the surgically treated group still had ulcer symptoms. But whereas only 13 per cent of this group had other psychosomatic symptoms as well prior to surgery, 37 per cent manifested such symptoms following surgery. In addition, the incidence of neurotic symptoms increased from 50 per cent to 100 per cent. In contrast, in the medically treated group, the ulcer symptoms remained unchanged, but there were no new symptoms. The authors concluded, on the basis of these findings, that surgical removal of ulcer symptoms appears to result in their replacement by new symptoms in a significant number of cases. In another study, patients with duodenal ulcer who required surgery for intractable symptoms were compared to patients requiring surgery for perforation, hemorrhage, and obstruction. It was found that 90 per cent of the patients in the latter group obtained good results, while only 60 per cent of the intractable ulcer symptoms were relieved. In this study, the most important prognostic factor in the intractable group was the degree to which the patient had been able to satisfy his basic social needs prior to surgery.

Suggested Cross References

In this section the psychosomatic aspects of peptic ulcer are discussed in a "specificity" frame of reference, according to which specific psychological factors are associated with peptic ulcer. For a discussion of alternate conceptual models of psychophysiological

processes, see Section 29.3, on current concepts of psychosomatic medicine. A more detailed discussion of the psychoanalytic concept of orality may be found in Section 6.1, in Area C, on current concepts of personality and psychopathology.

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latter, called somatopsychic-psychosomatic because of the role of organic factors in the primary predisposition and of psychological factors in the course, include ulcerative colitis and enteritis, regional enteritis, granulomatous colitis, celiac disease, and irritable bowel syndrome (mucous colitis and spastic colon).

Psychophysiological and Psychogenic Disorders

The eliminative function of the bowel determines its involvement in psychophysiological patterns of riddance and retention, and the conflict between physiological function and the social and interpersonal demands for bowel control and cleanliness determines its role in the psychogenic disorders.

Physiological concomitants of affects. Evacuation of the bowel during fear by man as well as by lower animals was known to the ancients and presumably represents a very primitive reaction to acute stress. During acute anxiety there may be periodic peristaltic rushes, sometimes with cramps and diarrhea. Such diarrhea, which occurs concurrently with the other manifestations of anxiety, typically begins with the rapid evacuation of the formed contents of the lower bowel, which is followed by the more liquid feces of the proximal colon. Three to six watery bowel movements, decreasing in volume over 1 to 3 days, are the characteristic feature, even when anxiety persists longer. This is much less commonly a simple affect concomitant, occasionally accompanying acute feelings of sadness, discouragement, and depression.

Diarrhea that is more than transient or in which the stools show appreciable mucus or any quantity of pus or blood or are greasy and malodorous generally indicates the presence of some other disorder, perhaps unmasked or exacerbated by the physiological effects of the affect. Constipation that begins with or soon after the experience of a depressive affect and becomes chronic may also signify the development of an organic bowel disorder, notably cancer.

Conversion reactions and anal drive. The rich symbolism associated with feces and defecation and the erotogenicity of the anus, plus the fact that its function is learned and partially under voluntary control, predispose the rectum and anus to conversion and anal drive patterns. These include constipation, frequent bowel movements (not usually true diarrhea), rectal spasm, sphincter spasm, rectal sensations, and pruritus ani. The repressed fantasies and the corresponding conversion manifestations include ideas of rectal pregnancy (severe constipation, abdominal distension, followed by a huge evacuation); anal intercourse and homosexual wishes (sphincter spasm, rectal spasm, pruritus ani, constipation, rectal sensations); aggression expressed in soiling terms (constipation, frequent evacuations, pain in the rectum).

Patients manifesting such conversion symptoms are likely to have a predisposition to conversion, and many have the personality features of hysteria. A few,

30.2 INTESTINAL DISORDERS

GEORGE L. ENGEL, M.D.

Patients seen by psychiatrists may exhibit a variety of expressions of disordered bowel function, including cramps, diarrhea, constipation, bleeding, incontinence, pruritus ani, bizarre rectal sensations, and flatus. Some of these are purely psychogenic in origin, some are psychophysiological phenomena, and some are symptoms of organic bowel disorders. The

especially men with such rectal symptoms, may be latently paranoid. Identification with other persons with bowel symptoms may also play a role in symptom choice. The reader is cautioned against making a diagnosis purely on the basis of plausible symbolism without reasonable corroborative data.

In those instances where control of bowel function has played an inordinately important role in infancy and childhood, bowel symptoms, notably constipation and diarrhea, are commonly expressive of psychological trends (drives) deeply embedded in the matrix of the personality. Among these persons, such personality trends as control and lack of control, generosity and miserliness, stubbornness and flexibility, order and disorder, cleanliness and sloppiness may be equated with the corresponding bowel behavior and be so expressed. Such a person may become constipated or have diarrhea when he is called on to give or perform more than he feels capable of, when he is in a messy place, when he should feel angry at someone, or when he feels deprived. These trends are such intimate parts of the total personality structure that they remain largely unconscious and are unlikely to be uncovered except by depth analysis, though they may be clearly revealed in dreams. In classical psychoanalytic terminology, such persons are typically anal characters.

Disorders of elimination secondary to psychopathological states. Certain patients exhibit inappropriate or bizarre patterns of elimination that are secondary to psychopathological states. These differ from conversion reactions in that they represent complex disturbances in the behavior associated with elimination rather than representing the use of a body part or function in a symbolic and defensive manner. Such disturbances may range from inadequate or undifferentiated elimination behavior to behavior that is determined by bizarre, usually psychotic, ideation.

Addiction to laxatives, enemas, high colonic irrigation. Excessive use of laxatives or enemas may be presented by the patient as a thoroughly rationalized behavior or in relationship to some gastrointestinal complaint that is usually explained in terms of the patient's idiosyncratic concepts. Some patients offer such traditional complaints as lack of appetite, nausea, vomiting, eructation, bloating, abdominal rumbling, indigestion, excessive gas, diarrhea, or constipation; others offer bizarre health theories as justification for the urge to purge. But further psychological inquiry often demonstrates that at the basis of the behavior are morbid psychological concepts of something "bad" or destructive within the body, actually displacements of "bad" or disturbing thoughts or fantasies. Accordingly, the patient sees the contents of the bowel as positively bad or dangerous. He may espouse pseudoscientific theories as to the deleterious action of retained feces and utilize extreme measures to clean out the bad intestinal contents. Sec-

ondary nutritional deficiencies and electrolyte imbalances may result. Further inquiry usually establishes that these strange notions are not restricted to the functions of the gastrointestinal system but extend to many other spheres as well. Many of these people also exhibit other eccentricities in dress, manner, behavior, and belief systems and often belong to crank or fringe groups. Some are obviously schizophrenic, and most reveal at least an inclination toward the persecutory delusional attitude of the paranoid.

Encopresis and psychogenic megacolon. Encopresis or fecal soiling—like its urinary counterpart, enuresis, with which it is occasionally associated—represents a complex psychologically determined failure or lapse in toileting. It consists of the passage of stools of normal or near normal consistency into clothes, bed linen, or any receptacle not intended for such purposes. It typically begins in childhood either as a failure to achieve proper toileting or as a loss of previously achieved bowel control and only infrequently extends into adulthood. It takes the form either of the promiscuous and casual expulsion of feces whenever the impulse so moves or of prolonged retention of stool with leakage of feces or periodic huge movements. The latter may be associated with enormous distention of the colon, sometimes designated as psychogenic megacolon.

Anthony identified three prototypes of the encopretic child. The "continuous child" is a dirty child coming from a dirty family, where symptom tolerance is high and where the mother is peculiarly unaware of the child's defecation cues. Continence is simply not achieved. The "discontinuous child" is the compulsive child of a compulsive family, overcontrolled, scrupulous with regard to his habits, secretive and ashamed about his toilet leakage. Usually, the mother is meticulously clean and unwittingly encourages the child to soil so as to provide a scapegoat for her unconscious sadomasochistic impulses. The "retentive child" is one who has undergone severe toilet training to which he responds with a stubborn constipation, which later gives way to encopresis. In the constipation phase, the intense struggle between mother and child may be marked by her insistent use of enemas, suppositories, and cathartics.

Bowel manifestations with psychosis. Extreme constipation may develop during psychotic depression, and incontinence may develop during acute and chronic brain syndromes and schizophrenia. Persistent and bizarre anal and rectal sensations, sometimes frankly delusional or persecutory in character, are occasionally the presenting complaint of a paranoid patient who presents himself to a rectal specialist for treatment.

Somatopsychic-Psychosomatic Disorders

Traditionally called psychosomatic and, according to the American Psychiatric Association nomenclature,

psychophysiological and visceral disorders, these are basically organic disorders in that they involve primary somatic predisposing factors and ultimately distinctive morbid anatomical changes in the involved organs. At the same time these somatic processes seem to contribute directly or indirectly to the development of specific psychological characteristics, which in turn define in a more or less specific way the circumstances that prove psychologically stressful for the individual and hence the psychodynamic conditions under which the organic process may become activated. To fulfill these requirements, the somatic factor must be present and exerting an influence from very early in life, placing it in the category of a genetic, congenital, or early acquired defect. It is in these regards that these disorders differ from those designated more simply as psychogenic and psychophysiological.

Characteristically, such disorders tend to be familial, may appear at any age from infancy to senescence, and, once initiated, run a chronic or remitting course with exacerbations or relapses that may culminate in irreversible structural changes. Psychological factors play a preeminent role in onset, remissions, and relapses. Further, there is consistency in respect to not only the psychological characteristics of the patients so afflicted but also the particular psychodynamic settings in which the disease is exacerbated or healed.

Ulcerative colitis. A disorder affecting primarily the mucosa and submucosa of the large bowel, ulcerative colitis is characterized by gross bleeding with formed or diarrheal stools when the rectum and sigmoid are involved and by cramps, diarrhea, and occult blood when more proximal colon is involved.

Psychological characteristics. An obsessive-compulsive character structure, sensitivity to rejection or hostility (occasionally approaching paranoid proportions), and a tendency to relate in an intense, dependent, and ambivalent fashion with a limited number of persons are commonly reported psychological features of the ulcerative colitis patient. These characteristics antedate the development of the manifest illness. These people tend to be neat, orderly, punctual, conscientious, stubborn, and often indecisive. They place a high premium on control of affect, tend to intellectualize, and have fairly rigid standards of behavior. Some are petulant, querulous, demanding, and provocative, but well directed self-assertion or expression of aggression is less common. Sensitive and easily hurt, they are constantly alert to and try to ward off or avoid rebuffs, often by being placating, submissive, and polite; by conforming; or by remaining proud, aloof, nonchalant, and haughty. They sometimes give the appearance of great energy, ambition, and efficiency, but this often reflects a need to have palpable accomplishment and to fulfill a sense of obligation in order to overcome feelings of incompetence and inferiority and to satisfy the demands of others.

The patient with ulcerative colitis often reveals a rather consistent pattern of interpersonal relationship, which usually originates in the relationship with the mother. On the one hand, he appears to have a quite dependent relationship on one or two key persons, usually a parent or parent figure; on the other hand, he has a somewhat limited capacity to establish warm, genuine friendships. He uses the key figure as if part of his equipment for dealing with the external world, leaning on him for guidance, advice, and direction. He is reluctant to take the initiative, and he tends to act out the wishes, conscious and unconscious, of the key figure. Yet this is a highly ambivalent relationship, one within which overt expressions of hostility are fraught with great danger, for to be rejected may induce overwhelming feelings of helplessness.

The author has found that the nature of the relationship with the mother is of decisive importance in understanding the psychology of the ulcerative colitis patient. In general, the mothers are controlling and dominating. Both men and women patients are likely to see their mothers as powerful and overwhelming figures, who set exceptionally high standards of performance and make them feel helpless and dependent. Women often describe their mothers as cold, unaffectionate, punitive, rigid, strict, and judgmental; the men are more likely to portray their mothers as kind, considerate women who worry about their well-being.

In general these mothers are either unhappy, pleasureless, gloomy women with no great zest or enjoyment in life or harddriving, businesslike, perfectionistic women who are active and concerned with many outside interests but often dissatisfied with their own or others' accomplishments. They tend to be worrisome, complaining, pessimistic, and often hypochondriacal. Expression of genuine warmth, affection, and understanding comes with difficulty. Many show moderate to severe obsessive-compulsive traits, and a few are psychotic characters or frankly psychotic, usually paranoid. Periods of depression are common. A typical posture of the mother is to assume the role of a martyr, thereby mobilizing guilty reactions from the patient.

The patients usually reveal a high degree of sensitivity to the shifting dynamics of the mother's needs, anxiety, and guilt. They respond to her sigh, disapproving look, or change in posture or facial expression as well as to verbal expressions of distress. Some patients submit passively to the mother's domination; others submit with the complaint that mother won't permit them to do otherwise. In general, the patient feels under great pressure from the mother to perform, whether it be in the sense of general social achievement or to meet the mother's emotional needs or to alleviate her guilt, shame, or anxiety. This may include manipulating others so that the mother will be spared distress. In a word, the patient

learns the conditions under which he will not be rejected. Notable is the need of these mothers to maintain control of their children even after they are adult, often being the ones who contact the doctor or who care for their ill adult offspring, even when spouses are willing and available.

Although the father occasionally plays this role, most often he is the less important parent. The woman patient is likely to portray her father as a gentle, kind, passive, but ineffective man to whom she is quite attached; the man patient is likely to see him as a brutal, punitive, threatening, coarse, and very masculine man who may admire a brother who is more masculine and who more adequately fulfills the father's ideal.

The ulcerative colitis-prone patients tend to gravitate toward work roles and social relationships in which their personality traits are most effective, and indeed some are conspicuously successful in their jobs. Sexual and marital adjustment often present difficulties, first in breaking away from mother and then in finding a suitable replacement for the key relationship. In general, sexual life tends to be less active and interesting, sometimes with an anally tinged aversion leading to such descriptions as dirty and disgusting and to a preoccupation with the possibility of offensive odors. In the choice of a spouse, the qualities of the key figure are often sought, sometimes in the person of the mother-in-law.

Onset. The onset and the exacerbations of ulcerative colitis are reported to occur characteristically in settings in which the key relationship or some symbolic representation thereof is threatened or actually disrupted and the patient, in response, feels helpless to cope with what is happening, often expressed in such terms as "too much," "helpless," "nothing left I could do," "overwhelmed," "despair." Typically such situations may include (1) being called on for performance or achievement which the patient feels incompetent to carry out; (2) disapproval or threat of disapproval from the key figure or surrogate; (3) real, threatened, or phantasied separation from the key figure. Such circumstances may develop very suddenly, in which case the colitis attack may begin within hours or a day or two; or they may occupy a longer period, such as adolescence, during which symptoms gradually or intermittently develop before becoming full blown. Once bleeding, diarrhea, or other organically determined symptoms begin, they are experienced as a profound threat to the patient's strong need to maintain control over his environment, including his own body, and they contribute profoundly to the mounting sense of helplessness and despair.

Nothing is known of the mechanisms involved in the relationship between psychological stress and the activation of ulcerative colitis. The primary site of involvement is the mucosa and submucosa, which show edema and engorgement leading to bleeding and ultimately erosion and ulceration. Although prolonged

administration of parasympathomimetic substances have produced lesions in the gastrointestinal tracts of animals, there is no support for the view that parasympathetic discharge is the primary factor in the pathogenesis of ulcerative colitis. The fact that the affects associated with psychological giving up, namely helplessness and hopelessness, are implicated in the genesis of many organic disease processes suggests a nonspecific relationship between disease predisposition and biochemical or physiological processes associated with these affects. It is of interest that the ulcerative colitis patient experiencing anxiety or rage who remains in control or feels guilt is more likely to develop headache than an exacerbation of colitis.

Ulcerative enteritis. Patients with ulcerative colitis may have similar involvement of the terminal ileum or may develop such a process in the small bowel after colectomy and the establishment of an ileostomy. Attacks characteristically occur under the same circumstances as with ulcerative colitis.

Regional enteritis and granulomatous colitis. Although not the subject of as extensive psychological inquiry as ulcerative colitis, the available data indicate many similarities between patients with regional enteritis or granulomatous colitis and those with ulcerative colitis. Psychologically, the resemblance is greatest in respect to the prominence of anal character traits, the patterns of relating, and the vulnerability to object loss and subsequent development of helplessness as the setting in which onset or relapse of active disease occurs. These similarities are considerable, but they are not yet well enough documented to justify an assumption that the two disorders are identical in respect to all psychological features.

Celiac disease and idiopathic steatorrhea. It is currently believed that celiac disease of childhood and many instances of idiopathic steatorrhea of adulthood represent the same disorder, as evidenced by common histopathological changes and a sensitivity to wheat gluten (gliadin). Further, a large percentage of the adult patients give a history of celiac disorder early in childhood; and proven childhood celiacs, allegedly recovered, may also as adults still show absorption defects, histopathological changes, and reactivity to gluten. Many of the latter have intermittent mild symptoms of malabsorption.

Evidence for a genetic determinant has been brought forth, leading to the suggestion of an inborn enzyme deficiency in the intestinal mucosa as the underlying defect. The natural history of the childhood disease, however, suggests that, although such an underlying mucosal defect and the presence of gluten in the diet may be necessary for the development of the malabsorption syndrome, they are not sufficient, for remissions in the presence of gluten in the diet are well known.

An additional determinant in both children and adults appears to be mediated through psychological

stress. Among children, a disturbance in the mother-child relationship, including changes in patterns of handling and feeding, appear to be associated with exacerbations, and remissions have been brought about through improving the mother-child relationship, even without removing gluten from the diet. Among adults, with and without a childhood history, onset or recurrences are noted in settings in which real or threatened loss of support eventuates in psychological giving up, with feelings of sadness, despair, helplessness, and hopelessness.

Experimental study suggests an interaction among at least three factors in the production of the full blown malabsorption syndrome: the intrinsic intestinal defect, gluten (gliadin) in the diet, and some effect mediated through psychophysiological or neurogenic influences.

Insufficient data are available to justify any statement concerning distinctive psychological characteristics of this group of patients. Many adults with a childhood history of celiac disorder show immaturity, dependency, and unusual vulnerability to loss of love objects. Studies of older children demonstrate the prominence of obsessive-compulsive traits and the controlling and ambivalent nature of the mother's relation with her child. They also point to evidence that such attitudes of the mother antedated the birth of the child. Superficially, these children appear to be passive, often withdrawn, inhibited personalities, for whom overt expressions of aggression or self-assertion seem to be difficult. As infants, they are fussy, irritable, and cry a great deal, even before the onset of the celiac symptoms.

Irritable colon syndrome (spastic colon, mucous colitis). This is the classic functional bowel disorder, characterized by alternating diarrhea and constipation, abdominal cramps, flatulence, and at times increased mucus in the stool. There is much evidence to show that both the typical symptoms and the physiological changes in the colon are the result of parasympathetic influences on the colon and that the colons of these patients react excessively to parasympathetic stimulation as compared to the colons of patients without bowel disorder or with ulcerative colitis, suggesting some intrinsic organic bowel defect, perhaps in innervation. Further, there is almost universal acceptance of the view that bowel symptoms are brought about by psychological influences. Actually, the symptom pattern of this group of patients is by no means restricted to the bowel but includes other expressions of autonomic activity, such as excessive sweating, flushing, dermatographia, lability of pulse, and peripheral vasoconstriction.

From the psychological perspective, these patients are generally noted to be rigid, obsessional, and compulsive individuals who attempt to maintain tight control over their impulses. They tend to be orderly, methodical, conscientious, precise, much preoccupied with cleanliness, tidiness, regularity, punctuality, and schedules. It is not surprising that they gravitate

to work roles in which such qualities are valued, such as accounting, bookkeeping, filing, and library work. They place a high premium on intellectual control and performance and are very restrained in expression of emotions, be they pleasurable or unpleasurable. By the same token, they tend, on the one hand, to maintain a cold, intellectual, almost impervious air toward the emotional turmoil of others and, on the other hand, to be extremely sensitive to hostile or rejecting behavior or emotional outbursts when directed toward them. In this respect they appear hypersensitive and easily hurt to the point at times of paranoid suspiciousness. Especially important in the underlying psychodynamics are conflicts about giving and receiving and the control of aggression. Distrustful and fearful of rejection, especially if aggressive or sexual impulses are displayed, they tend to hold on to what they possess, not to give. Some are notably stingy, stubborn, and parsimonious; others overdo the guise of generosity (reaction formation) but as a result constantly feel unappreciated and disappointed that the recipient is not more grateful. Feelings of depression are common, and there is a relatively high incidence of significant clinical depression, including melancholia.

It has been suggested that the oscillations between constipation and diarrhea so characteristic of these patients reflect shifts between psychologically holding back and maintaining control, on the one hand, and letting go in an unconscious, aggressively soiling or depreciatingly giving way, on the other.

Treatment. From the psychological perspective, the five somatopsychic-psychosomatic conditions discussed above are more notable for resemblances than for differences. In terms of threat to life or serious disability, they may be ranked in the following order: ulcerative colitis, ulcerative ileitis, malabsorption syndrome, regional enteritis, and irritable bowel syndrome, of which only the last may be regarded as without serious risk.

The importance of psychological influences makes it mandatory that a psychotherapeutic attitude characterize the physician who cares for these patients. With the more seriously ill patients, this includes appreciation of the psychotherapeutic implications of being able to bring symptoms under control, whether it be with the aid of steroids or ultimately surgery. In all instances, the role of the physician as a replacement for the lost or threatened key figures in the patient's life is a crucial one. Accordingly, the psychiatrist's most valuable contribution to the care of the sicker patient is in the form of the assistance he gives the medical physician in understanding and utilizing to best advantage his relationship with the patient and in avoiding the sometimes disastrous consequences of a disruption of the relationship. Especially valuable may be the psychiatrist's aid in preparing the ulcerative colitis patient with irredeemable bowel damage to accept ileostomy and colectomy.

Although this approach is predicated on a psychotherapeutically oriented perspective, some patients

can profit from more systematic psychotherapy. The capacity of a patient to so benefit must be evaluated by the psychiatrist, but care must be exercised that the referral, even when initiated by the patient, is not interpreted by the patient as a rejection by the internist or gastroenterologist. The latter, by all means, should maintain an active involvement with the patient so that beginning psychotherapy is seen as an addition, not a loss.

In recognizing the role of psychotherapy in the treatment of these patients, one should also have very clearly in mind what psychotherapy cannot be expected to accomplish. There is no evidence at the present time that psychotherapy, no matter how intensive, can eliminate the biological defect underlying colitis, ileitis, or malabsorption syndrome; therefore, an expectation of complete cure is unjustified. Although remission and complete healing are common, psychotherapy cannot insure against recurrence in the face of sufficient stress.

The major contribution that psychotherapy can make is the modification of the basic psychological structure so as to render the individual less vulnerable to the types of situations in which the disease becomes manifest. These particularly concern the capacity of the patient to develop human relationships and to tolerate their loss or threat of loss. Successful psychotherapy usually brings about a significant improvement in the patient's techniques of dealing with the early parental figures and some resolution of early conflicts. With this, one generally sees a gradual emancipation from parental figures and an increasing capacity to establish satisfying and enduring relationships with others.

As with anyone, however, there may still occur events in the person's life with which he has no effective means of coping, and under such circumstances the disease may resume. In general, the patient who has achieved some successful psychotherapeutic response has more chance of maintaining a remission. But it is of the utmost importance that the patient embarking on psychotherapy clearly understand that psychotherapy cannot eliminate the potential for the organic disease; otherwise, even a mild relapse may be felt as a personal failure or destroy the patient's confidence in the therapist, thereby constituting a major stress capable of provoking a massive recurrence. Many of the serious relapses during or after termination of psychotherapy or psychoanalysis have been of this nature and have led to an unjustified pessimism as to the effectiveness of this approach.

In brief, the indications for and choice of the type of psychotherapy are based on psychological considerations and not on expectations of eliminating the underlying organic disorder.

Suggested Cross References

For an alternate viewpoint on symptom choice, see Section 29.3 on current concepts of psychosomatic

medicine. For further discussion of the psychoanalytic concepts of anality and the anal character, see Section 6.1. A discussion of constipation and diarrhea in children may be found in Section 41.2.

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30.3 OBESITY

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Definition and Diagnosis

Obesity is a condition characterized by excessive accumulation of fat in the body. It is a convention to view it as present when body weight exceeds by 20 per cent the standard weight listed in the usual height-weight tables. But tissues such as muscle can contribute to significant degrees of "overweight," and so this measure is at times only a rough index of obesity. In the future, diagnosis will probably be based on newer and more accurate methods of estimating body fat. In the meantime, the simplest diagnostic method is still the best, inspection and palpation.

Epidemiology

Rarely, if ever, has an entire people had more than enough to eat for any prolonged period of time. As a result, throughout history, as in many underdeveloped areas today, obesity has been restricted to the privileged classes. In many cultures it is a status symbol, and the legendary yearly weighings of the Aga Khan suggest that the size of its leaders can

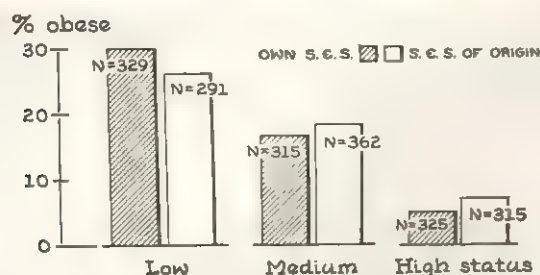


FIGURE 1. This chart shows the decreasing prevalence of obesity with increasing socioeconomic status (S.E.S.) among women in a large American city. (From Goldblatt, P. B., Moore, M. E., and Stunkard, A. J. Social factors in obesity. *J. A. M. A.*, 192: 1039, 1965.)

TABLE I
Comparison of Obese and Normal People
on Mental Health Indices

Obese persons show a higher prevalence of neurotic traits and symptoms than nonobese members of the same population. Detailed analysis of these data, controlled for age and socioeconomic status, reveal that the differences are statistically significant.

Trait	Percentage Making Pathological Scores	
	Obese	Normal
Immaturity.....	63	49
Suspiciousness.....	43	25
Rigidity.....	67	45
Frustration-depression.....	23	18
Withdrawal.....	40	30
Tension-anxiety.....	34	31
Neurasthenia.....	17	10
Psychiatrists' rating.....	30	22
Childhood anxiety.....	32	38

represent a source of pride for an entire community. Under the circumstances, one might expect obesity to be more prevalent among the privileged groups. Recent studies in Germany and India support less systematic impressions from a number of cultures that this is indeed the case.

In the United States just the opposite situation prevails. Here, increase in socioeconomic status is associated with a *decreasing* prevalence of obesity. In one study the condition was six times more common among women of low status than among those of high status (see Figure 1). Social class of origin showed almost as strong an association, indicating that social class influenced obesity and not vice versa. The consistency with which social factors were associated with obesity indicates their profound importance in our understanding of it. In addition to social class, such factors include social mobility, ethnic and religious variables, and familial generation in the United States.

Age is the second major influence on obesity from the epidemiological point of view, with the prevalence of overweight more than doubling between the

ages of 20 and 50. Since the percentage of body weight composed of fat increases with increasing age, the influence of age on *obesity* is even greater than is indicated by the figures on *overweight*.

Etiology

The days when one expected to find *the* cause of obesity are long past, and the condition is currently viewed as the end product of a disturbance in energy balance. According to this view, human obesity consists of many different disorders, which can result from a variety of determinants acting singly, in combination, or through each other. Two such determinants, age and social factors, have been described above. Several others have been identified.

Physical factors. Genetic factors have been abundantly demonstrated in obesity among lower animals and must be presumed to be of importance in man, even though they have been demonstrated until now only in rare conditions, such as the Laurence-Moon-Biedl syndrome. Biochemical factors contribute to some forms of experimental obesity and probably do so in obesity in man, although evidence is so far lacking. Constitutional factors, such as body build, have interesting associations with obesity. Obese adolescent girls show extremely low ratings for ectomorphy, and the presence of even a medium degree of ectomorphy appears to protect against the development of obesity. Another study using the Kretschmerian typology found that rapid weight fluctuations and emotional disturbance occurred more frequently among obese persons of the adiposedyplastic type than among obese persons of the pyknic or pyknoathletic types.

Emotional factors. These are probably of great importance. First, many obese persons report that they overeat when they are emotionally upset. Second, obese persons are more likely to manifest neurotic traits and symptoms than are nonobese persons (see Table I).

It has proved singularly difficult to proceed from these simple and provocative findings to a more precise understanding of emotions and obesity. Much of the higher prevalence of neurotic traits and symptoms among obese persons, for example, is due to the overrepresentation of both neurotic traits and obesity among persons of older age and lower socioeconomic status. When both age and socioeconomic status are held constant, the difference between obese and non-obese persons becomes considerably less, although still statistically significant.

Kaplan and Kaplan have reviewed the many attempts to define an emotional constellation specific for overeating and obesity. Countless psychic impulses, symbolic meanings, conflicts and dynamics, particularly orality and pathological dependency, have been proposed. The very diversity of these factors argues against the existence of any one which operates in all cases of obesity. Carefully controlled studies have failed to uncover a specific personality

profile of obese persons or a psychodynamic conflict specifically related to their overeating. The most clear cut evidence of the influence of emotional determinants on obesity has been found in two small subgroups of obese persons, each characterized by an abnormal, stereotyped pattern of food intake.

The "night-eating syndrome," found in 10 per cent of obese persons, more commonly among women, is characterized by morning anorexia, evening hyperphagia, and insomnia. There is no apparent symbolic meaning of either the evening hyperphagia or the morning anorexia, nor is there self-condemnation related to the overeating. The syndrome is precipitated by stressful life situations, and, once begun, it tends to recur daily until alleviation of the stress. Attempts at weight reduction when the syndrome is present have an unusually poor outcome, and persons suffering from it are difficult to influence by psychotherapy.

The "binge-eating syndrome," found in less than 5 per cent of obese persons, is characterized by the sudden, compulsive ingestion of very large amounts of food in a very short period of time, usually with great subsequent agitation and self-condemnation. It, too, represents a reaction to stress. In contrast to the night-eating syndrome, however, bouts of overeating are not usually periodic. They tend to be far more closely linked to specific precipitating circumstances, sometimes occurring within minutes of a particularly frustrating experience. Binge eaters can sometimes lose large amounts of weight by rigid and unrealistic diets, but such efforts are usually interrupted by a resumption of the eating binges. The small percentage of obese persons who develop anorexia nervosa appear to have been binge eaters.

Some of the determinants of obesity may act through a decrease in physical activity, which results in a caloric surplus through two mechanisms—first, and most obviously, by a reduction in caloric expenditure, and second by its effects on appetite. Interestingly, in both animals and man, while appetite increases with energy expenditure over a wide range of energy demands, it does not decrease proportionally when physical activity falls below a minimal level. The restricted activity of many obese persons may thus actually *increase* their food intake! A measure of the extent of this restriction in one group is shown in Figure 2. The physical activity of obese women is so radically reduced as to account wholly for their obesity. Such radical restriction is not present among all obese persons. Among the men in the study, differences in physical activity were small, so that the additional energy expended by obese subjects in moving their heavier bodies produced a caloric expenditure equal to that of the nonobese men.

Related Disturbances

Some neurotic obese persons show disturbances in their body image involving one or two kinds of

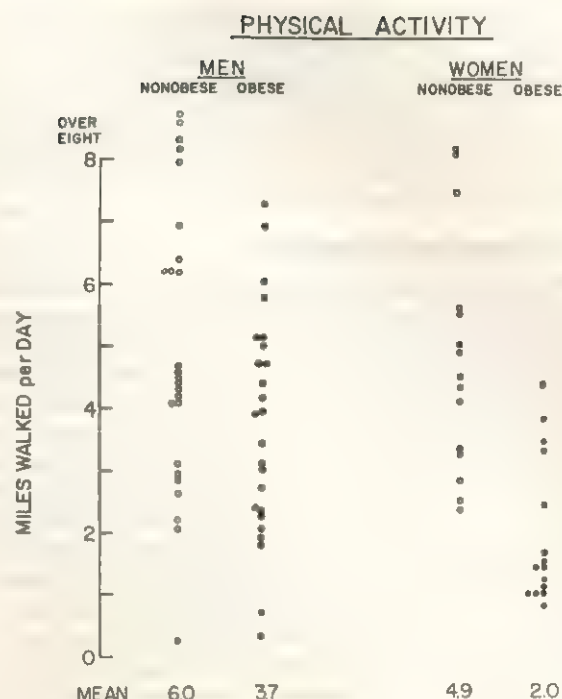


FIGURE 2. Comparison of the physical activity of obese and nonobese men and women. Each point represents the average distance walked each day by each subject, as measured by a mechanical pedometer. Most obese women walked shorter distances than nonobese women. Among men, there is less difference in the distances walked. (From Chirico, A. M., and Stunkard, A. J. Physical activity and human obesity. *New Eng. J. Med.*, 263: 935, 1960.)

faulty perceptions: misperceptions of important visceral events and misperceptions of their physical appearance.

Misperceptions of visceral events. Some persons have difficulty in identifying hunger and satiety, and they frequently seem unable to distinguish between hunger and other kinds of dysphoria. This "conceptual confusion" has been linked by Bruch to severe deficits in identity and self-effectiveness and to the need for signals from the outside for a person to know when to eat and when to stop. A recent experimental analysis of such misperceptions indicates that they are due to a response bias that can be corrected by training procedures.

Misperceptions of physical appearance. An obese person's misperception of his physical appearance is usually confined to his obesity and is characterized by a feeling that his body is loathsome and grotesque and that others can view it only with hostility and contempt. Such preoccupations may color every personal relationship and make the person's body an explanation and a symbol of all his failures and disappointments. This latter type of misperception occurs only in persons who become obese before adult life, and adolescence is probably the critical period when it is imprinted.

Among persons who become obese as children, less than half develop body image disturbances. But in

this group, neurosis is closely linked to obesity, and it contains many if not most of the persons with night-eating and binge-eating syndromes. The poor prognosis in juvenile obesity, with more than 8 out of 10 obese children remaining obese as adults, suggests that obesity in children is potentially a very fruitful area for treatment and prevention.

Management and Prognosis

Weight reduction of obese persons is frequently successful when carried out in a hospital and usually unsuccessful when attempted on an out-patient basis. In both instances, successful dieters usually regain their lost weight in a short period of time. These poor results are due, in part at least, to the process of selection. Information about reducing diets is so widely available that only persons with great difficulty in losing weight seek medical treatment, and only the failures of medical treatment reach the psychiatrist. In view of this selection, it is understandable that there is no systematic evidence showing psychotherapy to be more effective than other, less expensive, aids to weight reduction. Not so understandable, in the absence of such evidence, is the widespread belief in the efficacy of psychotherapy, specifically in uncovering unconscious causes of over-eating. Efforts at such uncovering are usually fruitless and may produce overdependency on the therapist and inordinate regression. It is unlikely that psychotherapy can modify the symptom choice of persons who overeat as a response to stress. Years after successful psychotherapy and successful weight reduction, persons who overeat under stress continue to do so.

Despite these limitations, psychotherapy has a place in the management of obesity and an important place in the treatment of some carefully selected obese persons. As has been noted, many obese persons overeat when under stress. When they can be helped by psychotherapy to live less stressful and more gratifying lives, they are less apt to overeat and may lose weight, sometimes permanently. Such benefits are not less significant for being nonspecific results of treatment. Furthermore, two conditions may constitute specific indications for psychotherapy. Disturbances in body image and the binge-eating syndrome have been successfully treated, with enduring weight loss among the binge eaters. Neither condition is influenced by other forms of treatment, including, significantly, weight reduction. Psychotherapy of these conditions frequently requires years to ensure enduring results; it may be facilitated by modifications in technique designed to minimize intellectualization and regression.

Some patients are helped by participation in lay groups such as TOPS (Take Off Pounds Sensibly). Drugs are of limited value, and it is frequently desirable to try to protect patients from the alluring programs of quacks and promoters.

Serious emotional disturbances may occur among obese persons during attempts at weight reduction. Recent reports indicate that this complication is rarer than had been thought, and it need not preclude most weight reduction programs, but psychiatrists should be aware of its existence.

Suggested Cross References

For a discussion of fundamental concepts of sociocultural determinants of behavior, see Silverman's section on sociology (Section 4.2) and Wallace's section on anthropology (Section 4.1) in Area B, on the basic behavioral sciences. Information regarding obesity in children may be found in Section 41.2 in Area H, on child psychiatry.

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30.4 ANOREXIA NERVOSA

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A young woman thus afflicted, her clothes scarcely hanging together on her anatomy, her pulse slow and slack, her tem-

perature two degrees below the normal mean, her bowels closed, her hair like that of a corpse—dry and lustreless—her face and limbs ashy and cold, her hollow eyes the only vivid thing about her—this wan creature whose daily food might lie on a crown-piece, will be busy—yet on what funds God only knows.

This is a description by Allbutt and Rolleston of the severe form of anorexia nervosa, a disorder better designated as psychogenic malnutrition. The malnutrition is due to a voluntary reduction in caloric intake, unrelated to economic status or the availability of food. The usual patient eats parsimoniously and may consume less than 1,000 calories a day. Some patients curb an intense desire for food; others actually lose their appetites. There are those intent on being slim who induce vomiting, hide or dispose of food, or use cathartics. Whatever the technique, the final result is the same—a reduction in calories and consequent loss of weight. Weird though these strategies seem, they become reasonable when viewed from the perspective of the patient who is determined for personal reasons to lose weight or who is afraid to eat because food induces physical discomfort or intolerable fears.

Clinical Characteristics

There has been a misconception that only females suffer from this disturbance, but this is not true, since 10 per cent of the cases are males. In females amenorrhea is a frequent but not invariable finding, in some cases preceding the loss of weight, in others occurring only after significant malnutrition. Many patients have remarkable energy despite their cachexia; but some are initially neurasthenic, and all become feeble when weight drops to critical levels. Finally, constipation, hypotension, a mild anemia, and bradycardia are all features of the cachectic state, and each is attributable to the physiology of malnutrition.

The literature is laden with biases concerning the classification of these patients. Examination of a large number of cases, however, makes it clear that some patients are disturbed adolescents, and others are hysterical, obsessional, or schizophrenic. In fact, cases cover the entire range of the psychiatric nomenclature.

Different classes of patients usually become malnourished in distinctive ways. Typically, the adolescent anorexic patient worries about obesity and diets excessively to increase his or her self-respect and to escape ridicule. The hysterical patient develops somatic disturbances that interfere with the ingestion of food. The patient with a phobia fears obesity and refuses to eat, whereas the obsessional individual ruminates about food and obesity and pursues a ritualistic diet. The depressed patient loses his appetite and develops a disinterest in food, but the schizophrenic develops delusions about food and most typically decides it is contaminated or poisoned. A few rare females respond to pregnancy fantasies with anorexia and cachexia.

In many cases, food and body contours assume unusual symbolic significance. For example, to some obesity means voluptuous curves and sexually enticing

protuberances that are sources of shame. Others see leanness as a return to inconspicuousness or a regression to a childlike lack of responsibility. These attitudes, as well as other psychological sets, play important roles in many cases and lead to attitudes about leanness and food that motivate semistarvation.

Differential Diagnosis

Although, in the past, anorexia nervosa and panhypopituitarism were sometimes confused, they actually have little in common. In anorexia nervosa, adrenal cortical and thyroid functions are normal. A low basal metabolic rate reflects a hypometabolic state due to malnutrition that is unrelated to pathological thyroid function. The only endocrine disturbance is a reduction in gonadotropins associated with a drop in urinary estrogens. These last changes reverse when the malnutrition is corrected.

Malnutrition and anorexia are nonspecific symptoms that appear in a great number of infections, and in malignant and deficiency organic diseases. These must be ruled out in the differential diagnosis of anorexia nervosa.

Management

Treatment is based on the fact that anorexia nervosa is a symptom of a general psychiatric disorder. The therapy is, therefore, influenced by two considerations. (1) The malnutrition can usually be ignored unless the weight loss is excessive or sudden, in which case hospitalization and forced feeding may be required, since patients may die from severe malnutrition unless emergency action is taken. (2) The psychiatric treatment should be designed to assist the patient in attaining coping devices that are better than the neurotic misuse of food. The attack on the underlying psychopathology must be highly individualized, ranging from somatic modalities to psychoanalysis, depending on the case. A period of hospitalization can sometimes be used to give the patient a controlled environment where he can be separated from home and family.

Suggested Cross References

Anorexia nervosa is further discussed from the perspective of child psychiatry in Section 41.2. Fundamental concepts of the hunger drive are discussed by Malmo in Section 3.4, on motivation.

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30.5 CARDIOVASCULAR DISORDERS

MORTON F. REISER, M.D.

Changes in cardiovascular function are an integral part of all emotional reactions. They may be extensive and profound, especially in severe anxiety states, and occur in acute, subacute, or chronic forms. As such, they represent a major component of the vegetative (neuroendocrine) response to psychological stress. Other components of the vegetative response involve metabolic pathways which may, in turn, influence the circulatory system through changes in water and electrolyte balance, blood fats, clotting mechanisms, etc. Accordingly, the relationships between psychopathological factors and cardiovascular pathology in the genesis of clinical disorders of the circulatory system may be exceedingly complex.

Heart Disease

Clinical features: General considerations. The symptoms (dyspnea, palpitation, tachycardia, substernal sensations of tightness or heaviness, perspiration, etc.) and signs (tachycardia, changes in blood pressure, perspiration, certain irregularities of cardiac rhythm, etc.) ordinarily associated with various forms of heart disease may also be observed in well developed anxiety states in the absence of underlying cardiovascular pathology. When acute states of this nature are recurrent and occur against a background of chronic low grade anxiety and tension, a number of diagnostic labels may be invoked. Actually, these conditions are best regarded and managed as anxiety states (acute, subacute, chronic, or mixed). However, in some cases the precordial sensations and symptoms become the primary focus of the patient's attention, and there is intense rumination and recurrent concern about heart disease which does not respond to ordinary techniques of direct reassurance. Such a condition might be labeled a "cardiac neurosis." The potential role of iatrogenesis in these cases is obvious, and the importance of prevention cannot be emphasized too strongly.

In another group of patients the predominant symptom complex may consist of more generalized complaints of chronic lassitude and weakness, with emphasis on faintness, excessive perspiration, and cold extremities (in addition to precordial and respiratory distress during acute anxiety attacks). This constellation has been labeled "neurocirculatory asthenia." Whether or not there are constitutional (metabolic) factors which would justify a separate diagnostic category for these patients is a matter of unsettled controversy at the present time.

The physiological changes brought about by anxiety and other activating affects, such as rage, must, of

course, be expected to exert important effects on the diseased cardiovascular system.

Psychophysiology in patients with structural heart disease. Under stress, the *diseased* cardiovascular system may not be capable of meeting the increased work demands that anxiety imposes and/or of maintaining its finely balanced regulating mechanisms within physiological limits under the impact of autonomic discharge and changes in levels and ratios of hormones, such as epinephrine and norepinephrine, to which it is exquisitely sensitive.

As demonstrated by Hickam, Cargill, and Golden, the burden imposed on the heart by anxiety is considerable, and comparable to that imposed by exertion. Whenever cardiac reserve is insufficient for performing the amount of work required to pump as much blood as the body requires, cardiac failure ensues. And it has been demonstrated by Chambers and Reiser that the increased work demanded by emotional stress may indeed lead to congestive heart failure in patients with severely diminished cardiac reserve. It appears possible that the increased work demand may well induce a state of relative functional coronary insufficiency in patients with coronary arteriosclerosis too severe to allow for enough increase in coronary blood flow to support increased myocardial work.

Psychophysiology of miscellaneous circulatory disorders. Regulatory cardiovascular functions which are finely balanced and sensitive to autonomic and hormonal changes include the mechanisms governing cardiac rate and rhythm, the caliber and tone of all components of the vascular tree, level of arterial blood pressure, and local perfusion of particular areas of the vascular bed (e.g., of various vital organs and extremities, etc.). Psychological stress may then precipitate and act as an aggravating factor in clinical disorders involving malfunction of these mechanisms, e.g., cardiac arrhythmias, migraine, essential hypertension, vasodepressor syncope, Raynaud's disease and other forms of peripheral vascular disease, coronary insufficiency, and cerebral vascular accidents. In some instances, the localization, anatomical or functional, of the disorder can be related to focal tissue pathology. For example, a rheumatic nodule or an ischemic scar involving a portion of the cardiac pacemaker-conduction system may provide a locus of irritability or refractory conduction that could account for development of a particular paroxysmal arrhythmia under the triggering influence of stress. In the absence of demonstrable local pathology, however, such an arrhythmia would be regarded as a psychophysiological cardiac reaction. Under such circumstances, it is not known what determines which area of the circulation or which of its functions will be involved (or, for that matter, whether the circulatory system will be the site of disease at all). The role of psychological mechanisms in respect to psychosomatic specificity is still a matter of controversy. Thus, it is not clear whether these mechanisms play any specific etiological role at

all and, if they do, whether they do so alone or in combination with other predisposing (e.g., constitutional) factors.

Psychological effects in patients with structural heart disease. The symptoms and diagnosis of heart disease may generate considerable initial (and often continuing) psychological distress for the patient. And the unresolved anxiety, somatopsychic in origin, may act to aggravate the condition or to counteract the effects of medical treatment. Cyclic self-reinforcing situations commonly develop. On the one hand, the mobilization of psychological defenses may be harmful; for instance, denial may lead to the patient's refusal to cooperate with the medical regimen. On the other hand, excessive invalidism out of proportion to the actual severity of the circulatory disorder may ensue and be severe enough to justify a diagnosis of cardiac neurosis.

The role and importance of direct verbal and non-verbal reassurance, sedation, and the judicious use of tranquilizing agents, particularly in acute situations, are obvious. Over the long term, these complicating psychological reactions may require the use of limited psychotherapeutic techniques (primarily proper management of the doctor-patient relationship) by the physician in charge. Occasionally, psychiatric consultation and treatment are required.

Hysterical conversion symptoms in patients with heart disease. Any of the symptoms of circulatory disease may occur as manifestations of major hysteria—that is, as conversion symptoms. Occasionally, patients who have an underlying cardiovascular disease and have experienced certain symptoms in association with it may subsequently experience the same symptoms on a purely psychological conversion basis in the absence of the concomitant physiological changes which previously gave rise to these symptoms. This possibility should be borne in mind in relation to patients with unaccountably intractable or recurrent symptoms, such as pain (angina), light-headedness, sense of breathlessness, and palpitation. Similarly, chronically recurrent symptoms of acute anxiety may eventually occur without physiological mobilization (e.g., palpitation without change in heart rate or stroke volume). When this situation obtains, it can be recognized by conducting the appropriate examinations or tests while symptoms are being experienced. If symptoms have become independent of their physiological background, treatment should be modified accordingly.

Possible psychological determinants of coronary heart disease. For many years there has been considerable interest in the possible role of psychological factors in the etiology of coronary heart disease. As noted above, emotional factors may contribute to the development of functional coronary insufficiency in patients with established coronary arteriosclerosis. However, the role of psychological factors in the etiology and pathogenesis of arteriosclerotic heart disease has not been clearly established. Formulations of

a "coronary personality" have not found consistent support in careful empirical research, although many investigators attribute this lack to the operation and complex interaction of multiple variables—such as age, sex, and socioeconomic status—which have not been fully taken into account in experimental design. Recent psychophysiological work suggests that emotional stress may be accompanied by changes in blood-clotting mechanisms and level of blood cholesterol, but, again, this awaits systematic replication and validation. Accordingly, it is probably best at this time to suspend judgment regarding the exact role of psychological factors in the etiology and pathogenesis of coronary heart disease.

Essential Hypertension

Essential hypertension is the term used to refer to the sustained elevation of systolic and diastolic arterial blood pressure in the absence of any of the demonstrable known causes of arterial hypertension.

Clinical features. The disease exists in two forms, benign and malignant, distinguished primarily by the extent of visceral (particularly renal) damage, rate of progression, and, to a lesser degree, the height of the patient's blood pressure, particularly the diastolic pressure. Usually, the malignant (accelerated) form is superimposed on a preexistent benign essential hypertension, but it may take this form from the outset, particularly in younger individuals. The disease manifests its damage through changes in the arterial tree, particularly the smaller arterial radicles and arterioles, which show a form of arteriosclerosis termed arteriolesclerosis. This condition is widespread but leads specifically to clinically important pathology in the heart, brain, and kidneys—the organs that are the three major sources of morbidity and death (in that order of frequency). The basic symptoms which are directly (and unquestionably) attributable to the disease are those associated with arteriosclerotic heart disease (congestive failure and/or coronary insufficiency), cerebral arterial disease (acute vascular accidents, thrombosis and hemorrhage, and acute hypertensive encephalopathy), and arteriolar nephrosclerosis (renal insufficiency and uremia).

The disease may, and usually does, run an indolent, benign course. The elevation of the blood pressure is thought to accelerate or aggravate the arteriosclerotic process; however, there is no absolute relationship between level of blood pressure and prognosis, although in general the trend is for higher blood pressure levels to augur more rapid progression of the disease process. Actually, this is difficult to evaluate because of the frequent artifact that the blood pressure level in patients with essential hypertension is extremely sensitive to circumstances of measurement. Thus, levels determined in the physician's office may be quite a bit higher than the patient's ordinary day-to-day blood pressure and hence not truly representative. In any event, there are many instances on record

where patients with quite high blood pressure levels have lived long, comfortable, and useful lives and have died of some other disease.

Nor is there a clear one-to-one relationship between blood pressure level and symptomatology. Although patients with the disease may experience many symptoms often attributed to hypertension—such as headache, dizziness, light-headedness, breathlessness, precordial tension, lethargy, lassitude, easy fatigability, muscle cramps, etc.—many physicians now regard such symptoms as primarily psychological in origin. Furthermore, the benign form of the disease may be quite asymptomatic; as a matter of fact, it is often discovered in the course of a routine examination with some evidence—in the eyegrounds, for instance—that it has existed without symptoms for some time.

The basic pathological physiology of the elevated (systolic, diastolic, and mean) arterial blood pressure consists of an increased peripheral resistance, which is due primarily to a decreased total cross-sectional area of the arteriolar bed. Cardiac output (stroke volume and heart rate), blood viscosity, etc., are within normal limits during the uncomplicated phases of the disease. The narrowing of the total arteriolar cross section may result from functional (reversible) increase in the tone of the arteriolar walls and from structural (irreversible) arteriosclerotic changes. The former may be mediated through sympathetic nervous system pathways, through the effects of circulating pressor substances, or through combinations of the two.

Psychophysiology. Although this cardiovascular dynamic pattern can be produced and aggravated by psychological stress in the patient with essential hypertension (with a resultant rise in blood pressure), this is not the most common pattern of change in circulatory dynamics in normotensive individuals under psychological stress. The more common reaction in the nonhypertensive individual with anxiety is an elevation of systolic blood pressure, a fall in diastolic blood pressure (relatively unchanged or slightly lowered mean blood pressure), increased cardiac output (stroke volume and heart rate), and decrease in peripheral resistance. Occasionally, the hypertensive pattern or combinations of the hypertensive pattern and the pattern just described can be elicited in the normotensive individual in psychophysiological experimentation. But no clear cut, unequivocal differential relationship between specific affects, such as rage and anxiety, and specific patterns of cardiovascular dynamic change have been satisfactorily demonstrated in normotensive individuals as yet. On the other hand, the hypertensive mechanism—that is, spasm of the arterioles with increase in peripheral resistance—can be readily and reproducibly activated psychologically in the patient with essential hypertension. It has been demonstrated that these pressor responses may be mediated through both the neurogenic and the

humoral mechanisms which are known to affect arteriolar tone.

Psychological determinants. Innumerable clinical studies have demonstrated that the onset (or discovery) of the disease, occurrence of complications (heart failure, myocardial infarction, cerebral vascular accidents, hypertensive encephalopathy, etc.), and even acceleration of the disease from the benign to the malignant phase may occur in conjunction with the sustained emotional turmoil accompanying life crises. The external nature of these crises and the internal character of the patient's emotional turmoil are consistent within each patient, in accordance with his personality and life history. It has also been observed that frequently the progress of the disease is slow during periods when the patient's personal affairs are quiet and well ordered, and he is able to maintain a well ordered, "good" relationship with the physician.

Although no specific psychological characteristics distinguishing these patients as a group from the general population have been reliably established, a few very broad and nonspecific generalizations can be made about some psychological characteristics of patients with hypertension. Like other patients with major psychosomatic diseases, most often their core psychological conflicts are observed to center around pregenital libidinal issues and difficulties in the neutralization of aggression. In addition, they have particular problems in dependency relationships, in which they display extreme degrees of ambivalence (which often interferes with optimal management of the doctor-patient relationship, especially at times of crisis).

Although the role of the emotions as a major and highly important influence on the clinical course of essential hypertension has been clearly established, the mechanism and role of psychological factors in the etiology of the disease are not clearly understood. A great deal of research has been carried out on this question, however, and the evidence is suggestive (but not conclusive) that emotional factors may play some role in etiology, along with constitutional and possibly other, as yet unknown factors. A major multiple factor theory was proposed by Franz Alexander, who postulated a specific emotional problem (involving modulation and management of rage) as a necessary (but not sufficient) condition for the development of essential hypertension.

Treatment. A primary problem in the treatment of essential hypertension centers around the proper evaluation of the patient's clinical status and course and attainment of a clear perspective as to the nature and source of the patient's symptoms. Most medical authorities agree that major specific measures—hypotensive drugs, surgery, special diets, etc.—should be reserved until the disease shows signs of increased rate of progression. However, determination of the point where a previously indolent course is beginning

to show signs of progression is a judgment which often requires the utmost in clinical skill and acumen. This potentially critical development in the course of the disease is best detected through careful serial evaluation of the patient's cardiac and renal status and regular observation of the patient for the appearance and progression of the characteristic changes of hypertension in the optic fundi.

Perhaps the major contribution of psychiatric studies of this disease has been to clarify the limited significance of the level of blood pressure, *per se*, and to provide a clearer perspective for understanding the origin of symptoms.

The most frequent—and frequently the most difficult—psychological problem confronting the physician emanates from the patient's fear of the disease. To be effective, reassurance must be based on firm conviction which is valid in respect to the physician's knowledge of the natural history of the disease, and also based on careful appraisal of the patient's clinical status and thoughtful formulation of the mechanisms underlying his symptoms. Reassurance that stems from generalities rather than specifics, however well intended, is apt to be hollow and to backfire eventually. In most instances, the patient's fears far exceed the actual dangers of the situation, so that the physician has a great deal of leeway within which to take a realistically based position that is clinically sound and inwardly comfortable and permits consistency in his continuing long term management of the patient.

It is important to recognize those symptoms which are of neurotic origin for what they are, and to base such a diagnosis on careful study of the patient's personal history so that a positive psychiatric formulation can be made and substantiated. It is not sufficient to arrive at such a diagnosis simply by the process of exclusion. This is a course fraught with danger for the patient.

On the basis of his thorough and sober understanding of the patient, then, the physician can (1) avoid unnecessary and even harmful medications, treatment, restrictions, etc., and (2) apply appropriate (psychotherapeutic) treatment techniques. In general, the major psychotherapeutic tool available to the general physician in the management of the patient with hypertension is the doctor-patient relationship. Adjunctive use of psychoactive drugs should be considered in instances where the psychiatric clinical status of the patient provides appropriate indications. Additionally, these drugs may be prescribed for their tranquilizing, sedative, or antidepressant properties when it is felt that sustained emotional tension (anxiety and/or depression) may be aggravating the physiological disorder. Although some of the psychoactive drugs do exert effects on autonomic function, including a degree of inhibition of or interference with adrenergic sympathetic activity, such effects probably

do not, in themselves, constitute indications for use in the treatment of the patient with essential hypertension. The incidence of depression as an untoward side effect of long term Serpasil administration may be more commonly encountered in patients with essential hypertension than in patients with normal blood pressure.

In brief, each patient should be studied individually, and treatment should be based on the best understanding the physician can achieve in respect to his particular problems and situation, rather than on any preconceived "formula," such as the once popular notion that the patient with hypertension would be helped if he were encouraged to express his anger more freely. Appraisal of the advisability of undertaking specific modes of intensive psychotherapy should be based on the usual psychiatric indications without special qualifications related to hypertension.

Vasodepressor Syncope

Syncope, or fainting, is due to acute peripheral circulatory inadequacy which is usually quickly reversible. The disorder may arise from a number of causes. Thus, vasodepressor syncope, which is its most common form, must be differentiated from carotid sinus syncope; from postural hypotension; from faints associated with cardiac, respiratory, and cerebral disorders; from faints that are primarily psychic in nature; and from epilepsy, narcolepsy, and catalepsy.

Clinical features. Vasodepressor syncope may occur under a wide variety of familiar circumstances, e.g., pain, anxiety, shock, etc., all of which share two characteristics in common. First, fear is a major component of each; second, as Engel has pointed out, they are all experienced in relation to some type of injury to the organism—whether actual, threatened, or fantasied. Pain, tissue damage, reduction in blood volume, peripheral vasodilation, and anoxemia are factors which may predispose to vasodepressor syncope and, when present, participate in the genesis of the attack.

The faint usually has its onset while the individual is in an erect position and is commonly preceded by manifest anxiety and a characteristic set of premonitory symptoms: sweating, nausea, restlessness, muscle weakness, pallor, and sighing. Often, the attack can be averted if the individual lies down when these premonitory symptoms appear. If this procedure is not followed, these symptoms may be followed within a few minutes by blurred vision, light-headedness, and, finally, loss of consciousness and falling. At the very beginning of the prodromal period, blood pressure and pulse may be elevated, but the faint itself is characterized by a rapid fall in arterial blood pressure, the fall in systolic pressure being somewhat greater than the fall in diastolic pressure. When systolic pressure falls to critical levels (55 to 60 mm. Hg), loss of consciousness occurs, and heart rate frequently slows abruptly to 30 to 60 beats per minute, reflecting some degree of

heart block mediated by the vagus nerve. At this point, there is a slowing of the brain waves to two to four per second. If the faint persists for more than 15 to 20 seconds, mild brief clonic convulsive movements may occur.

Psychophysiology. Engel has formulated the psychophysiological hypothesis that vasodepressor syncope occurs when the individual lacks the freedom to take appropriate action against his fear or anxiety. He hypothesizes that under such circumstances the circulatory preparation for action (fight or flight), which includes increased muscle blood flow, takes place but is not followed by action. Without activity, this redistribution of blood is not compensated for by muscle contraction, reflex increase in cardiac output, and vasoconstriction in other portions of the vascular bed. As a result, blood pressure falls, due to the pooling of blood in the muscle mass of the extremities, which remain immobile.

Since vasodepressor syncopal attacks are more apt to occur if fear must be denied, they tend to occur more often in men than in women in certain situations, such as venipuncture and threatened pain from medical and dental procedures. (It is well known that this type of fainting may even become "contagious" when a large group of men are being processed for Army service, for example.)

Treatment. Usually, the patient regains consciousness soon after he falls or is placed in a recumbent position, and circulatory and other physiological signs return to normal. Some of the premonitory symptoms may persist briefly, however, and the faint may recur if the patient sits or stands up too soon. Therefore, while the attack itself does not require special treatment, the patient should be encouraged to exercise his legs while he is still lying down and to move actively about after he rises until his circulation and blood pressure are stabilized.

If attacks of vasodepressor syncope are recurrent without demonstrable physical cause and adequate situational provocation, they should be regarded as clinical evidence of a neurotic disorder, and the patient should be treated accordingly.

Suggested Cross References

For further information regarding the psychiatric disorders often associated with psychogenic cardiovascular complaints, see Section 23.1 on anxiety reaction, Section 32.3 on neurasthenia and hypochondriasis, and Section 23.2 on conversion reactions.

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30.6 RESPIRATORY DISORDERS

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The primary function of the respiratory system is the intake of oxygen and the elimination of carbon dioxide. These processes, being vital to life, have a marked affective and symbolic significance. The respiratory system is closely related to a variety of behavioral activities that have considerable emotional meaning. Crying, sucking, smelling, and the expulsion of irritants by means of coughing and sneezing are all associated with respiration from the earliest moments of life. As the infant feeds, for example, there is close coordination of sucking, swallowing, and breathing. The respiratory system is involved in the earliest significant relationships that the individual has with other people and provides one of the earliest means of expressing emotional reactions and needs.

Considerable evidence indicates that the central nervous system (CNS), by means of pontine, diencephalic, and cortical mechanisms, regulates respiratory function. The close relationship between CNS activity and respiration affords a physiological basis for the

profound influences of psychological and emotional processes on respiration.

The relation between respiration and psychological and emotional experiences has been considered from both an experimental and clinical point of view. Early studies indicated that increased attention or mental work is accompanied by a decrease in respiratory amplitude and an increase in rate. Finesinger and Mazick studied the effect of the recall of pleasant and unpleasant ideas on the respiratory response of normal and neurotic subjects. Of the respiratory functions studied, the minute volume showed the greatest consistency of deviation in relation to changes in ideational stimulation. Most phobic patients and those with anxiety neurosis, and the majority of control subjects as well, showed a considerable increase in minute volume during unpleasant periods as compared with the pleasant ones. Essentially similar changes were found by Finesinger and Mazick in an analogous population during the actual administration of painful stimuli and again during subsequent recall of the experience. Other investigators have been interested in the relationship between psychodynamic patterns and respiration. Alexander and Saul, for example, analyzed respiratory tracings with special reference to psychological correlations and found suggestive evidence of a relation between emotional themes having to do with the ingestion, retention, and elimination of food and certain characteristics of the spirogram.

Hyperventilation

Anxiety and hyperventilation. Of all the affective experiences of man, anxiety is the most commonly experienced by all. Anxiety, in addition to its subjective component, is characterized by a variety of physiological reactions, such as pallor, blushing, quickened heart beat, and respiratory disturbances. One of the most common complaints of anxious patients is difficulty in breathing. Patients often demonstrate this by deep sighs or state that they cannot get enough air. The respiratory concomitants of anxiety are primarily ventilatory in nature and may vary in form from deep sighs or hyperventilation to breath holding. In an analysis of a large number of spiograms, Finesinger found that the incidence of sighing respiration was considerably higher in a group of patients suffering from anxiety than in a control population.

Clinical features. The hyperventilation accompanying anxiety is often called to the physician's attention by symptoms such as fainting or tingling of the extremities, which are due primarily to a decrease in blood carbonate. Engel et al. have studied the clinical aspects of hyperventilation of psychogenic origin. They divided the symptoms into those related to the reduction of consciousness and those related to tetany. Reduction in consciousness correlates with changes in the electroencephalogram, and tetany is unrelated to such changes. Reduction in consciousness is often associated with giddiness, faintness, light-headedness,

and blurring of vision; tetany appears only after longer periods of hyperventilation and is much less frequent.

Differential diagnosis. In the differential diagnosis of hyperventilation, it is important to consider other causes, such as febrile illnesses, high external temperatures, and at times encephalitis. Hyperventilation due to anxiety may be mistaken for asthma.

Treatment. In many cases the replication of the light-headedness, tingling, and faintness produced by requested hyperventilation serves as a source of reassurance to the patient. Psychotherapy is often effective in the treatment of the anxiety underlying the hyperventilation syndrome.

Asthma

The major psychophysiological respiratory disorder is bronchial asthma. Asthma can be broadly and simply defined as dyspnea with wheezing. The primary pulmonary change in asthmatic breathing is bronchial obstruction resulting from a combination of bronchospasm, bronchial edema, and mucous plugs. The obstructive processes produce the signs and symptoms.

Etiology. The investigation of bronchial asthma has been concerned with the role of allergic, infectious, psychological, social, endocrine, and hereditary factors. A specific etiological determinant has not been isolated. The most thoroughly studied mechanism has been hypersensitivity to allergens. Allergic asthma has been demonstrated experimentally as well as clinically in humans and animals, but it appears at the present time that a variety of factors are involved in the development of asthma and in the precipitation of asthma attacks.

Psychophysiological mechanisms. Psychological processes may be involved in the pathophysiology of asthma by means of several mechanisms. Emotions may modify the immunological or allergic mechanisms responsible for some cases of asthma, and emotional phenomena may also be related to the development of asthma by means of CNS control of bronchiolar function. A combination of both these processes in varying proportions occurs in many cases.

Allergic and immunological mechanisms. There is considerable clinical evidence that emotional factors modify some types of allergic disorders; however, until recently few experimental studies have considered the effect of psychological stress on immunological responses. Rasmussen et al. have demonstrated that mice subjected to a standardized avoidance conditioning stress show an increased susceptibility to herpes simplex virus and decreased susceptibility to passive anaphylaxis. Chronic avoidance conditioning was also found by Wistar and Hildemann to depress the immune reaction responsible for the rejection of skin homografts. A decrease in susceptibility to Type I polio virus has been observed in monkeys following an acute avoidance conditioning procedure. A number of reports in the Russian literature have considered the effect of psychological mechanisms on antibody titers.

Petrovski, for example, studied changes in agglutinin titers associated with behavioral disturbances induced in immunized dogs and baboons by stressful stimuli or by conflict conditioning techniques. He observed a parallelism between the intensity and duration of the behavioral disturbance and the fall in circulating antibody titers.

Recently the neurophysiological mechanisms that may mediate the psychological influences on immunological reactions have been experimentally studied. A growing body of literature indicates that CNS processes may modify hypersensitive mechanisms, specifically anaphylaxis. Freedman and Fenichel tested the effect of midbrain lesions on the course of anaphylaxis in the guinea pig and found that bilateral lesions in the midbrain reticulum at the level of the superior colliculus prevented anaphylactic death. Szentivanyi and Filipp have reported that lethal anaphylactic shock in the guinea pig can be prevented by focal lesions in the tuberal region of the hypothalamus. It has been shown by Luparello, Stein, and Park that anterior but not posterior hypothalamic lesions afford significant protection against lethal anaphylactic shock in the rat.

A variety of factors may be involved in the protective action of hypothalamic lesions on guinea pig and rat anaphylaxis. Hypothalamic neuroendocrine processes concerned with the control and release of adrenocorticotrophic hormone (ACTH) and thyroid-stimulating hormone may play a role. It has been shown by some but not all workers that ACTH and cortisone provide protection against guinea pig anaphylactic shock. Several investigators have reported that a close relationship exists between thyroid physiology and anaphylactic processes. Recent studies have suggested that the hypothalamus may also take part in the regulation of immune processes through autonomic nervous activity.

The protective action of hypothalamic lesions on the course of anaphylaxis may be related to an alteration in antibody production. Recent studies have suggested that the hypothalamus may participate in the mechanisms determining antibody level. The authors have found that lesions in the anterior hypothalamus are associated with a significant decrease in circulating antibodies in the guinea pig.

Bronchiolar function. Emotions and the CNS may also play a role in asthma by means of a direct effect on bronchiolar physiology independent of allergic mechanisms. It has been demonstrated by a number of investigators that stimulation of the vagus nerve produces bronchiolar obstruction. In 1887 Francois-Frank reported that electrical stimulation of the motor cortex can produce bronchoconstriction. However, relatively few studies have been concerned with the CNS control of airway caliber. The availability of techniques for the measurement of airway resistance and lung compliance provides the opportunity for

quantitative research on CNS control of airway caliber.

Personality patterns. The emotional factors involved in the development and precipitation of asthma have been considered from several standpoints. One of the earliest approaches was to investigate the relationship between asthma and personality patterns. A number of studies suggested a relationship between a cyclothymic or hysterical personality and asthma. A "respiratory personality" in asthmatics—characterized by a cyclothymic disposition associated with paranoid features, repressed hostility, and a desire for self-punishment—has been described. McDermott and Cobb, in a clinical survey of 50 cases of bronchial asthma, studied each case from a psychiatric point of view. They found that in 37 of the patients there was an emotional component in their asthmatic attacks. Furthermore, they reported that 30 of the 50 asthmatics showed neurotic traits predominantly of a compulsive character. This approach has led some investigators to classify asthmatic patients into an allergic group and a psychic group, but recent studies have found no convincing evidence to support this division. Current investigations have shown that there is a wide variation in personality disturbances among asthmatic patients, and there is no single personality type.

Psychodynamics. The attempts to discover a common personality type in asthma have given way to efforts to find a specific psychic constellation. In the psychoanalytic literature, a number of specific conflicts have been reported as leading to bronchial asthma. Some workers have been struck by the close relationship between asthma and fantasies associated with aggressive and especially anal soiling impulses. It has been suggested that the bronchiolar obstruction is an attempt to ward off retaliatory aggressive anal impulses. This notion is in keeping with Wolf's observations of defensive physiological reactions of the nose and respiratory system in response to irritants and unpleasant emotional stimuli.

Much of the recent emphasis on the psychological genesis of asthma has been concerned with the view that the significant psychodynamic process in asthma is unconscious fear of loss of the mother or mother figure. This was first suggested by Eduardo Weiss, who described the asthmatic attack as being similar to the "shrieking, helplessly sprawling newborn child with the blood-red swollen face."

French and Alexander reported a study of 27 asthmatic patients undergoing psychoanalytic treatment. They described the central emotional problem in asthma as a fear of separation from the mother and concluded that the asthmatic attack is equivalent to a repressed cry for the lost mother. Many investigators, including the authors, have come to the position that one of the most frequent psychodynamic themes in perennial asthmatic patients is an exaggerated need

for a bond with the mother or mother figure. This need is accompanied by an acute fear of loss of the mother's love, which may be mobilized by an actual physical separation or by situations that threaten estrangement from the mother.

It is in relation to an exaggerated need for love and the consequent fear of separation that the authors have noted a variety of situations and stimuli as antecedent events to an asthmatic attack. We have observed that sexual temptations, competitive feelings, narcissistic desires, and hostile impulses may precede asthmatic attacks. Our clinical experience suggests that behavior or fantasies with such themes become sources of emotional tension to the asthmatic because they stimulate fears of retaliatory withdrawal or estrangement from a parental figure.

The possibility must be raised that the dependency observed in asthmatics may not be primary but secondary to the disease process. The asthmatic attack itself could give rise to an acute need to cling to a mother figure and may, therefore, tend to reinforce the helpless dependency seen in these patients. Only further research will provide an answer to this important question.

Learned determinant. The conditioned reflex also has been suggested as one of the psychological mechanisms involved in asthma. Many clinical papers have reported that stimuli regularly associated with the presence of an allergic substance may precipitate an attack in a susceptible individual. For example, an artificial rose may precipitate an attack in an individual allergic to rose pollen. Conducting allergic studies with humans, Herxheimer observed that, when asthmatic subjects are merely placed in a situation in which on repeated occasions they have been previously exposed to allergens, many develop asthma without the exposure. Dekker, Pelser, and Groen have reported conditioned asthmatic attacks in a laboratory setting. They followed a procedure similar to Herxheimer's, using a known allergen paired with neutral solvents and found in two subjects after repeated trials that the inhalation of pure oxygen caused attacks of asthma, as demonstrated by clinical signs and changes in vital capacity. The mouthpiece alone was eventually sufficient to cause an attack. These attacks could not be distinguished from those that appeared after allergen exposure. Recently, Ottenberg et al. and Noelpp and Noelpp-Eschenhagen have reported that a respiratory response similar to asthma can be conditioned in the guinea pig.

It has been demonstrated by Schiavi, Stein, and Sethi that it is possible to produce in the guinea pig, in response to a pain-fear stimulus, an asthmatic-like respiratory pattern—shortened inspiration and prolonged expiration—without evidence of bronchiolar obstruction. This was in contrast to the findings in guinea pig experimental asthma of an identical respiratory pattern but with the presence of bronchiolar ob-

struction. Humans also may develop an asthmatic-like respiratory pattern during hyperventilation without concomitant changes in bronchiolar physiology. The above findings suggest that it is important to define asthma in terms of bronchiolar function as well as the usual ventilatory variables. Such respiratory criteria will permit precise evaluation of psychological factors that may play a role in bronchial asthma and provide aid in the differential diagnosis and treatment of the disorder.

Treatment. As indicated in the above discussion, many factors are involved in the development and precipitation of asthma. Therefore, in the treatment a collaborative approach is often required. The joint efforts of the internist and psychiatrist are important in the handling of the medical and psychological aspects of the illness. From a psychiatric point of view, the treatment may range from supportive to intensive insight forms of psychotherapy. In each it is necessary to have an adequate understanding of the physiology and psychodynamics involved.

Suggested Cross References

See Engels and Wittkower's section (Section 30.10) for a further discussion of allergy. Finch's section (Section 41.2) in Area H, on child psychiatry, contains a discussion of asthma in children.

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30.7 SEXUAL POTENCY DISORDERS OF THE MALE

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Sexuality is a highly emotional and ubiquitous human experience. A wide variation in sexual practices and frequency falls within the limits of normality. According to Kinsey, male sexuality reaches its frequency peak in adolescence and declines steadily from then on; he estimates the number of sexual acts performed by a male may reach 100,000 in his lifetime.

Sexual functioning in the human male represents a dynamic interaction between psychic and somatic determinants. Sexuality is influenced by complex conscious and unconscious psychic factors, by such physiological factors as neurological and endocrine status and age, and by such sociocultural factors as income and education and the prevailing sexual mores and attitudes about women. The sexual process is sensitive and may be disturbed by any one of these factors. Sexual disturbances are prevalent in our culture. Impotence and premature ejaculation are the most common sexual complaints of males.

Impotence

Impotence may be defined as that condition wherein the male cannot obtain or maintain an erection satisfactory to him for purposes of heterosexual coitus. It is a relatively common condition at all ages but is a particularly distressing one in the younger years of adult life. As Stokes pointed out, "Among civilized peoples there are many cases of unresponsiveness at the peak of adult vigor. This is an anomaly in the biological world."

Etiology. In bygone years, there were numerous speculations about the causes of impotence, most of which had to do with the aging process in the geriatric period or with organic factors in the younger age groups. One of the most persistent of the latter ideas was that impotence was due to inflammation of the posterior urethra at the site of the verumontanum. A favorite treatment was to paint this area with

a silver nitrate solution. This concept became untenable in more recent years, when studies showed that males with severe inflammatory lesions of the posterior urethra—due to gonorrhea, for example—were usually not impotent at all. If such inflammatory lesions of the urethra produced impotence, gonorrhea would be much less of a public health problem than it is.

Psychological factors in the etiology of impotence and its analogous situation in the female, frigidity, had been described decades ago by Freud and Stekel, but these concepts were, for the most part, accepted only slowly by the medical profession. Today, students of these conditions agree that the vast majority of cases are due to psychological factors, although it is true that some are due to other determinants. From an etiological standpoint, impotence can be classified as due to (1) organic disease, (2) drugs, and (3) psychological factors. Effective treatment depends on the accurate diagnosis of the underlying cause.

Organic disease

Systemic disease. Any physical disease that produces weakness and malaise understandably interferes with sexual drive and arousal during its course. This is so obvious that it needs no exposition. The problem that arises in this context is the systemic disease that is vague or undiagnosed. It is stated by numerous authorities that impotence frequently accompanies diabetes mellitus and, in fact, may be one of the earliest symptoms. The reasons for such a relationship are not clear. It is said that potency usually returns when the diabetes is brought under control. Hypothyroidism, anemias, and malnutrition have also been mentioned as etiological factors.

Aging. Although the aging process is not a disease as such, its effect on potency is considered here. It is a common belief that the older the man, the less potent he is. Kinsey et al. found that impotence increases with age, with practically no men in their sample impotent at age 35, and 77 per cent impotent at 80. They note the phenomenon of wide individual differences and report erections and coitus in some males of advanced age. Although sexual activity, like most other activities, shows a decline as the years advance, it is not correct to assume that impotence is an inevitable function of advanced years. Studies by Finkle et al. and Newman and Nichols indicate that marital status—that is, having an available sexual partner—is more closely related to continuing potency in the aging male than is age per se. These authors concluded that the older single male—the widower, for example—often lacks the drive and interest required to seek a sexual partner and thus reports that he is impotent, whereas the married older male is often able to continue coitus into advanced years. The latter authors made the interesting point that "One commonly recognized belief among younger people in our society is

that older persons, especially grandparents, have no sexual feelings," and then went on to give their data, which show how wrong this concept is. In our society, the probability is that the amount of sexual activity engaged in by older persons is more a function of a readily available sexual partner than it is a function of age alone.

Local disease. Castration is a possible cause of impotence, although it does not uniformly result in impotence. Rowe and Lawrence reported the case of a castrated man who carried on satisfactory marital relations for 25 years. McCartney observed 10 cases of gonorrhea in 23 eunuchs he studied. Tauber gave an historical review of the topic and noted that the changes in potency after castration are unpredictable. He raised the question of whether castration per se interferes with the sexual life by stopping a biological requirement or whether interference with potency, if it develops, may not be on a psychological basis. There is much clearer agreement that the cessation of ovarian function, whether by surgical removal or as a result of the menopause, does not interfere with the previously established sexual pattern of the adult female. However, there is evidence to suggest that androgens—from the adrenal gland in men and women—may be an important determinant of male and female sexual drive.

Prostatic disease and prostatectomy. There appears to be agreement in the medical literature that prostatic disease, whether infectious or neoplastic in nature, does not result predictably in impotence unless the lesion produces pain. In this regard it can be interfering. The effect of prostatectomy on potency is not clear. Rowe and Kimbrough found that impotence increased with respect to the type of prostatectomy; for example, they reported 100 per cent incidence of impotence with the radical perineal method. Finkle and Moyers found surprisingly little impotence after prostatectomy, irrespective of the surgical route used.

Neurological disease. Impotence is less of a problem in neurological lesions than is often supposed. Monroe et al. concluded a study of this problem with the statement:

Our series indicates that destruction of the sacral segment of the cord or transection and destruction of the cauda equina and the pelvic parasympathetic plexuses are the only neurologic, anatomic lesions that will prevent the occurrence of erections. Associated with such absence will be an autonomous bladder, an absent anal reflex, and possibly an atonic urethral sphincter. Erections occur in the presence of all other cord injuries, whether partial or transecting, and regardless of the level involved.

Drugs. The agents most likely to be involved are sedatives, tranquilizers, and opiates. The morphine addict frequently has complete impotence. Overdosage with ethyl alcohol often produces impotence during the period of intoxication, although some men report increased sexual ability with a "hangover."

Chronic barbiturate intoxication is likely to result in impotence. Recent reports have indicated that some of the newer psychoactive drugs, the phenothiazines and amphetamines particularly, may produce impotence or ejaculatory abnormalities.

The physician faced with an impotent male patient who is also taking drugs has no choice but to recommend a drug-free trial period of at least 30 days and observe the outcome. Medical judgment must determine whether the condition for which the drugs were used overrides the impotence in importance. Every physician is acquainted with the fact that it is one thing to recommend a drug-free trial period and quite another matter for the patient to follow this recommendation if it involves breaking long standing habit patterns—alcoholism, for example. Further, withdrawal by persons addicted to opiates and barbiturates usually requires hospitalization in the interests of safety.

Psychological factors. The characteristic symptom of psychological impotence is that it is selective in nature—that is, it occurs under one set of circumstances but not under another. Thus, a man may be impotent with his wife but with no one else, impotent with a mistress but not with his wife, impotent with his wife and other women of equal social rank but not with prostitutes, impotent with women but able to obtain erection and achieve orgasm and ejaculation with masturbation, impotent with his wife but potent in sexual dreams, impotent with women but having morning erections, impotent with women but not impotent with other males, impotent with women but not with children or in unusual or deviant circumstances, and so on. There may be, and often are, combinations of these circumstances.

From the diagnostic standpoint, it is of critical importance that the physician obtain a complete sexual history. This in turn requires a good doctor-patient relationship to permit the patient to discuss facts he has held secret and disclosed to no one. It is self-evident that, if a male is impotent in one circumstance but not another, the cause of his selective impotence must be psychological in nature and not due to physical disease or to drugs. In such a patient there is no point in putting him through a series of examinations and tests to discover the cause. It is obvious that no abnormalities will be found to explain the impotence because the patient has adequately demonstrated that his anatomy and physiology of erection are intact.

It is common in psychiatric practice to have a patient referred who is impotent with his wife and who has had a series of tests, cystoscopic examinations, prostatic massages, and a trial on testosterone performed. What he has not elected to tell his previous physicians is that he has been having an affair with another woman, and in this he is perfectly capable. Historical data of this type, which is crucial to an understanding of his problem, usually will not be dis-

closed casually or quickly to the physician. Such a history points to conflict and discord between marital partners, and the impotence is merely a symptom of the underlying personality problems.

In a man who has previously been potent but who is now impotent under a particular set of circumstances, treatment must consist of an investigation into the psychological or emotional stresses involved. This means that the physician must be prepared to spend some time with his patient in running down the factors involved. If the physician does not have the time or does not feel at home in such an area, the patient should be referred to a psychiatrist, if this is feasible. Therapy frequently needs to involve both husband and wife. Because each person and each marriage represent their own unique problems, there is little point in attempting to generalize or to give a number of case histories. There are, however, some types of impotence that are so common that general remarks about them are possible.

Impotence of inexperience. It often occurs that the healthy young male experiences impotence or premature ejaculation at the outset of his heterosexual life. If there is a ready explanation, it is most likely due to a feeling of ineptness, a fear of hurting the girl, feelings of guilt and wrongdoing, an inability to reconcile the loved female with sexual passion, fear of pregnancy, and the like. This phenomenon frequently occurs on the honeymoon in sexually inexperienced young people. As experience is gained, potency is usually gained, and probably few of these situations come to medical attention unless the problem persists for some months.

Impotence only with a wife. There are numerous possible causes of this circumstance, but the most frequent is the development of hostile feelings, either overt or covert, between the partners subsequent to marriage, causing them to withdraw sexually from each other and in other ways as well. Impotence and frigidity under these circumstances can be regarded as symptoms of the disrupted marriage and, in this context, are not primarily sexual problems.

A variation of this type of impotence is that wherein no hostile relationship exists and the wife is much loved. First described in the medical literature by Freud in 1912, complicated psychological forces are involved. In brief, because of emotional factors learned in his childhood, such a man is never able to reconcile a female that he loves with sexual passion. However, he is sexually able with a downgraded female, such as a prostitute, with whom he need form no affectionate relationship. As Freud pointed out: "Where such men love, they have no desire and when they desire they cannot love. They seek out objects (i.e., females) they need not love. As soon as the object fulfills the condition of being degraded, sensual feeling can have free play." After diagnosis, the male with this type of impotence should be referred to a psychiatrist if possible.

Impotence prior to orgasm and ejaculation. Here the penis becomes flaccid after vaginal entrance and terminates coitus before orgasm and ejaculation have been reached. In its simplest form it may occur because a multiparous and lax vagina does not furnish enough frictional grip on the penis to keep the erection in force. Some men object to the use of condoms on the same basis—that they prevent sufficient stimulation to maintain erection.

Fear of being discovered in the act, fear of pregnancy, or a partner who is unresponsive and disinterested may cause erection to vanish after coitus is started. The wife, engaged in intercourse, who makes a casual remark about a household problem, often causes her husband to fail. He is aware that her mind is elsewhere, and his interest vanishes.

Impotence associated with sexual deviation. The predominantly homosexual male may find that he is impotent if he attempts heterosexual coitus, although he is sexually capable in a homosexual relationship. This is because he has little or no physical interest in females; hence, they do not arouse him. Without arousal, there is no erection. For similar reasons, cases of impotence may occur in a man who had been sexually adequate most of the time with casual females with whom he had no close emotional ties or who had been adequate for months or years with a wife. Psychotherapeutic investigation may show this man to have repressed (latent) homosexuality as judged by dream content, strong resistance to discussion of homosexual topics, and the like. He has met increasingly strong unconscious resistance to sexual arousal in a situation that binds him to a heterosexual attachment. Occasionally, one sees the man who for years has maintained both heterosexual and homosexual outlets but who toward middle age becomes impotent in heterosexual but not in homosexual relations. The reverse situation probably occurs, although the author has never seen such a case.

Males who show other sexually deviant behavior patterns—such as transvestitism, bestiality, sadism, masochism, voyeurism, and exhibitionism—are often impotent in the usual heterosexual situation but are orgasmically able in situations that meet the specific criteria of their deviations.

Premature Ejaculation

By definition, premature ejaculation is that condition wherein the male arrives at orgasm and ejaculation before he wishes to do so. Often used to describe the extreme—wherein the male ejaculates immediately after entering the vagina or even before, and the sexual attempt ends in a fiasco—the term also applies to all degrees of prematurity wherein the male is dissatisfied with his performance. The dissatisfaction invariably relates to his having ejaculated and lost his erection before his sexual partner has reached orgasm.

Etiology. There are two divergent points of view as to cause. The psychiatric literature in general and the psychoanalytic literature in particular—Stekel, Abraham, and Bergler, for example—regard premature ejaculation as a form of neurosis. Other authors, with the extreme represented by Kinsey, take quite a different view. In essence, the latter view is that quickness in any human activity represents a superior trait and that premature ejaculation, however inconvenient it may be for the sexual partner, is a sign of superiority. But whether one regards prematurity as a symptom of neurosis or as a superior trait, the fact remains that many men reach orgasm and ejaculation before they wish to do so and hence diagnose themselves as having premature ejaculation. If they consult a physician, it is to enlist his help to delay the response, if this is possible.

Physiology. Arrival at orgasm and ejaculation involves the phenomenon of summation of stimuli, both psychic and tactile. When the threshold of excitability is reached, the reflex fires, and orgasm and ejaculation occur. As in any biological function, one may think in terms of the curve of individual differences; this states that the threshold of excitability is reached in the male population as a result of differing amounts of stimuli but without any implication of pathology or abnormality. The approach to the problem of premature ejaculation can be thought of as involving the following physiological factors: (1) reduction of sensory input, both psychic and tactile, and (2) alteration of the threshold of excitability. If either or both of these factors can be changed, it follows that the time of arrival at orgasm and ejaculation can be changed also.

Treatment

Inhibition of psychic component. In clinical practice, one hears men describe their own methods of delaying response. Those that involve the psychic component are: (1) occupying the mind with non-sexual fantasy (this can be almost anything—reliving a hunting trip or golf game, doing the multiplication table, and so on); (2) tightening the anal sphincter as much as possible and concentrating on keeping it tight (recommended by Kinsey); (3) bodily maneuvers, such as pinching the skin of an arm, lightly biting the cheek or tongue; and (4) judicious use of alcohol, a cerebral depressant.

Reduction of tactile component. This involves reduction either in the amount of intensity of vaginal friction or in the excitability of the receptor end organs in the glans penis. As to the latter, Aycock reported that the use of an anesthetic ointment rubbed into the glans has been tried with indifferent results. Although some men object to the use of condoms because the alteration of tactile stimuli prevents them from keeping the erection in force, other men find condoms to be a solution to their problem of premature ejaculation. The amount of vaginal friction may

be reduced materially by limiting the frequency of thrusts or the extent of penis travel within the vagina. If the penis is deeply inserted in the vagina and penis travel is limited to short strokes, of about an inch performed slowly, summation of tactile stimuli is reduced, and the threshold is reached more slowly. Some men report an ability to postpone orgasm and ejaculation indefinitely by this method and must increase the frequency and length of thrusts to reach it. It is a useful technique with the sexual partner capable of multiple orgasms.

Alteration of threshold of excitability. Semans reported a method that in his experience, was highly successful in treating prematurity. In brief, the male or his wife stimulates the erect penis in a masturbatory fashion until the premonitory sensations of impending orgasm and ejaculation are first felt. The penile stimulation is stopped abruptly at this point, and orgasm and ejaculation do not occur. Sexual excitement and possibly the erection subside over the course of the ensuing minutes. The stimulation is then started again, and, as before, it is stopped at the first sensations of impending orgasm. As Semans reported, "By repeating the procedure, the response of ejaculation becomes no longer premature; that is, it can finally be delayed indefinitely until female response has begun or is complete." This technique appears to be one that trains the threshold of excitability to be more tolerant of the summing stimuli. Once the desired coital pattern has been established, it appears to remain a stable one. The technique recently reported by Masters and Johnson appears to follow similar principles.

Psychotherapeutic management. The psychiatric and psychoanalytic literature report favorable results in prematurity following long term therapy that investigates conscious and unconscious attitudes toward sexuality stemming from childhood training and experience. It constitutes a therapeutic technique that may well bring success in patients with neurotic attitudes about sexuality, toward the female, and so on. The writer must admit that most of his psychotherapeutic efforts have failed to change the premature response pattern. Obviously, this does not mean that psychotherapeutic management in other hands may not achieve better results.

Suggested Cross References

For a further discussion of the sexual disturbances that underlie some cases of impotence, see Sections 26.3 and 26.4 on homosexuality and other sexual deviations, respectively. Lief and Reed's section (Section 5.7) in Area B, on the basic behavioral sciences, contains a discussion of normal sexuality. For a review of corresponding psychophysiological genitourinary disorders in women, see the next section in this chapter. Work's section in Area H (Section 41.6) contains a discussion of sexual disturbances in children.

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30.8 OBSTETRICAL AND GYNECOLOGICAL DISORDERS

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Current theoretical formulations and research studies of genitourinary and obstetrical problems tend to combine the advantages of both physiological and psychological orientations and, concomitantly, to stress the interaction of psychic and somatic factors. On still another level of investigation, workers have begun to underscore, to an increasing degree, the intimate relationship among specific visceral organs, genetic dispositions, pain thresholds and other somatic factors, and gynecological dysfunction. The ensuing discussion will be restricted to the psychogenic components of such dysfunction.

Menstrual Disturbances

Few somatic phenomena are so well suited to serve as a focus for discussion of psychophysiological

correlations as menstrual disorders. Such disturbances may take various forms and produce symptoms which range in severity from mild discomfort to intense pain. However, psychological factors are present in almost all forms of menstrual disorders. Current theoretical formulations concerning the psychological aspects of female sexual function are reviewed briefly below. This discussion will then proceed to consideration of the application of these principles to three common forms of menstrual disturbance—dysmenorrhea, amenorrhea, and premenstrual tension.

Psychological determinants. According to classical psychoanalytic theory, in a broad sense, the psychological problems underlying a variety of menstrual disorders can be attributed to disturbances in the patient's feminine identification. More specifically, Freud's theory of psychosexual development provided the springboard for subsequent investigations of adult female sexual function.

Oral stage. Benedek and others consider the oral stage of development a crucial determinant of future sexual function. These workers have stressed, in particular, the importance of the principal interactional unit of the infant-mother relationship, as circumscribed by the feeding situation. The ability of the mother to gratify the infant's oral needs will, in turn, affect the infant's general feeling of well-being and the course of its primary identification with the mother. If, on the other hand, the feeding situation is a frustrating emotional experience, ensuing mother identifications will be tinged with fear and hostility and ultimately result in the infant's reluctance to identify with the mother. Furthermore, when a barrier to feminine identification has been established during the early part of life, it becomes difficult to achieve such identification at succeeding stages of the development.

Deutsch and others have emphasized the unconscious penis-breast association as a crucial determinant of later sexual functioning. Briefly, the anxiety provoked by the trauma and frustration associated with the breast (nursing) will subsequently be attached to the penis and inhibit sexual pleasure.

Anal stage. Freudian theory further states that during the period of bowel and bladder training (anal stage) the infant's basic attitudes toward his own body functions are established. Thus, too stringent or premature an emphasis on sphincter control may make for considerable fear, hostility, or guilt toward bodily functioning in general, and toward associated anal-urethral functioning in particular. Later, unconscious associations to menstrual, urinary, and fecal discharge may cause a reactivation of the intense fear, hostility, and guilt established during earlier developmental stages, particularly of the power struggle between child and parental figure involved in bowel and bladder control.

Genital phase. During this stage in development, the female child becomes increasingly aware of the

biological differences between the sexes. Concurrently, she becomes aware of the fact that she possesses an organ, the clitoris, which can be pleurably stimulated, while boys possess an organ, the penis, which she lacks. The sexual self-stimulation and attendant guilt associated with the former discovery, and the penis envy and fear of castration associated with the latter discovery, become interwoven with her sexual and love strivings. And, inevitably, her feelings of self-blame or responsibility for absence of penis, or being maimed, are associated with sexual self-stimulation and related fantasies. These developments may, in turn, give rise to consequent feelings of resentment toward males because of their "superior" biological accoutrement (penis), and because of their dominant cultural role—a factor emphasized by Horney, Thompson, and others. In any event, the manner in which such early conflicts are handled will either foster or hamper feminine identification and genital functioning; as such, they constitute a crucial determinant of mature female sexual functioning.

Puberty. Menarche may occur at any time from the beginning of puberty on. It is no longer equated with sexual maturity, which occurs at a later date; however, its emergence makes conspicuous or exhibits, as it were, the girl's femininity. And, with the onset of menstruation, there is a reactivation of prepubescent anxiety which has its origins in more primitive sexual drives and attendant guilt surrounding these drives. Particularly common are self-consciousness, self-hate, resentment of the feminine role, castration fears, and masturbatory guilt. According to psychoanalytic theory, the unconscious identification of menstrual discharge with mutilation further interferes with the girl's psychological acceptance of this physiological phenomenon.

Dysmenorrhea

Definition. Dysmenorrhea, which refers to a variety of painful menstruation, is perhaps the most prevalent of the menstrual disorders. However, it is generally believed that this type of dysfunction has become less common, due to cultural changes. Among these, increased freedom in expression of sexual needs and behavior has lessened the psychological burden formerly imposed on the woman.

Clinical features. The four major symptoms of dysmenorrhea comprise severe and protracted pain, with concurrent discharge of blood clots; pain from hyperemia and distention, which occurs directly prior to menstruation, and subsides rather quickly after the onset of menstrual flow; membranous dysmenorrhea; and, finally, menstrual colic, accompanied by abdominal distress, nausea and vomiting, migraine, tachycardia, anxiety attacks of variable depth and duration, and fainting spells.

Physiological mechanisms. The physiological mechanisms operative in dysmenorrhea include a wide range of somatic phenomena. Foremost among these

mechanisms, according to Haman, is the lowered pain threshold found in dysmenorrheic women, which makes them more sensitive to uterine contractions, which are not usually perceived by other women. Research investigations have also implicated associated physiological mechanisms, including ischemia of the myometrium, vasoconstriction, tissue fragility, and fibrinolysis of menstrual debris.

Psychological determinants. Basic etiological considerations concerning the psychological determinants of dysmenorrhea derive from the woman's underlying image of herself and her sexuality. As mentioned earlier, menstruation is considered the badge of femininity. And menstrual onset, its earliest and foremost symbol, may serve to precipitate, or reactivate, many related fears. Menstrual flow may be associated, for example, with punishment for previous sexual wrongdoings, such as prepubescent sexual self-stimulation, unacceptable sexual fantasies, or feelings of hostility and rivalry with the mother for the love of the father. Furthermore, the repressed fears and guilt activated by menstruation may be expressed through visceral outlets. Simmel, among others, believes that the organ chosen is not fortuitous; rather, it is predicated by the nature of the underlying emotional conflict.

Still another etiological factor, emphasized by Benedek, derives from the woman's basic reluctance to accept her feminine role, as symbolized by the menstrual experience. Earlier identification conflicts, stemming from repressed hostility toward the mother and an underlying jealousy and envy of masculine dominance, are brought to the fore by menstrual onset. Thompson's detailed account of the cultural factors involved, particularly the resentment of masculine dominance, elaborates on this possible etiological aspect.

Finally, underlying attitudes toward the body orifices and the eliminative functions may be reactivated by menstrual onset. If a strong sense of repressed guilt and anxiety has been established during the early stages of development, centering around toilet training, all eliminative contents and orifices may be perceived in later life as dirty and shameful. The equation of expulsion with hostility and its attendant guilt may well be reactivated during menstruation, as may be the assumption of being mutilated. Consequently, the apprehension, discomfort, and occasional pain which may accompany menstruation may be magnified by psychological conflicts which have been reactivated by the menstrual process itself. And, concomitantly, guilt feelings may be expressed through somatic symptoms revolving around menstrual activity.

Amenorrhea

Definition. The various types of psychogenic amenorrhea are differentiated on the basis of the degree of dysfunction, as well as the extent and nature of the

symptomatology involved. In general, amenorrhea refers to the absence of menstruation. Under this broad rubric, the more common categories are oligomenorrhea, which refers to sparse menstrual flow for prolonged intervals, ranging from several weeks to several months, and even years; and pseudocyesis, which refers to false pregnancy.

Clinical features. As mentioned above, the primary symptom of oligomenorrhea is scanty menstruation. Pseudocyesis is accompanied by the classical symptoms of pregnancy, which, in addition to the complete cessation of menstruation, include nausea, enlargement and pigmentation of the breasts, abdominal distention, and even simulated labor pains. Only well documented evidence of the absence of pregnancy or tumor permits this diagnosis. Clinically, it is found chiefly in women of hysterical or schizotypal organization.

Physiological mechanisms. In amenorrhea, the chief physiological mechanisms involve the derangement of characteristic hormonal patterns, as a result of the suppression of hypothalamic influences on the anterior pituitary gland. In the absence of luteinizing hormone, the ovarian follicle does not produce ovulation. There is ample evidence, however, that the structure of the endocrine system makes it vulnerable to emotional influences. Research studies have also demonstrated that the absence of the hypothalamic stimulus can be traced to emotional factors. Conversely, when emotional stress decreases, estrogen production and cyclic activity have been found to return to normal. Recent research has thrown new light on the interrelationship of emotional, hypothalamic, and ovarian components.

Psychological determinants. Etiological formulations permit a clear distinction between the phenomena of oligomenorrhea and pseudocyesis. Foremost among the psychogenic factors in oligomenorrhea is the repression of the ovarian cycle. Such a reaction may occur in response to a variety of stressful experiences, such as extreme physical danger or the psychic stress precipitated by the loss of a loved object. According to some workers, suppression of ovulation characteristically occurs as a concomitant of the fear and unconscious denial of gender and sexuality.

The variety of conflicts concerning feminine identification, mentioned above in connection with dysmenorrhea, are believed to play an integral role here too. It may also be speculated that the repression of menstruation represents an attempt to avoid activation of earlier developmental conflicts, particularly those associated with the anal stage of development.

In pseudocyesis, the objective signs of pregnancy in the absence of pregnancy derive from the pathological wish for or fear of pregnancy. Thus, this symptom may serve as an expression of conflicting attitudes regarding childbearing and related female sexual functions. Benedek and others have also emphasized the unconscious hostility of pseudocyclic

women toward children, and they hypothesized that resulting guilt feelings give rise to this symptomatic expression which represents an attempt to undo these hostile impulses. A deeply rooted fear of the dangers of childbearing, representing unconscious self-destructive impulses, presents another possible explanation for this phenomenon.

On the other hand, various authors have pointed out the significance of the intense desire for pregnancy which produces this clinical picture, which is sometimes defined as conversion hysteria. Pregnancy symbolizes a fully feminine achievement, and its alleged existence may serve to undo the guilt resulting from contradictory sexual tendencies. The fantasied pregnancy can serve, not only as an instrument in the woman's fight for sexual identity, but also as a means of competing with her mother and of satisfying unconscious early strivings. It may indicate a desire to hold the husband, and, as such, be perceived as a reaffirmation of the woman's youth, potency, and desirability. Thus, the wish for pregnancy, which is pathological in its intensity, may represent the patient's attempt to gain fulfillment of her intense and unfulfilled dependency needs.

In summary, then, this clinical phenomenon may express feelings ranging from an intense fear of pregnancy to a pathological wish for it. In either case, the symptom is the outcome of magical thinking, aimed at resolving the forces which underlie these unconscious fears and wishes. As such, pseudocyesis is found in severely disturbed women. At the same time, because the expression of unconscious wishes and fears is so dramatic, it highlights effectively the role of unconscious psychological factors in producing somatic changes.

Treatment. With specific reference to oligomenorrhea, provided the patient does not manifest severe underlying psychopathology, a supportive and reeducative program regarding menstrual processes may facilitate a return of the normal cycle. Similarly, removing the major external and endogenous conditions related to emotional stress may serve to alleviate the somatic expression of such stress. The crucial diagnostic question is whether the amenorrheal condition is the comparatively benign expression of a more deeply rooted, malignant psychopathology, in which the menstrual cycle has a dramatic symbolic significance. Obviously, in such cases, more intensive psychotherapy is imperative.

In general, however, the treatment of the clinical entities of oligomenorrhea and pseudocyesis should encompass the knowledge that these somatic manifestations are part of a larger constellation of maladaptation. Psychotherapeutic plans, therefore, should not focus upon the presenting symptom, but on the patient's current life situation, specifically, her underlying fears, hostilities, and guilt feelings. For the most

part, the course and strategy of treatment of these clinical disorders follow the individual application of the standard therapeutic techniques for psychosomatic disorders discussed below.

Premenstrual tension

Definition. Premenstrual tension can be distinguished from more general premenstrual discomfort on the basis of the extent of the patient's disability and, most importantly, the strength of its relationships to underlying fears and distortions.

Clinical features. The physiological symptoms usually include edema of various tissues, engorgement of the breasts, and bloating and discomfort in the abdominal region. Accompanying symptoms may also include nausea, vomiting, and diarrhea.

The psychological manifestations which accompany these cyclic physiological complaints include irritability, impatience, anxiety, fatigue, depression, or alternating moods, such as fits of weeping and euphoria. In addition, bouts of regressive or compulsive behavior in the form of preoccupation with bodily cleanliness, housecleaning, and the like have been reported.

The above symptoms are highly prevalent and are said to be present in 40 per cent of all women who suffer from menstrual disturbances.

Psychophysiological mechanisms. The interrelationship of physiological and psychological factors and, in fact, the correlation of cyclical hormonal activity and consequent mood changes have been demonstrated in research studies. Briefly, the hormonal imbalance responsible for fluid changes in tissues directly preceding menstrual onset puts further stress on the integrating and controlling functions of the ego. If the adaptation is already somewhat tenuous, the added burden of menstruation may disturb fragile controls.

In summary, while an organic predisposition seems to be present in some forms of menstrual disturbance, such as dysmenorrhea and premenstrual tension, in other cases of menstrual disorder, the symbolic significance of menses is a crucial factor. And, in such patients, the somatic symptoms can be viewed as an expression rather than the cause of the patient's general distress.

Both physiological and psychological treatment methods are used in the management of menstrual disorders. The treatment approach varies with the individual case. Some cases of premenstrual tension respond to hormone therapy, others to psychotropic drugs; however, the treatment of choice for the majority of patients is psychotherapy. Finally, as mentioned earlier, the psychotherapeutic treatment of this patient population should focus on the total life situation in the context of previously established attitudes, rather than specific, isolated symptoms.

Pregnancy and Childbirth

Pregnancy

Psychodynamics. In the psychologically mature woman, the wish to be pregnant is viewed as a primary pleasure, the woman deriving pride and satisfaction in the pattern of reproduction unique to the female, and in the uniqueness of the activity. According to Helene Deutsch, the reproductive process is "the direct fulfillment of the deepest and most powerful wish of the woman" and in the healthy woman, pregnancy is an expression of her sense of fullness and self-realization, rather than her doubts and frustrations.

Pregnancy may also have a variety of psychopathological meanings, however. For one, since reproduction satisfies the belief in immortality, it supports early omnipotent feelings. Other motivating forces may also accompany, or gain preeminence over, the healthy drive for motherhood. These may include, for example, the desire to revive a shaky marriage, to diminish self-doubts concerning femininity, or to assuage deep aggressive drives. Pregnancy may provide enormous regressive and substitutive gratifications, the powerful motivating forces being the need to compensate for a sense of loss (penis), or a restitutive or reparative motive (castration fear and guilt). Pregnancy may represent strong competitive drives toward mother or an older sister, or excessive competition with the male. And, finally, pregnancy may express the female's doubts as to her adequacy or her right to be loved for herself.

Freud hypothesized that the frustration caused by the lack of a penis was the central motivating factor in female psychosexual development, and he concluded that the woman's wish for a child was motivated by her wish to retain the penis, more specifically, her father's penis, symbolically. According to this concept, a male child represents the fulfillment of the originally repressed wish. Insofar as the concept of penis envy is related to infantile fantasy, it may be among the significant fantasies which are revived during pregnancy.

Clinical features. There is no gainsaying the fact that pregnancy, even in the emotionally mature woman, may tax her physical reserves. But many of the somatic symptoms observed during pregnancy may express varying degrees of emotional dysfunction. To begin with, life situations may present real obstacles and barriers to what might, under other circumstances, be considered an ideal attitude toward childbearing. A faltering marriage, an attempt to hang on to one's spouse, economic considerations related to the present size of the family or to the timing of the pregnancy, professional obligations, including the traditional conflict of the career woman who does not want to be tied down—all these may be expressed through any number of somatic symptoms.

The crux of the woman's problem often lies in her fears concerning some symbolic aspect of childbearing. The fact remains, however, that while pregnancy may accentuate existing severe psychopathology, faulty emotional attitudes expressed in pregnancy are not intrinsic or inherent to the childbearing process, but are mobilized by it.

Psychophysiological mechanisms. Benedek's attempts to correlate hormones and metabolism with the sex drive, including the desire to be pregnant, are relevant in this connection. Since hormones stimulate specific emotional responses, and psychological factors, in turn, influence hormonal regulation, there is a continuous interaction. The preovulatory period, under the influence of estrogens, is marked by increased sexual desire, which is maximal during ovulation. After ovulation, the progestational influence is at its peak, and this encourages the woman's passive-receptive needs—the desire to be loved and protected.

The development of the female progresses from infantile narcissism, or concentrated pleasure in self, to the point where, to quote Deutsch, the ego has "the capacity for tenderness, altruism, and a specifically colored activity." The initial dependency, as seen in the symbiosis with the mother, and the ensuing magical wish for omnipotence and possession are linked first to the digestive tract. And, in fact, the early alimentary pattern exerts a powerful force (which is incorporated as a crucial component into the later wish for a child) as an expression of dependency. The female child attempts to gratify these dependency needs by ensuring possession, first of mother, and later of the father, through a variety of coercive moves. The father becomes more significant with the female's increased awareness of biological differences between the sexes, and she fantasies that he will replace the organ she has been deprived of. During puberty, there is a strengthening of feminine identification and identification with the mother, which will be strongly influenced by previous psychological events involving identity and body image.

These attitudes may be reinforced by pregnancy and expressed somatically. The endocrinological and metabolic demands of pregnancy usually give rise to symptoms associated with psychological factors, i.e., nausea, fatigue, headaches, or vomiting. Additional symptoms may be accentuated as well, including anorexia, vertigo, or even severe metabolic disturbances. Oral and hostile rage in response to unfulfilled omnipotent infantile needs may be reactivated during childbearing, so that the woman feels so self-destructive and unworthy that the fetus represents a hated or feared person. In fact, hostile and destructive attitudes toward the unborn child, self, and others, and feelings of inadequacy are not uncommon. And all these attitudes may be channeled through the physiological symptoms of pregnancy or expressed through fears which appear to be very realistic. Such symptoms may also provide secondary gains: they

may permit the woman to avoid household chores and sexual activities and, above all, permit her to indulge her dependency needs.

Unfavorable life situations, such as a too recent pregnancy, may color the woman's acceptance of pregnancy, or her capacity to cope with it. But the reverse may also be true: when the woman's oral-receptive needs are met, she may function better during the period of pregnancy than she did before and take pride in an uneventful and complaint-free childbirth.

Treatment. Fears surrounding pregnancy or childbirth, which are probably found in every woman to some degree, may center on the unborn child or the pregnant woman herself. The focus is interchangeable, mother and fetus being mutually substitutive. But it is usually easier for the woman to talk spontaneously about her fears concerning the unborn child than to discuss her own fears.

Whatever her psychological and physiological status, the prenatal period should include regular visits to the physician to provide continuing observation of the patient. Such visits permit an opportunity for examining problems or disturbing thoughts as they arise. Early involvement of the father and other family members with the unborn child should also be stressed.

Childbirth

Labor and delivery. Current interest in the obstetrician's management of the pregnant woman, following the work of Grantley Read and subsequent investigators who described the fear-tension-pain syndrome in labor, is aimed at diminishing the fear of delivery and reducing the tension-pain response. Similarly, increased understanding of the psychodynamic processes involved in labor have resulted in additional constructive modifications, primarily the use of anesthesia.

The interaction of physiological and psychological factors occurring at any time during pregnancy may be carried over or released during the process of labor, or immediately thereafter. For example, the woman may not be ready to give up her sense of unity with the child, or she may experience a feeling of emptiness or feel guilty over her insufficient love for the newborn. Such feelings may be expressed in mood changes, ranging from mild moodiness to severe depression, or malignant erratic behavior during the lactation process.

Lactation. There is ample proof that lactation can be influenced by emotions. However, more sober investigators have wisely emphasized the fact that the wish to nurse is not the equivalent of the ability to nurse, or vice versa. Depending upon crucial factors in the woman's early development, differences in degree of "maternal feeling" are inevitable. This may not be crucial, unless the woman attempts to hold herself to an ideal of what motherhood entails. In that event,

guilt about her inability to nurse the child or her lack of interest in doing so may become a focal point for her inner distress and be expressed through somatic dysfunction.

Postpartum period. Again, in the period following delivery, the psychodynamic factors which determine the woman's over-all sexual adaptation may be taxed to the point where they seek expression in somatic symptoms. These may take the form of lack of appetite or self-interest, absence of sexual interest, chronic or persistent fatigue, or mood changes. The last are certainly not uncommon, and sometimes more severe reactions are seen in the postpartum period. Some investigators have stressed the fact that emotional decompensation seen in the postpartum period expresses dysfunction and maladaptation which may have existed prior to impregnation. In some instances this dysfunction and maladaptation may have been responsible for the pregnancy, rather than the result of childbirth. The woman may be more vulnerable psychologically during this period: the hormones are facilitating agents which influence the thresholds of response patterns, and ovarian function is not established with regularity until after lactation is complete. Nevertheless, it is generally agreed that when a psychosis manifests itself in the postpartum period, its form has been predetermined by the woman's previous emotional organization. Some have viewed severe postpartum dysfunction as release phenomena, which facilitate the overt expression of underlying pathology, the clinical picture usually being that of depression or schizophrenia.

The clinical management of postpartum psychosis is considered in detail elsewhere in this volume. In brief, physiological treatment techniques, in the form of hormone therapy and psychoactive medication, as well as psychotherapy, would appear to constitute an appropriate treatment approach to this syndrome.

Sexual Disturbances

In the motivation for sexual intercourse, the desire for orgasmic gratification generally takes precedence over the desire to reproduce. Rado described coitus as providing the human organism with a source for overwhelming pleasurable accumulation and discharge of its superabundant emotional tensions. This formulation supports Freud's hypothesis that sexual frustration plays a large part in the etiology of certain behavior disorders; it also explains why any interference with the achievement of such pleasure and the discharge of these emotional tensions may precipitate emotional disturbances with their multiplicity of somatic expressions.

Physiological determinants. A few general remarks which are applicable, to some degree, to all forms of female sexual dysfunction may serve as an appropriate preamble to this discussion of specific female sexual disturbances. To begin with, the study of physiological, as opposed to psychological, factors

has been especially neglected in this area. Yet, the role of higher cortical centers in either facilitating or inhibiting spinal centers which respond with a reflex to mechanical stimulation is particularly crucial. This cortical stimulation (or inhibition) is, in turn, a product of the total psychodynamics of the patient, including experiences at different levels of consciousness. It is the cortical activity which determines the response described as pleasurable sensations. Moreover, as Marmor has pointed out, given the same amount of clitoral stimulation, the cortical centers determine both the intensity and the duration of orgasm.

Secondly, it should also be pointed out, in this connection, that the phenomenon of orgasm in the female is by no means synonymous with pleasurable sensations, although one facilitates the other. In fact, according to Dickinson and Beam, only two out of every five women in our society experience orgasm regularly. However, the woman may derive certain satisfactions from sexual intercourse, and experience pleasurable sensations, even when she does not achieve orgasm. Yet, while some women who are too inhibited to have an orgasmic response are able to enjoy sex nevertheless, more frequently, it is experienced as a sign of inadequacy and as such becomes another factor leading to her distress. Thus, patients in this category may be divided into two groups: the first group "enjoys sex, but cannot have an orgasm"; the second "cannot have an orgasm, so they cannot enjoy sex." Furthermore, the patient's specific attitude in this respect is frequently believed to have important implications in terms of etiology, treatment strategy, and prognosis.

The third related point for general discussion refers to the fact that, for many years, it was assumed that the female's response to vaginal, rather than clitoral, stimulation was an important criterion of psychosexual health. And, as such, this orientation was fundamental to the therapeutic approach to female sexual disturbance. However, the hypothesis that clitoral sensitivity must eventually give way to vaginal sensitivity in the course of "normal" psychosexual development is no longer considered tenable in the light of recent data. Rather, it is generally agreed that clitoral excitation in the process of sexual intercourse is an essential factor in the stimulation leading to orgasm. Although there are secondary erogenous zones, such as lips, breasts, and buttocks, in women, the chief erogenous zone is localized in the glans clitoris. Thus, Masters and Johnson have shown that failure to achieve orgasm during intercourse is often related to inadequate clitoral stimulation.

Frigidity

Definition. The term frigidity, or sexual anesthesia, is a term which is used to designate a variety of sexual disorders relating to the inhibition of female sexual response, ranging from "unsatisfactory" orgasm (but otherwise vigorous sexual response) to

complete lack of response to sexual stimulation. In all of its manifestations, frigidity represents the form of psychogenic sexual dysfunction which is encountered most frequently in clinical practice.

Psychodynamics. Bypassing, for the moment, the infrequent physiological causes of nonorgastic response, such as the effect of the ovarian cycle, the numerous psychological factors associated with this disorder in women are variously ascribed to the fear of impregnation, fear of rejection by the sexual partner, envy or hostility toward the male, and fear and/or guilt regarding penetration and impropriety of the sex act. Sex is viewed as an act of violence and there is fear of mutilation. Consequently, any sexual activity, coitus in particular, is perceived as a threat.

Frigidity may also be used as a weapon against the male. To the woman who feels inferior, and therefore hostile, to the male because of anatomical differences and social roles, or because of her dependency upon the male, with its concomitant frustration, sexual nonparticipation may be a bid for independence. Frigidity may also be a defense against earlier unacceptable impulses, such as competitiveness with the mother or forbidden sexual fantasies. The inability to assume a female orientation, because of a preoccupation with competition or domination, may lead to a diminished capacity for sexual pleasure. Again, the release phenomenon of orgasm may be equated with loss of control and with concomitant aggressive, destructive, or violent behavior. Fear of these aggressive or destructive impulses leads to damaged self-esteem and the expectation of retaliatory behavior from the male, and it contributes to sexual inhibition which is expressed in nonorgastic response.

Dyspareunia and vaginismus

Definition. Although dyspareunia, which refers to painful or difficult sexual intercourse, and vaginismus, which refers to an involuntary spasm of the vaginal muscles, are differentiated from frigidity, the underlying psychological factors operate from the same base line of fear, hostility, and guilt, and they lead to the same consequences, i.e., sexual avoidance, sexual displeasure or aversion, and varying degrees of pain or discomfort. On the other hand, dyspareunia and vaginismus are less prevalent than frigidity and generally indicate the presence of more severe pathology.

Psychophysiological mechanisms. Kroger and Freed have pointed out that the terms "dyspareunia" and "vaginismus" are used interchangeably in the gynecological literature, although attempts have been made in both cases to differentiate demonstrable pathology from psychic factors. This discussion is limited to consideration of these symptoms as a somatic expression of psychological maladaptation and a defense against sexual intercourse. Thus, in vaginismus, the involuntary muscle spasm which expels the penis and renders coitus impossible may express

the force with which the woman desires to prevent entrance into her body, her reproachment of the act itself. Her perception of the male sexual organ as a dangerous weapon which will damage her by penetration leads the female to lose her capacity for sensation. Whatever the underlying factors in her inability to participate actively and derive pleasure from sexual intercourse, her concern with this failure and her fear of it will then reinforce her distress and her fears that she is unfeminine, or homosexual. Similarly, in dyspareunia, the psychogenic fear of anticipated pain makes intercourse unbearable or unpleasant.

Treatment. Any therapeutic procedure must, of course, include removal of organic factors, when present. However, the psychogenic components of these disorders are more readily apparent. The more common and frequent psychological determinant of unpleasant and painful coition refer to the woman's relationship with the partner, realistically and symbolically. Although these may be based upon her deep-seated problems, the difficulties in the relationship per se and the problems inherent in the partner must be taken into account as well. Indeed, all of these factors must be assessed and utilized in outlining an effective therapeutic program.

Ideally, the therapeutic plan will include education and reeducation of both partners to enable increased awareness of sexual technique and relationship pitfalls, as well as increased understanding of the part each partner plays in the problem of the other, even though maladaptation in the sexual area may be rooted deep in the personality structure. Once it has been established, when variations occur in the usual orgasm pattern, they may then be related to other disturbances, such as illness, including depression; increased tension of one partner; or increased tension in the relationship.

Social and internal pressures which characterize female development in our society; excessive masturbation with independent orgasm and subsequent dependency on secondary stimulation to the exclusion of the sexual act itself; ignorance of sexual techniques; moral, religious, and parental prohibitions; fear of dependency, on the one hand, and the expression of aggressive impulses, on the other; and excessive guilt and fear of coitus all impinge on the freedom of the female to develop her capacity for sexual pleasure and her ability to perceive it as a source of satisfaction. Other cultural demands, such as the emphasis on virginity as a prerequisite for marriage, further complicate the picture. Nevertheless, despite such impediments, psychotherapy may be remarkably effective in such cases.

Fertility problems. Through the comparative study of animals, Beach and other investigators have clarified the part psychodynamic integration plays in sexual behavior. With the development of the brain in the evolution of vertebrates, mating behavior has

become more complex. The sexual pattern of the individual woman is shaped by highly complex social forces which are in constant interaction with her biological equipment. Although, as mentioned earlier, coition is dominated by a desire for orgasmic pleasure and is independent of reproductive intent, which may or may not be present at a given time, deeper attitudes toward coition, menarche, childbearing, and menopause are intertwined.

Psychophysiological mechanisms. Though the physiological mechanisms of involuntary sterility are not yet completely understood, investigators repeatedly stress the crucial interplay between psychogenic and physiological factors in the sensitivity of the endocrine system of the reproductive apparatus.

Rubin and others have called attention to the importance of tubal spasm in sterility, where the constriction of the smooth muscle at the uterotubal junction prevents ovum and sperm from making contact in the tube. Since the smooth muscle of the female genital tract is particularly susceptible to hysterical spasms arising from emotional stress, Stallworthy considers this spasm to be a manifestation of the autonomic disharmony operating in the patient.

The frequent occurrence of conception after seemingly sterile couples have adopted a child is also considered by some to reaffirm this interplay of psychic and physiological disturbances in low fertility and to underscore the role of unconscious emotional factors. Hanson and Rock, on the other hand, have advanced another interpretation of this phenomenon. They suggested that the possibility of improved relations between husband and wife, relief from anxiety over childbearing, diminished conflict about motherhood and the general increased sense of well-being—all of which may be consequences of the adoption—help to facilitate conception. However, these conclusions were based on data garnered from questionnaires that did not attempt to explore unconscious factors, which might have been crucial in the previous failure to become pregnant. Other investigators, too, have pointed out that in some instances the improvement in the psychological well-being of the woman and in the marital relationship, in general, may have occurred prior to the adoption and have suggested that data concerning postadoption impregnation needs careful review.

Various authors have expressed a preference for terms, such as limited fecundity, and subfertility, as opposed to sterility. This is not merely a question of semantics, since a physiological predisposition does appear to exist. A woman whose somatic constitution renders her highly fertile, given the very same fears, hostilities, and hysterical traits, will still conceive with relative ease and express her fears, anger, and guilt in other ways. On the other hand, when a woman's physiological predisposition renders her subfertile and she is, in addition, marginally adapted psychologically for reproduction, emotional factors

may interfere sufficiently for sterility to result. However, this does not mean that psychic factors are the sole determinants of sterility.

Psychological determinants. Obviously, the fear of impregnation may be a crucial factor in the inability to conceive. Such fears might include an unwillingness to take on changes in the current life situation or to have less freedom for other activities, increased commitment to a marriage with which the woman is dissatisfied, or fears of childbirth. Many of these fears are experienced at a conscious level.

Unconscious fears may be more serious, including the woman's fear of surrendering the father-daughter relationship she has enjoyed with her husband and having to compete with a child for his affection, and hostility toward the male, both of which may be expressed by a stubborn "refusal" to conceive. The psychodynamic factors operating in the unconscious rejection of pregnancy by women who seem to desire it approximates the general concept of maladaptation in the sexual area as delineated above. In certain women, the woman's need to repudiate the feminine role may be expressed in the form of amenorrhea; in others, the disturbed emotional patterns are reflected in the inability to become pregnant.

Treatment. In addition to the need for a careful biological survey, treatment must be based on careful evaluation of the total relationship between husband and wife, of the nature and origins of the woman's feelings of frustration, and of the accompanying feelings of anger or incompatibility. Because of the sensitivity to all components in the sexual cycle and sexual behavior, intrusive attitudes may well trigger motor discharge of tension through the uterotubal spasm described above.

Increased tension and anxiety may result, as well, from the woman's failure to conceive initially or after repeated attempts, particularly when there is excessive focus on this problem. Her fear of being childless, empty, and unfulfilled may be equated with the male's dread of impotence. Such a self-image may augment emotional duress in subsequent coital attempts and make impregnation even more unlikely. In such instances, reduction of tension by means of relatively simple measures, such as reassuring the woman on this score, prescribing sedation, or even the seemingly stereotyped suggestion of a vacation may yield favorable results.

Since conscious or unconscious avoidance of exposure to impregnation during ovulation results in infertility, the importance of a careful and detailed history before a diagnosis of sterility is made should be underscored. Detailed accounts of frequency and time of intercourse, as well as the emotional disposition of the woman during and directly after intercourse are essential in this connection.

Careful scrutiny of the woman's capacity for sexual pleasure is also indicated; there are frequent reports of cases where alleged sterility and frigidity

are alleviated concurrently. Investigation of the husband's attitude toward the prospect of becoming a father and toward his wife's supposed inability to conceive, as well as his own attitudes concerning marriage or family foundation, provides data which facilitate further understanding. Inevitably, the husband's attitude contributes to his wife's tension in general and during intercourse in particular; and by so doing he may have intensified her basic problem of subfertility.

Menopause

Turning briefly to the somatopsychic symptoms related to the menopause, typically, the woman's attitude toward this gradual decline in her reproductive capacity draws on many early fears. These are now reinforced by her concern that she will be less attractive to her spouse, or as a woman; that she will be incapable of sexual participation or sensual pleasure (together with shame and guilt because of her persistent sexual stirrings); that the menopause is a period of disturbing changes and symptoms; that she will be abandoned and become old and purposeless. These attitudes may be expressed in irritability, hypersensitivity, excessive complaints, or multiple somatic symptoms. Reeducation and redistribution of general understanding of the illusory threat of menopause are helpful psychotherapeutic tools, in addition to physiological procedures, such as hormonal replacement therapy and administration of psychoactive drugs.

Abortion

"Habitual" abortion. Spontaneous abortion occurs in 10 per cent of all pregnancies. "Habitual abortion"—that is, at least two consecutive abortions—may be attributed to physiological, as well as psychological factors. Nevertheless, despite the fact that it is certainly not exclusively psychogenic in etiology, the emotional consequences of abortion are usually serious enough to demand careful medical attention. Such an experience may well be the first traumatic psychological experience in the marriage. In that event, the physician may assuage the woman's uneasiness, self-reproach, and guilt, to some extent, by emphasizing the facts that spontaneous abortion is frequently an indication that an abnormal sperm has fertilized the egg and that abortion is highly preferable to the continuation of pregnancy which would result in an abnormal fetus. Such cases require preventive measures as well: before a future pregnancy is contemplated, the seminal fluid should be analyzed to determine whether the percentage of atypical sperm is within normal range.

On the other hand, the abortion may, of course, have been precipitated by an autonomic instability so great that minimal stimuli would provoke an extreme response. Moreover, such a tension state increases

with each failure to achieve childbirth, and each additional disappointment.

Therapeutic abortion

Psychiatric indications. With the increase in the incidence of therapeutic abortion a hardship has been imposed on hospital facilities faced with the task of interpreting the existing laws. Yet, both hospital and individual physicians have assumed responsibility for this task to an increasing degree. The previous, almost universal practice of permitting the individual physician to decide whether a patient's condition justified a therapeutic abortion has given way to the practice currently followed in most hospitals of basing this decision on committee action. There has been a gradual decrease in the number of legal abortions based on physical illness, such as tuberculosis or cardiovascular conditions, so that, with the exception of rubella at certain periods, psychogenic considerations are responsible for an ever increasing percentage of therapeutic abortions. The nuclear elements involved in therapeutic abortion are similar to the ones involved in contraception and sterilization.

Investigators have emphasized that therapeutic abortions are performed much more frequently on the private services than on ward services. Although the law usually permits interruption of pregnancy only to preserve the life of the pregnant woman, the fact is that the life of the prospective mother is almost never jeopardized by pregnancy, but her mental and physical health may well be, which, in turn, would jeopardize the proper development of the fetus. Nyswander, Klein, and Randall have emphasized these factors, as has Hall, in reports of findings in different national areas. And Guttmacher has pointed out that, while it is impossible to obtain therapeutic abortion incidence figures for the United States as a whole, current trends clearly indicate that there has been a change in philosophical orientation. The preservation of life no longer connotes merely organic survival; such decisions are now based on considerations pertaining to emotional adaptation.

Under the circumstances, it is not surprising that the incidence of therapeutic abortion on grounds of psychiatric illness has risen steadily so that it is now the most common single precipitating factor. This trend, which reflects current opinion that severely disturbed women should not bear children, also indicates an increasing concern with the welfare of children and an increasing awareness of the importance of early environmental and psychological factors for future development.

Incest or impregnation of a female who is mentally incapable of anticipating the potential results of coitus, rape, psychoses, and sufficient evidence that a child would be born mentally or physically defective are currently included among the psychiatric criteria for interruption of pregnancy.

Psychological effects. Whatever the circumstances,

the emotional effect of the abortion upon the woman represents a serious consideration. Although impregnation may occur in a female who has neither the knowledge nor the equipment to comprehend its significance, many conscious and unconscious factors are operative. While the woman may want to have the pregnancy interrupted, this wish may be accompanied by feelings of guilt and fear, and the abortion may, in such cases, precipitate a serious emergency reaction. Psychiatrists are generally agreed that certain safeguards should be established with regard to abortion and that the delineation of such measures is the appropriate responsibility of the members of this discipline, rather than the law.

Other Psychogenic Gynecological Problems

Other clinical phenomena frequently encountered, such as spontaneous abortion due to emotional factors; psychogenic aspects of contraception, including failure to use such measures; low back and pelvic pain; obesity; and psychogenic leukorrhea, are among the variety of additional syndromes included under the broad rubric which some authors have termed "psychosomatic gynecology." The basic psychodynamics involved in these symptoms vary from person to person. And given the same or similar psychodynamic patterns, there is a concomitant variation in the choice of presenting symptom or dysfunction. However, it may be speculated that the common denominators will include a faulty self-image and a faulty identification with the feminine role; fear of aggressive or competitive impulses; intense dependency needs and the frustration of these needs; and a fear of sexual feelings and penetration.

Today, women have an increased understanding of their problems in these areas, and this understanding, together with their greater cultural freedom, lessens the need for such distortions. Current medical efforts are directed to making childbearing equally safe for mother and infant. The good medical regimen, calling for frequent visits for examination, counseling, and psychophysical investigation, is designed primarily to prevent complications and thereby make later treatment unnecessary. Furthermore, this general approach is being extended to all aspects of female psychosexual function.

Suggested Cross References

For a further discussion of postpartum psychosis see Section 32.2. A more detailed description of the fundamental classical psychoanalytic concepts of the sexual development of females that were mentioned in this section may be found in Chapter 6, while alternate viewpoints regarding this subject are presented in Chapters 7 and 8, which deal with other psychoanalytic and psychodynamic conceptual models of personality and psychopathology. Normal sexuality is discussed in Section 5.7. Additional information regarding the relationship between sex

hormones and behavior can be found in Section 30.9 on endocrines. Legal aspects of abortion are discussed in Chapter 48 on forensic psychiatry, and sexual disturbances of children are treated in Section 41.6.

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30.9 ✓ ENDOCRINES

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In discussing endocrine malfunction, one must avoid any commitment to a concept of disease that prevents attempts to understand process by immobilizing symptoms into rigid syndromes. Alternatively, restricting discourse to psychosomatic terms may lead to indulgence in a convenient but nonenlightening semantic artifice. Psychosomatic medicine uses many models in research, and so the interplay of many different dis-

ciplines and methodologies is necessary for a multifaceted approach. Only by maintaining flexibility can the complexities of psychosomatic phenomena, including those of endocrine aberrations, be understood. The language of the various disciplines used must be employed appropriately. For example, Mirsky has pointed out that the physiological concept of homeostasis is not appropriate to human behavior, and biochemistry can give no information about the rigidity of the superego. His wise and succinct comments of particular relevance to psychoendocrinology state that psychosomatic medicine is

...an approach to the study of man which emphasizes that every scientific discipline provides concepts and techniques which are relevant to some particular level of organization; that no level of organization is more or less significant than any other; that a disturbance at any level of organization can influence all other levels; and that only the concomitant appraisal of all levels of organization can yield insight into the dynamic stability which characterizes health. This is an approach which emphasizes that every level of organization—from the social to the molecular—is involved in the predisposition, the precipitation, and the perpetuation of the various clinical derangements that plague man and his society.

Ultimately, psychiatrists are interested in the effects of malfunction of the endocrines as they affect people. (The anatomical, physiological, and neurological relationships are of great importance because of the principle of control by feedback mechanisms and because nervous system disturbances may be manifested by endocrine upset and vice versa.)

Hypothalamic Pituitary Function

Mechanisms. Emotional arousal may lead to a discharge of trophic hormones from the pituitary, with consequent secretion by the appropriate target glands, whose product in turn damps the mechanism causing the pituitary discharge. The secreted products from peripheral glands may also affect cerebral metabolism, leading to further disturbance in affect or cerebration. The hypothalamus is commonly named as the site of control, but most recent work indicates that the limbic system is intimately tied in with regulation of hypothalamic and other systems concerned in endocrine control. All this implies the principle of homeostasis in this physiological system.

Disorders

Hypothalamic lesions. These may result in pituitary dysfunction demonstrated by cachexia, obesity, dwarfism, eunuchoidism or regression in gonadal function, and diabetes mellitus or insipidus. These symptoms may occur singly or in combination with the attendant personality difficulties, such as the shy submissive adaptation of the eunuchoid. The group showing obesity, sexual infantilism, and skeletal abnormalities, such as broad pelvis and genu valgum have no detectable hypothalamic or pituitary pathology at autopsy; their condition was formerly termed

"Fröblich's syndrome," an eponym that should be dropped. Many mature normally at puberty and lose most of their stigmas. They are, however, subject to teasing and bullying in childhood and consequently to emotional distortion.

Pituitary disease. It can be accompanied by personality change in such conditions as dwarfism, which is not incompatible with normal intelligence and achievement of full adult role if genetic in origin but, if due to a pituitary pathology, may have associated endocrine defects of thyroid, adrenal, and gonads. The personality distortion depends, therefore, not only on the abnormal physical aspect but on the endocrine deficiency acting on the nervous system as well.

Acromegaly. This disorder leads to psychological repercussions due to the gross distortions of face and figure that occur. Studies at the Burghölzli Clinic indicated that half the observed cases had mild and the rest severe character changes. Thinking was retarded, and emotional expression was clumsy and slow. There is an apathy associated with a sort of inert elation. They are egocentric and resigned. Sex drive may be increased initially but is later diminished. Episodes of bad humor, thirst, or gluttony occur and appear to be compulsive. The psychopathology is not specific, according to Blickenstorfer. Psychoses are rare but do occur coincidentally. Acromegaly is not related to acromegaloïdism and is not an inherited disease.

Adrenogenital or virilizing syndromes and Cushing's disease. Though predominantly initiated by pituitary malfunction in most instances, these disorders are expressed largely through adrenocortical secretory activity and are discussed under "Adrenals."

Hypopituitarism. With hypopituitarism, adrenocortical deficiency may occur as a result of craniopharyngioma in preadolescence or as a chromophobe adenoma later. Pituitary cachexia, used synonymously with the eponym "Simmonds' disease" if restricted to the original description, is due to septic infarction of the pituitary following postpartum pelvic infection. If the pituitary defect is due to destruction allegedly ensuing on local vascular thrombosis as a sequel to severe hypotensive shock following uterine bleeding, it is known as Sheehan's syndrome. The symptoms in this kind of pituitary deficiency may resemble Addison's disease but with much less pigmentation, greater weight loss, and a fluctuating blood sugar level, which adds periods of suddenly impaired consciousness to the other physical symptoms and the psychological ones of inertia and impaired judgment. The most important distinction to be made is from anorexia nervosa, with which it is often confused. The latter condition is not hormonally dependent except insofar as the amenorrhea represents a hypothalamic-pituitary disturbance. Surgical hypophysectomy is the greatest of pituitary deficiencies, any one of which leads to a diminished emotional life and reduction—if not complete obliteration—of sexual drive.

Thyroid

Hyperthyroidism. The psychological manifestations of hyperthyroidism are present in almost every case and include anxiety, tension, physical and autonomic overactivity, and emotional lability, with depression, euphoria, or apathy occurring less frequently. More severe mental disorders also occur. Psychosis of the organic reaction type was common in severe cases with or without thyroid crisis before the introduction of antithyroid drugs. Now the delirium is more likely to be caused by the drugs themselves.

Other psychoses occurring concurrently include manic-depressive reactions, agitated depression, schizophrenia, and occasionally mania. The incidence of these psychoses in hyperthyroid patients is in dispute. A recent study by Bursten found 10 patients with psychosis and concurrent thyrotoxicosis among 8,000 patients admitted to a New York mental hospital. The conclusion drawn was that this combination was not a clinical rarity.

Etiology. There is wide agreement that psychological factors may determine the onset of hyperthyroidism, but there is no definite proof. Gibson found that severe emotional shock may precipitate the disease in genetically predisposed individuals, but, more significantly, prolonged tensions and chronic emotional stresses appear to be more important etiologically than acute episodes. The incidence of emotional precipitants was said by Lidz to range from 60 to 100 per cent, with an average of 80 per cent. Healthy people with a high I^{131} uptake show personality characteristics similar to those of patients with hyperthyroidism.

Psychoanalytical studies have postulated that there are specific similarities in the basic needs and defensive patterns in hyperthyroid patients, most of whom are women. According to psychoanalytic theory, there is in childhood an unusual emotional attachment and dependence on a parent, usually the mother, and any threat to this protection or approval is found intolerable. Often there is inadequate support given to the patient as a child because of economic stress, divorce, death, or multiple siblings. The persistent threat to security in early life leads to unsuccessful and premature attempts to identify with the object of dependence and cravings. Because of this failure, the patient continuously strives toward premature self-sufficiency and tends to dominate others by smothering attention and affection. There is a need in the patient to build defenses against a repetition of the unbearable feelings of rejection and isolation that occurred in childhood. Should these break down, then thyrotoxicosis may result.

Clinical features. The electroencephalographic (EEG) recordings in hyperthyroidism show an increase in the frequency of the α rhythm, the degree of change showing some relationship to the increase in the basal metabolic rate and the protein-bound iodine

levels. Following specific antithyroid treatment with radioactive iodine, the EEG in most cases reported by Wilson and Johnson became completely normal. There is, however, evidence to suggest that endocrinological factors other than thyroid play an important role in the production of EEG abnormalities in patients with hyperthyroidism.

Treatment. The adequate treatment of thyrotoxicosis requires a multidisciplinary approach. Initially, the metabolic disturbance should be corrected by appropriate medical antithyroid methods or by surgery. Symptomatic relief of agitation and anxiety can be obtained by means of sedatives and tranquilizers. Then, emotional factors that are important in the etiology of the disease can be dealt with by psychotherapy. The extent of the psychotherapy depends on the individual. Those moderately well adjusted emotionally before the onset of the thyrotoxicosis usually do well solely on a medical regimen, especially if their difficulties are resolved. Persons psychologically maladjusted before the illness began require psychiatric follow-up therapy; this is probably essential to prevent relapse and for successful long term treatment.

Hypothyroidism. Hypothyroidism with mental illness has been of interest to psychiatrists since Sir William Gull noted mental changes when describing the disease in 1873 and the Clinical Society of London in their report on myxedema in 1888 pointed out the high incidence of insanity as a complication.

Clinical features. Many personality disturbances have been wrongly attributed to the hypofunctioning of the thyroid. The incidence of severe mental disorder in hypothyroidism increases with the severity and duration of the condition. In most cases of myxedema, there is a progressive slowing of all mental processes, loss of interest, poor memory retention for recent events, unresponsiveness, impaired judgment, apathy, and tiredness unrelieved by sleep. Michael and Gibbons reported that excitement and irritability also occur. Disturbances in affect range from retardation to mania. Thought disorders, particularly of a suspicious or paranoid delusional nature, are common and may be accompanied by hallucinations. Many features of myxedema psychosis resemble the organic reaction types, with clouding of consciousness manifested as disorientation, confusion, or coma. It is not surprising to find organic symptoms, since the brain is affected by the thyroid deficiency in the general physical disturbance. Sassenbach reported that there is a relative cerebral hypoxia due to a decrease in cerebral blood flow and absence of change in the glucose consumption and mean oxygen requirements. These changes, noted Browning, are detected in the EEG as a slowing of the dominant frequency and a reduction in voltage.

Treatment. There is widespread belief that the mental symptoms caused by myxedema disappear when the patient is made euthyroid. This is not true. Recent investigations by Tonks indicated that some

cases with disturbance in consciousness and a history of less than 2 years are those most likely to respond favorably to the administration of thyroid. The other types of psychoses are less liable to show a lasting response to hormone replacement therapy and are best managed like psychoses of unknown etiology, that is, with psychotropic drugs. Asher has suggested that in these cases the mental changes are irreversible, but there is little evidence that this is so. It may be that all psychoses due to myxedema show organic features and that the psychoses that do not are, in fact, coincidental. It is considered unlikely that emotional factors are important in the production of myxedema.

Parathyroid dysfunction. Psychiatric disorders occur with parathyroid dysfunction as with other endocrine upsets. The symptoms associated with hypoparathyroidism are those of a toxic delirium. Anxiety, agitation, and depression are common; delusions and hallucinations usual; disorientation, confusion, and delirium are frequent; paranoid ideas and suicidal attempts may occur.

Neuropsychiatric disorders in primary hyperparathyroidism have been reviewed in detail recently by Schwartz. In one third of 31 cases surveyed, symptoms of nervousness, tension, and irritability were found. Retarded and agitated depressions and a confusional state were encountered in individual cases. Signs correlated with serum calcium levels. Therapy relies on medical and surgical treatment of the underlying condition.

Pancreas

Diabetes mellitus. The importance of the emotions in diabetes mellitus has been given variable weight over the years. They were thought important until the present century, when a series of events nullified the earlier interest. These were: advances in knowledge of the physiology of carbohydrate metabolism and the beneficial effects on the prognosis and treatment of the condition with the introduction of insulin; the acceptance of heredity as an adequate etiological explanation; and the failure of combat in World War I to increase significantly the number of diabetics. However, the rise of psychosomatic medicine over the last 25 years produced a revival of interest in the complex psychological aspects of the disease.

Etiology. Heredity plays a dominant role in the etiology of diabetes. A child from a diabetic-non-diabetic marriage has a one-in-four chance of developing diabetes, predictable genetically by the Mendelian ratio. If both parents are diabetics, diabetes in the offspring is inevitable. Nevertheless, cases develop in which no hereditary taint can be identified. Many observers, such as Lidz, have noted cases in which the onset coincided with or closely followed emotional disturbances. These situations can only be assessed in terms of personality organization, needs, and defenses, since other people survive what seems like

comparable trauma. That diabetes mellitus may arise from emotional causes is a distinct possibility, but one that is not readily susceptible to proof, said Treuting.

✓ **Psychophysiology.** There is more understanding and agreement about the role of emotional factors in established diabetics. Under experimental stressful situations, various changes have been demonstrated by Hinkle and Wolf. These include ketonemia; alterations in the fasting blood sugar level, leading to either hyperglycemia or hypoglycemia; changes in the glucose tolerance curve; and an increase in the excretion of water, glucose, and chlorides. The stressful life situations that produce these metabolic changes appear to have a high degree of specificity for the individual and usually involve significant persons in their lives, such as parents, spouses, or children. Circumstances that provoke feelings of frustration, loneliness, or dejection are frequently accompanied by glycosuria and increased insulin requirements. Conversely, resolution of conflicts and life situations to which the diabetic responds with feelings of security and contentment are often accompanied by hypoglycemic reactions, with a decrease in glycosuria and reduced insulin requirements. Patients repeatedly admitted to a hospital in diabetic acidosis either have abandoned their therapeutic regimen or have omitted to take their insulin because of emotional disturbances. In this way, they use their diabetes as a manipulative tool to escape into the hospital and so avoid the environmental stress.

✓ **Psychological characteristics.** The effects of diabetes on the patient create psychological problems that may result in behavioral difficulties. Children develop temper tantrums when desirable foods—like candies, jams, and desserts—are withheld from them. Adolescents, with dietary and recreational activity limitations, feel different from their peers and may be considered asocial by them.

Parental reactions to the disease are important in molding the future personality structure of young diabetics. Anxiety in the parents is quickly transmitted to the patient; perfectionistic mothers gain control of the illness at the cost of behavioral difficulties.

Each patient is required to make his own individual adjustment to the numerous anxiety-provoking factors associated with the disease. These include dietary restrictions, self-administration of hypodermic injections of insulin, daily urinalysis, the effects on employment and marriage prospects, and the stigma of suffering from a chronic incurable disease. The well adjusted patient responds by self-restriction and rigid control of his diet, but those with low frustration tolerance show total disregard for food restriction by overeating and developing provocative and delinquent attitudes toward their diets.

Obesity and actual weight gain are accepted as predisposing and precipitating elements, respectively, in diabetes. Diabetic patients may have a compulsive

desire to eat, and this is intensified during periods of loneliness, dejection, or tension. Overeating is regarded as a psychological substitute for affection, and terms such as "oral," "dependent," "seeking maternal attention," and "passive" have come to be associated with the diabetic personality, but they are obviously not specific. In general, diabetes tends to impede the maturation processes in children and to favor regression in adults.

✓ **Management.** The proper management of diabetes mellitus requires an adequate understanding of the personality traits and life situation of the individual patient. Education in the difficulties of a restricted diet and techniques of insulin by a competent and cheerful physician helps to alleviate anxiety. Since obesity is usually caused by underlying emotional problems, group psychotherapy may be a good way of dealing with it. Summer camps provide an excellent means of handling diabetic children. There, the child receives supervision and instruction about his diabetes, which helps him to become self-reliant and to lose his feelings of isolation. Impotence and infertility occurring in the diabetic are, said Schwartz, due to an associated hypogonadism, though psychological factors may often be chiefly responsible. The symptoms of weakness and fatigue in hypoglycemia may cause it to be confused with anxiety states. It may also mimic a catatonic stupor. Glucagon deficiency and hyperinsulinism from exogenous or endogenous sources may be responsible.

Gonads

Gonadal function begins in utero with differentiation of genital structures and neural tissues that control behavior in experimental animals. The studies of Young and of Goy indicated that a normal embryological pattern of the sex hormones is necessary for the postnatal development of normal sexual behavior patterns and normal social relationships. In adult animals, hormones elicit mating response patterns by acting on brain mechanisms. In the mature human, androgens are chiefly responsible for sexual drive or libido in both sexes. Experiential factors modify innate sexual patterns in animals and even more so in man. The studies of the Hampsons and of Money of hermaphrodites indicated that the gender role is acquired in the first 3 years of life and is maintained despite incongruities with respect to chromosomal, gonadal, and hormonal factors, or internal or external morphology. This is relevant to the problem of homosexuality, which is not dependent on hormones.

Testes. The coincidence of puberty and schizophrenia suggests a causal relationship that is, however, not supported by modern endocrine studies. Atrophy of tubules and aspermatogenesis, observed by Mott and Prados, have been both denied and affirmed. No significant pathognomonic endocrine pattern is characteristic even of a small group of schizo-

phrenics, but some suggestive findings remain, and more refined techniques may yet reveal participation of hormones in this obscure malady.

Hypogonadism. This disorder has characteristic physical manifestations that may be alleviated in large part by various androgenic preparations if the condition is due to a testicular fault. Obviously, the alleviation is more apt to be complete if treatment is begun soon after the gonadal failure. Delayed puberty or testicular regression due to pituitary malfunction may respond to treatment with human chorionic gonadotropin, noted Williams. The endocrine pattern, especially during the developmental period, may have profound psychological effects. The studies of Bleuler suggested that individuals who do not have normal gonadal development during childhood fail to achieve normal heterosexual object relationships. Hypogonadal adult males tend to be passive and constricted psychosocially. Failure to develop sexual drive at a normal age for puberty is accompanied by emotional crippling. Later restitution of such drive may be more anxiety-provoking than satisfying. Paranoid reactions are a frequent response to the physical defects of eunuchoidism and such accompaniments as feminine appearance, including gynecomastia, noted Schwartz.

The hypogonadism of Klinefelter's syndrome, due to a chromosomal abnormality that accounts for the defects, has attracted much attention of late. Some such individuals attain a normal or above average mentality, but most are below.

Impotence. Impotence may be a manifestation of defective androgen secretion in eunuchoid males but not in normal males, in whom psychogenic causes are almost solely responsible, the exceptions being severe illness and starvation. Differences in sexual drive may be genetically determined in animals, and clinical observations indicate that there may be considerable differences in the amount of duration of sexual drive in the human also. Androgenic preparations can have only a placebo effect in psychogenic impotence.

Male climacteric. Male climacteric with vasomotor manifestations, corresponding to that in women, is rare. Williams noted that it may be seen when pathological processes interfere with Leydig cell function.

Ovaries. The influence of the ovaries on physical and mental maturation and reproductive functions represents a complicated interplay between hormonal action and feminine psychodynamics.

Ovarian malfunction. Malfunction of the ovaries may take many forms. Infantilism due to ovarian failure, whether primary or secondary to a pituitary defect, has psychological repercussions eminently manifested during adolescence, when comparison with peers makes for anxiety and withdrawal. Precocity in development of sexual characteristics can likewise be embarrassing, though less negatively disturbing. Cosmetic aberrations, such as acne of adolescence, can be torture, and hirsutism with or without signs of

androgeny is also distorting to the personality, noted Rome and Robinson.

Menstrual disorders. Dysmenorrhea is dependent in a large proportion of cases on a neurotic personality configuration, including resentment of the feminine role, overdependency, sensitivity to stress, and other distortions. There is an extensive literature but little concept of prevalence or its significance in healthy women.

Menorrhagia, metrorrhagia, and amenorrhea occur as part of personality disorders and inappropriate response to stress. Only by ascertaining the full picture of the patient's life situation from her and from reliable informants can a picture of the pertinent fears and conflicts be obtained. Patient psychotherapy with assistance from the endocrinologist may save the individual from needless and mutilating surgery.

Premenstrual tension and depression may exist as a single complaint or may accompany other gynecological or psychiatric symptoms. This is probably the most prevalent of the psychosomatic endocrine disturbances. Many treatment approaches have been suggested, including the use of diuretics and sedatives, hormone therapy, phenothiazines, and intensive psychiatric appraisal and treatment of the underlying personality disorders.

Sterility and repeated abortions. These may be manifestations of endocrine malfunction arising from emotional disturbances. Again, full information about the person and her situation is necessary for assessment and technical studies. Psychotherapy in such cases has been demonstrably effective.

Menopause. The menopause has been unjustly blamed for psychiatric ills. It is, indeed, an event of psychological significance, particularly for the unfulfilled. Neurotic and psychotic events at this time of life demand the same kind of careful psychiatric inquiry as at any other. The menopause cannot account for events that may be psychoneurotic, schizophrenic, manic-depressive, or hysterical in nature.

Postpartum psychoses. These may be schizophrenic or depressive; they may constitute a single episode or be repeated with each pregnancy. The changing hormonal milieu may be critical for predisposed persons, but the altered psychological status may be the most important factor in the psychologically brittle or immature.

Adrenals

The interaction between the emotions and the activity of the hypothalamopituitary adrenocortical system has been investigated in normal subjects and psychiatrically disturbed individuals. The response of the adrenal cortex in normal persons was studied under stressful situations, such as in relatives accompanying patients to the emergency rooms of general hospitals; students just prior to their final examinations; and patients awaiting major surgery. The com-

mon response to these stressful situations was an increase in the levels of plasma cortisol and the excretion of urinary corticosteroids.

Addison's disease. In his original description of the disease in 1855, Addison noted the presence of psychological symptoms, but it was not until 1941 that Engel and Margolin described the nature and frequency of mental symptoms in this condition. These were confirmed by Cleghorn and extended by Stoll. Apathy and negativism appear in four fifths of cases, depression and irritability in one half, suspiciousness and agitation in about one sixth. The symptoms, though worse in crises, improve only slightly following treatment with electrolytes and deoxycorticosterone, but with cortisone or allied compounds there is substantial improvement. Paranoid and catatonic states and manic-depressive psychoses may be seen in some 5 to 10 per cent of untreated cases and usually respond to glucocorticoid treatment. Manic and depressive states with paranoid coloring and occasionally vivid hallucinations may also occur as a response to early treatment with cortisone or its congeners.

The electroencephalogram shows abnormalities in Addison's disease, the pattern being one of slow diffuse activity at two to six cycles per second. Since correction of the electrolyte imbalance does not abolish this abnormality, it seems to be unrelated to sodium and potassium changes. Cortisone-type therapy restores the EEG picture to normal.

Cushing's syndrome. The psychological manifestations of Cushing's syndrome were formerly considered to be a reaction to the associated physical deformities, but they often appear before noticeable physical changes occur. Their incidence is roughly 50 per cent in the naturally occurring disease, where they usually appear much more slowly than in the therapeutically induced syndrome. A wide variety of psychiatric symptoms have been reported. Depression appears most frequently and is often associated with anxiety or retardation. Episodic outbursts of disturbed behavior, with excitement and acute anxiety verging on stupor, are also met. In general, a typical schizophrenic reaction is not seen, although paranoid delusions and auditory hallucinations do occur in some cases. The more severe psychiatric symptoms can often be managed with judicious use of phenothiazines.

Adrenocorticotrophic hormone (ACTH). ACTH, cortisone, and related substances are administered to patients with a variety of diseases, often in amounts that are not sufficient to produce a characteristic clinical picture of Cushing's syndrome. The side effects in terms of psychological symptoms deserve special comment. The commonest finding, noticed shortly after their introduction into medical treatments in the early 1950's, is an alteration in mood, principally euphoria; depression also occurs, but less often. Other transient findings are tension, restlessness, and excitability. Psychotic symptoms are less common but

take the form of mania, delusions, hallucinations, disorientation, and catatonic states. The clinical picture, therefore, is sometimes indistinguishable from acute paranoid schizophrenia, acute catatonic schizophrenia, or acute organic psychosis, except that on most occasions the condition is reversible when the hormone therapy is stopped. In recent years these incidents have not been reported because they are easily controlled by reducing the dose of the drug.

The high incidence of depressive features in Cushing's syndrome can be contrasted with the high incidence of euphoria occurring in those on hormone therapy. The reasons for these contrasting findings are as yet unclear. Symptomatic relief of psychotic reactions can sometimes be effected with judicious use of phenothiazines.

Adrenal function in the psychiatric disorders

Anxiety. Persky et al. published the results of their extensive investigations on patients whose predominant symptom was anxiety. Their findings showed that the activity of the adrenocortical system in anxious individuals reacted similarly to that of normal subjects in stressful situations. They also found that radioactive cortisol had a higher turnover rate in those with anxiety than in normal persons, indicating that cortisol is produced in larger amounts and metabolized faster in anxious subjects.

Schizophrenia. It is not surprising when one considers the complex nature of the schizophrenic illness that conflicting results have been obtained by different investigators who were measuring the activity of the adrenal cortex in these patients. However, it has been shown by Bliss et al. that acute schizophrenics who are emotionally disturbed appear to have elevated plasma cortisol levels (17-hydroxycorticosteroid levels), whereas chronic cases with little or no affect have levels comparable to normal emotionally calm subjects. One investigator has recently indicated that the excretion of 17-ketosteroids is higher in schizophrenic patients who have not regressed than in those who have.

Depressive states. The suitability of depressive illness for the study of adrenocortical activity in relation to emotional stress is apparent: it is a common illness, and the majority of depressed patients recover or improve within a comparatively short time. Original work on depressed subjects was carried out by the Michael Reese group in 1956 and 1957. Their findings showed elevation of 17-hydroxycorticosteroid levels in the plasma; the more severe the depression, the higher the corticosteroid levels. Higher cortisol values were seen in the retarded depressions than in the agitated ones. Gibbons and McHugh reported a positive correlation between the severity of the depressive illness and the height of the plasma cortisol levels, with the majority of patients showing a decrease in the cortisol levels with clinical improvement or recovery. These findings were confirmed at

the Allan Memorial Institute by McClure, who also observed that the plasma cortisol levels remained elevated throughout the 24 hours in these patients. Gibbons, using radioactive cortisol to determine the adrenocortical secretion rate, confirmed the increased adrenal activity in depressed subjects and demonstrated that there was a high correlation between the elevated plasma cortisol levels and the cortisol secretion rate.

Mania. Knowledge of the adrenocortical response in mania is still small, but it is gradually increasing, chiefly through the reports of investigators on individual cases. Rizzo et al. found low urinary glucocorticoids in a manic-depressive female patient during her hyperactive episodes, with the levels returning to normal after clinical recovery. Gibbons and McHugh reported a case with high blood plasma-cortisol levels during phases of depression and low levels during phases of elation.

Psychiatrists such as Lewin have suggested that mania is a defense against the pain of depression. Bunney et al. attempted to find biochemical confirmation of this psychological theory. They simultaneously studied the behavior and the urinary 17-hydroxycorticosteroids in a female patient with regular 48-hour manic-depressive cycles over a 2-year period. The patient's mania was characterized by intense denial of her illness and was accompanied by low 17-hydroxycorticosteroid levels. Her days of depression were associated with feelings of suffering and pain, but her 17-hydroxycorticosteroid levels were high. The investigators feel that these findings support the concept that the mechanism of denial is associated with low levels of urinary 17-hydroxycorticosteroids.

Adrenogenital syndrome. Hermaphroditism is frequently due to overactivity of the adrenal cortex in utero. When the overactivity of the adrenal cortex occurs after puberty, it may lead to Cushing's syndrome or the development of a simple state of hirsutism, clitoral hypertrophy, and menstrual irregularities. Considerable psychological changes, such as depression and self-consciousness and even paranoid psychosis with delusions and hallucinations, may also appear, but in the cases where androgenic reaction exceeds the corticoid, there seems to be less mental disturbance. There have been claims that these people have been restored to normal by an adrenalectomy.

Differentiation from Cushing's syndrome can be made through a study of ketosteroid and corticoid excretion in the urine. Actually, the two syndromes may merge with each other. The incidence of mental abnormality seems to be much greater in the typical Cushing's syndrome, which is associated with a much greater degree of increase in the glucocorticoid secretion.

Idiopathic hirsutism is often an obscure phenomenon without any adequate explanation. Its occurrence is naturally disturbing to the individual, and

it is said that the incidence of hirsutism is greater in female schizophrenics.

Adrenal medulla. Modern biochemical techniques have greatly enhanced knowledge of the products of the adrenal medulla and of sympathetic neurohumors. These substances are: dihydroxyphenylethylamine (dopamine), norepinephrine, and epinephrine. The first two are the predominant "sympathins"; the last two make up most of the adrenal medullary catecholamines; norepinephrine is the transmitter substance released from sympathetic postganglionic nerve endings. The relation of these compounds to nervous and mental diseases is a matter of controversy and has been reviewed in Sourkes' authoritative book.

Relation to emotions. Because of the differences in pharmacological effects of norepinephrine and epinephrine and because of their differential release action, Funkenstein expected that each might function as the mediator of different patterns of emotion or of personality. Elmadjian et al. studied individuals undergoing various types of stresses, both naturally occurring and experimentally induced, and interpreted their results as showing that active aggressive emotional displays are related to norepinephrine secretion; tense, anxious, and passive individuals show an increased excretion of epinephrine and a normal excretion of norepinephrine.

Although some other investigators have obtained conflicting results, Mendelson found no changes in the catecholamine output during the stress of prolonged sensory deprivation, and negative results were found when medical students were shown moving pictures with emotion-laden content. Men having a high incidence of coronary artery disease and showing much ambition, who had to meet deadlines under intense pressure, were found to have a rising excretion of catecholamines, particularly norepinephrine, during working hours. Subjects with the opposite type of behavior excreted less.

Mason studied monkeys provoked to an emotional response and found that the release of epinephrine was related to the element of unpredictability in the experimental situation. One can only conclude from this work that the hypothesis is quite unproved that human beings can be characterized by their catecholamines.

Relation to mental disorders. In the psychoses and other mental abnormalities, some changes in catecholamine metabolism have been encountered, none of which appears to be decisive for the clinical condition. The only exception appears in the subnormal level of epinephrine that Weil-Malherbe found in mental deficiencies. In manic-depressive patients, abnormal excretory patterns have been observed. The excretion of the catecholamines is higher during the manic phase of the psychosis than during the depressive phase. The excretion of epinephrine may be elevated in acute schizophrenic patients but is normal in chronic cases. Abnormally low rates of

excretion of epinephrine were observed in patients with senile dementia and with Down's disease (mongolism). In a study of acutely disturbed patients admitted to a hospital for treatment, it was found that those showing mainly depression tended to excrete a somewhat greater amount of norepinephrine than the normal control subjects; those showing anxiety had an elevated output of adrenocortical hormone; and patients with agitated depression had an increase in both corticoids and epinephrine. Such results suggest that psychic stress does not lead to a uniform pattern of hormonal reaction but may show a variety of patterns.

Relation to brain damage. Many groups of psychiatric investigators have been engaged in the search for an amine or amine metabolite that is toxic for brain tissue, producing a psychosis. The effects of mescaline, lysergic acid diethylamide (LSD), and similar agents constitute the theoretical model for these endeavors. It has been suggested that the toxic substance is adrenochrome, adrenolutin, or some related aminochrome derived from epinephrine. However, scientific proof has not been forthcoming. Recently, Friedhoff and Van Winkle have put forward a claim that an abnormal metabolite of dopamine is related to schizophrenia. This metabolite is dimethyldopamine or 3,4-dimethoxyphenethylamine. This substance is among a number of congeners that cause a catatonic syndrome in cats. At present, many groups are engaged in determining the specificity, or lack of it, of dimethyldopamine and its derivatives for mental disease.

The best evidence for catecholamine dysfunction in cerebral disease comes from studies of Parkinson's disease. Dopamine, which is normally present in relatively high concentrations in some of the basal ganglia of the brain, is deficient in these masses of gray matter at post-mortem examination of Parkinson's disease patients. Norepinephrine and serotonin are also low but not to the same extent. Urinary excretion of dopamine is also subnormal in this disease, indicating that the metabolic defect, whatever it is, may express itself generally as well as in the brain.

Poirier and Sourkes have prepared monkeys with specific unilateral lesions in the region of the substantia nigra as experimental models of basal ganglial disorder. Such animals exhibit deficient dopamine or serotonin or both in the ipsilateral striatum. The neurochemical changes correspond not only to lesions of specific tracts but to the occurrence of specific neurological changes, detected as tremor, abnormal posture, or both, of the contralateral limbs.

Pheochromocytoma is a tumor of chromaffin tissue, occurring usually in one of the adrenal glands but sometimes ectopically. The neoplasm can release catecholamines spontaneously, provoking a rise in blood pressure, palpitation, headache, vertigo, and anxiety. These patients occasionally come to the attention of

the psychiatrist and may receive the diagnosis of psychoneurosis before the tumor is discovered.

Suggested Cross References

Further information regarding the brain disorders that occur in association with Cushing's disease, myxedema, hyperthyroidism, and hypoglycemia may be found in Busse's section on disturbances in metabolism, growth, and nutrition (Section 19.2). Obesity is discussed in detail in Section 30.3, the psychosomatic aspects of menstrual disorders and habitual abortion in Section 30.8, and sexual impotence in Section 30.7. For more information regarding catecholamine metabolism and its relation to psychopathology, see Section 2.2 on neurochemistry in Area B.

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30.10 ALLERGIC AND SKIN DISORDERS

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Skin Disorders

The situation of the skin at the interface of the organism and its environment probably accounts for its very early recognition as an important somatic sounding board for the emotions. Expressions such as

"crimson with rage" and "white with fear" long antedated any formal exposition of psychosomatic concepts. Interest in the psychological aspects of skin disorders can be traced back as far as 1891, when Brock and Jacket coined the term "neurodermatitis."

Psychophysiology. As a major component of the body's homeostatic defensive system, primarily involved in heat and fluid regulation, the skin well illustrated Cannon's concepts of adaptation to environmental change. He described the blanching of skin under the stimulus of fear as an instance of his fight-flight principle—constriction of the cutaneous vascular bed in order to shunt blood preferentially to the musculature.

As the organ system most visible to inspection, the skin serves as a mirror of emotional states. Because of its rich endowment with sense receptors for pain, touch, and temperature sensations, the skin becomes the matrix for the body ego. The importance of physical contact in early development has been demonstrated by Harlow in monkeys and by Bowlby in children. The sexual function of the skin and the significance to normal development of its successively libidinated erogenous zones was hypothesized much earlier by Freud.

Abnormal cutaneous sensations

Generalized pruritus. It has been shown that itch, tickle, and pain are sensations all conveyed by the same outgoing fibers and are differentiated only by the frequency of impulse. Although release of histamine and proteinases into the skin has been proposed as the mechanism by which this sensation is initiated, other researchers, such as Rothman and Arthur and Shelley, have cast doubt on these theories. At present, the neurohumoral basis of naturally occurring pruritus is still unclear.

Anxious and tense individuals or a normally well adjusted individual at times of anxiety and tension may be more conscious than usual of itching sensations from a given lesion. Guilt, anger, boredom, irritation, and sexual arousal may all predispose the individual to itching and subsequent scratching. Experimental manipulation of the itch threshold with psychic stress has been demonstrated by Cormia. His subjects, under conditions of emotional tension, received previously standardized doses of histamine intradermally and showed an enlargement of the wheal and flare response and a prolongation of itching.

Kepecs and Robin developed a carefully standardized stimulus—stroking the skin with cotton wool for a 2-minute period—and were able to correlate the interpretation of this stimulus—itch, tickle, touch—with personality factors of the subjects:

The pain-pleasure series (pain, itch, tickle) is closely related to erotic instinctual life. The touch system is related to and subserves ego functioning. Responses of normal adaptation appear related to optimum balance between erotic, instinctual life and ego control, insofar as this can be reflected in the skin.

Reactions of no adaptation (all itch or tickle) indicate excessive emotionality and deficient control. Reactions of touch only are correlated with attempts at excessive and rigid control of affects.

Scratching evidently derives from reflexive movements that serve to clear the skin of irritants. In humans it may be both painful and highly pleasurable and may thus serve both self-punitive and autoerotic purposes. Musaph in a recent monograph entitled *Itching and Scratching* also pointed to the role of itching as a derived activity. He referred to the concepts of Tinbergen and other ethologists who observed that most animal species, when in the midst of conflicting drives, respond fully to one and make some token response to the other in what is called a derived activity. Musaph then pointed to scratching as just such an activity, frequently serving as a derived expression of frustration.

Localized pruritus

Pruritus ani. The investigation of this disorder commonly yields a history of local irritation—threadworms, irritant discharge, fungal infection—or general systemic factors, such as nutritive deficiencies or drug intoxications. However, after running a conventional course, it often fails to respond to therapeutic measures and acquires a life of its own, apparently perpetuated by scratching and superimposed inflammation. It is a distressing complaint that often interferes with work and social activity. Careful investigation of large numbers of these patients has revealed that personality deviations often precede this condition, and emotional disturbances often precipitate and maintain it. Some workers have postulated specific psychic factors in pruritus ani patients and feel that many character traits of these patients are based on compliance with or opposition to parental dictates regarding bowel training. Fixation at or regression to this anal stage of development leads to conflicts that frequently involve sadistic impulses. These, being intolerable, may be dealt with by a variety of defenses: (1) reaction formation manifesting as gentleness and subservience toward authority, (2) projection with suspiciousness and ideas of reference, (3) turning on the self, of which the scratching is a vivid manifestation.

A pleasurable component of the anal activity—rubbing, manipulating—is usually, though not invariably, obliterated by an unconscious sense of guilt, which changes the pleasurable rubbing into self-punitive scratching. Characteristically, patients susceptible to this illness display other evidences of their pregenital level of development, and in both men and women defective heterosexual relationships are common. In line with the anus as a site of expression of conflict over latent homosexuality, a preponderance of pruritus ani in men is noted.

Pruritus vulvae. As in the foregoing condition, specific physical causes, either localized or general-

ized, may be demonstrable, and the presence of glaring psychopathology in no way lessens the need for adequate medical investigation. Studies of large numbers of such patients suggest that both itching and scratching have a painful and pleasurable quality. In some patients, pleasure derived from rubbing and scratching is quite conscious—they realize that it is a form of masturbation—but more often than not the pleasurable element is repressed. Some investigators feel that the disorder is seen in patients with a characteristic history and psychodynamics. Most of the patients studied gave a long history of sexual frustration, which was frequently intensified at the time of the onset of pruritus. For many of these patients, the coexistence of a powerful father fixation and a severe code of morality interfered with adult sexual expression and in some cases led to pronounced masochistic trends.

At times of intense frustration, then, these patients regress to a masturbatory level of psychosexual development, but, because of their intense guilt, self-punitive feelings also become intense. Thus, the pruritus vulvae strikes a balance between pleasure and pain.

Abnormal cutaneous manifestations

Hyperhidrosis. States of fear, rage, and tension can induce an increase of sweat secretion. It has been demonstrated by Cuno et al. and Herman et al. that perspiration in the human is of two distinct forms, thermal and emotional. Emotional sweating appears primarily on the palms, soles, and axillae; thermal sweating is most evident on the forehead, neck, trunk, and dorsum of hand and forearm. The sensitivity of the emotional sweating response serves as the basis for the measurement of sweat by the galvanic skin response, an important tool of current psychophysiological research.

Excessive sweating (hyperhidrosis) may, under conditions of prolonged emotional stress, lead to secondary skin changes, rashes, blisters, infections, etc., and may thereby underlie a number of other dermatological conditions that are not primarily related to emotions. Basically, hyperhidrosis may be viewed as an anxiety phenomenon mediated by the autonomic nervous system, although it must be differentiated from drug-induced states of hyperhidrosis.

Rosacea. This condition is more common in women than in men and usually occurs in the thirties and forties. It features an increased vascularity, with papule formation on the blush area of the face and upper chest. Sufferers from rosacea display a heightened responsiveness not only to heat but also to hot drinks, spiced food, hurried meals, and a variety of emotions. Most patients in a large series studied by Wittkower related that excitement and worry, among other factors, brought on hot flushes. They displayed variations in the severity of rosacea in connection with changes in their life situation—work versus holi-

days, health versus illness of relatives. Some workers feel that these patients present specific personality features, the most outstanding characteristics of which are their abnormally high level of self-esteem, anxious dependence on the good opinion of others, compulsive desire to please, and constant fear of attracting attention. Underlying these were unreasonably strong feelings of inferiority, guilt, and shame. In most of the patients studied, rosacea was preceded by life situations that led to the production or activation of shame. For these people, the rosacea appeared to represent a state of permanent blush.

Urticaria. Many physical, chemical, and biological factors have been incriminated as causative of urticarial eruptions; however, emotional stresses and, particularly in chronic urticaria, personality disorders are clearly present in a high percentage of cases.

An extensive literature documents the precipitation of the onset and relapses of urticaria by emotional disturbances. Kreibich and Sobotka reported a patient who displayed such attacks when he was annoyed. As a test of this correlation, he was hospitalized and on two occasions wrongly accused of some minor irregularity by the nurse. In both instances he became annoyed and within a few minutes broke out in an urticarial rash. Hansen reported the case of a woman dining on lobster in a clandestine meeting with her paramour. There, they were surprised by her husband, and the woman developed a generalized urticaria. Though never sensitive to lobster before, she subsequently suffered from urticaria whenever she ate it. Stokes, Kulchar, and Pillsbury detected a relative psychogenous stress in 83 per cent of 100 patients studied for urticaria. Many other authors have undertaken detailed investigations of the precise emotional meaning of precipitating events. A particularly thorough discussion of emotional precipitants is to be found in a recent publication by Musaph.

Study of 35 urticarial sufferers permitted Wittkower certain conclusions about the group as a whole. Two thirds of this group stated spontaneously that, as children, they had been deprived of their mother's love. In the majority of cases this belief seemed to be ill-founded, a reminder that the adequacy of any commodity, including maternal affection, depends not only on sufficiency of supply but also on intensity of demand. As children, they responded to frustration in one of two ways. Some openly expressed their resentment; others suppressed or repressed the aggressive response, and, indeed, turned to its opposite—exemplary, compliant behavior—in order to secure from the environment the affection for which they felt such a strong need.

These two behavioral patterns were carried forward into adult life, with roughly half of the patients displaying an ingratiating and excessively compliant attitude toward their environment, an attitude that

was further intensified by criticism or disapproval. The other group, far from begging for what in fact or in fantasy had been denied them, demanded what they regarded as their due, complained bitterly if it was not forthcoming, and in general presented a vindictive and bellicose appearance. The aggressive behavior of the latter patients arose from a number of sources. For one, they were quite unable to tolerate any denial of love or affection; for another, they assumed an aggressive defense because of their inability to admit their inordinate need for affection; and thirdly, it appeared that at least some of them compulsively repeated the childhood trait of seeing just how far they could go without being rebuked, perhaps in the hope that they would be loved despite their objectionable behavior.

Despite glaring differences of conduct, patients of both groups showed in common an inability to tolerate the denial of love and reacted with anger to such a situation. It found token expression in urticarial eruptions. This expression of infantile anger seems to be central to the development of urticaria.

Atopic dermatitis. Of the many diseases in the eczema-dermatitis group, atopic dermatitis has long been regarded as the one most strongly influenced by the emotional life. It is usually accompanied by itching that often appears disproportionate in severity to the visible lesions. Some authors have considered the itching to be primary and the skin lesions a reaction to scratching. For this reason, it is often called neurodermatitis.

This condition is found in both a childhood and an adult form, both frequently appearing in the same individual with an intervening period of several years. The term "atopic" signifies that it is regarded as an allergic disorder, but the specific interrelationship of allergic and emotional factors is far from clear.

As with urticaria, a study of events and circumstances at onset reveals a preponderance of emotionally significant events. The literature abounds with references to the appearance of atopic dermatitis following an emotional disturbance. In 77 of 90 patients studied by Wittkower and Edgell, events of a disturbing nature preceded the onset of dermatitis, and 147 episodes were discerned in which onset, relapses, or aggravations were clearly related to emotionally disturbing situations. The recurring theme that seems to pervade all the varieties of precipitating events is that of loss of love. This can be undisguised or so heavily disguised as to be indistinguishable as such until one is well acquainted with the history and dynamics of the individual.

Are there personality qualities and emotional states that specifically seem to characterize the victims of this illness? Patients studied by Wittkower and Edgell felt that they had not had their fair share of affection as children and tended to maintain in adult life an inordinate childlike dependence on their parents, in most cases the mother. As in the cases

described for urticaria, various responses were possible. For some, a need for affection, attention, and support found its expression in a submissive, docile, or even overtly helpless attitude. In others, the same need was concealed behind self-assertive, ambitious, or even provocative behavior. For many, the lack of self-confidence impaired their social and occupational progress. Many remained single or married partners who appeared to serve as parent substitutes. One 45-year-old man could only resist the urge to scratch himself if his motherly wife sat with him and held his hand.

Wittkower and Hunt studied atopic dermatitis in children. Scrutiny of the child-parent relationships stressed the factor of maternal rejection, a rejection that could be either overt or disguised beneath a reaction formation of intense overprotectiveness. The latter form appeared to be the most common and was stressed by Miller and Baruch, Williams, and Newell. Abramson referred to an engulfing attitude in the parents of eczematous children wherein the parent demands narcissistic satisfaction, regardless of any danger to the child. Thus, simply stated, in somatically susceptible individuals rendered emotionally vulnerable by childhood experience, events that reactivate feelings of longing for love are found to precipitate the onset and exacerbations of atopic dermatitis.

Psoriasis. The primary cause of psoriasis is not known, but a number of aggravating factors have been well established. These include systemic infections, an excess or deficiency of sunlight, damp, cold, and emotional stresses. In contrast to the preceding conditions, psoriasis does not appear to be a specific affect equivalent but responds unspecifically to a variety of emotional stresses. It does not seem to be bound to any personality type or any specific conflict constellation, but in one large study the number of emotionally maladjusted individuals was found to be far in excess of the normal population. For these individuals, the nature of the emotional event that proves significantly stressful is, of course, related to the particular personality difficulty. If an individual is emotionally maladjusted for reasons unrelated to the psoriasis, the emotional maladjustment may, but need not, take charge of the psoriasis and may determine its onset and further relapses.

Psychodynamics. It can be seen that certain emotional states appear to correlate highly with various forms of cutaneous disorder: aggression with generalized pruritus, sexuality (both heterosexuality and homosexuality) with genital and anal pruritus, anxiety with hyperhidrosis, shame with rosacea, anger with urticaria, and the longing for love with atopic dermatitis.

None of these mood states is disease-specific; all are found not only in normals and psychoneurotics but also in other psychosomatic disorders. For example, the longing for love, which seems to be asso-

ciated with atopic dermatitis when coddling or fondling is the regressive object, may be expressed in gastric hypersecretion if food is the regressive object.

Finally, it should be stressed that none of the disorders described is considered to be, strictly speaking, psychogenic. All are multicausal and determined by a combination of constitutional and acquired factors, of which the emotional is but one—one weighing more or less heavily in the given individual and in the individual at a given time.

Allergic Disorders

In the preceding pages, evidence was submitted indicative of the relevance of emotional factors to dermatological disorders. But emotional factors *alone* do not account for these disorders. One other factor known to be of considerable importance in the etiology of two of these disorders, urticaria and atopic dermatitis, is allergy, the constitutional or acquired oversensitivity to well defined noxious substances. What evidence exists for the relevance of allergic factors to the etiology of these and kindred disorders? Have these factors been shown to be operative in every case? What evidence has been produced to show the etiological relevance of emotional factors to these disorders? How can the observations of allergists and psychiatrists be reconciled?

Constitutional factors. Both urticaria and atopic dermatitis are frequently connected with exposure to substances, generally proteins, that act as allergens. Often the individual learns by experience which substances must be avoided. Commonly, and particularly in the case of atopic dermatitis, the victim gives a history of past or present allergies involving different systems—a digestive allergy to certain foods in infancy, asthma or hay fever, contact dermatitis, drug reactions, etc. Frequently, a strong family history of allergic responsiveness is elicited.

Various techniques have been developed to demonstrate a responsiveness to allergens when this is suspected. Patch, scratch, and intradermal tests all introduce a dilution of the suspected allergen into the subject's skin. A reactive individual shows a wheal response that contrasts with a control site where a nonallergenic control substance was introduced. More elaborate is the Prausnitz-Küstner method of passive transfer, wherein serum from the patient is injected intradermally into the forearm skin of a nonallergic person, and the area is challenged with the suspected allergen. The presence of reagins is indicated by wheal formation. A simple though unpleasant test of the allergic response is that of exposing the patient to the suspected allergen and seeking to duplicate the eruption. Often dramatically effective, it requires, because of the suggestion factor, that the subject be unaware of the exposure.

Psychological factors. It has been shown by Mitchell, Curran, and Myers that in many patients with allergic disorders an offending allergen cannot

be traced by the usual diagnostic procedures. It is equally clear that a positive skin reaction is not proof of the pathogenic effect of the suspected substances. Allergic investigation of *chronic* urticaria is rarely of value. This is in clear distinction to *acute* urticaria, where allergens are more frequently significant. In atopic dermatitis positive skin tests are frequently present but rarely of therapeutic usefulness. Since evidence of allergy is so often lacking in allergic disorders, it may be inferred that other factors, among them the psychological, play an etiological role.

Many authors have studied the emotional settings of the onset and exacerbations of both atopic dermatitis and chronic urticaria. In these, as in other allergic disorders, there is a strong correlation with emotionally disturbing events that, according to some observers, tend to be somewhat illness-specific and specific in the emotional reaction they induce.

Experimental evidence bears on the interrelationship of psychological and allergic factors. For instance, positive skin test cannot be produced in a previously nonreactive subject, and the extent of an existing allergic skin response can be affected by hypnotic suggestion. Mason and Black hypnotically relieved a patient of her seasonal asthma and hay fever, and her positive skin response disappeared completely. Nonetheless, antibodies continued to be demonstrable by passive transfer.

Ikemi and Nakagawa studied 13 subjects who were highly sensitive to contact with certain specific leaves but insensitive to chestnut leaves. Under hypnosis five subjects were told that they were being touched with chestnut leaves, while actually the allergenic leaves were used. On the other arm, chestnut leaves were applied, with the suggestion that they were the allergenic leaves. Eight subjects were given the same pair of suggestions, blind-folded and without hypnotic induction. All 13 subjects showed a response, in flushing, erythema, or papules, when given the suggestion that the control leaves were allergenic. Four of the five hypnotized and seven of the eight nonhypnotized showed no noticeable response to the allergenic leaves when given the suggestion that they were chestnut leaves. These studies vividly demonstrated the effectiveness of suggestion, with or without a hypnotic induction procedure, in the production and inhibition of an allergic skin response.

An allergic skin reaction can be altered by suggestion or experience that activates significant emotions. Kaneko and Takaishi produced urticarial eruption in known urticarial patients by suggesting under hypnosis feelings of aggression that they could not express. Kalz et al. studied the vascular skin response in patients with atopic dermatitis. The intradermal injection of histamine normally produces a flare response. In some patients it was absent. It was characteristic of the latter group that they restricted the expression or display of emotion. However, after

psychiatric interviews that relieved and discharged previously inhibited aggression, all in this group developed a flare response.

A further large body of experimental evidence is based primarily on research with asthmatics, and on animal studies in which an allergic bronchospastic reaction was developed as a conditioned response.

Personality structure and psychodynamics. The question of the allergic personality has been much debated. Some authors, such as Smith and Marty, have sought to delineate highly specific personality traits; others refer to more general qualities. Many agree that certain features of personality structure and psychodynamics are common to patients with different allergic disorders. The most outstanding is a strong longing for love, a longing of the infantile dependent kind that arises from a sense of deprivation of maternal love in childhood and leads to a passive dependent relationship with the mother and to a fear of estrangement from her and a fear of being left alone. Situations that precipitate allergic attacks are those that reactivate these fears.

As can be seen from the above discussion of atopic dermatitis and urticaria, a wide spectrum of defense mechanisms may be used to deal with these fears, and, accordingly, a wide variety of personalities is found who, on the surface, appear to have little in common.

Psychiatric disorders and allergy. At one time it was felt that alternation of psychosis with allergic disorders was of such frequency as to represent a degree of mutual exclusiveness between the two. More careful investigation, based particularly on asthma, indicates that such mutual exclusiveness is not a frequent occurrence. Nonetheless, there are individual cases in which a clear alternation may be seen. Eng-Kung described a case of urticaria in a Taiwanese woman that repeatedly alternated with episodes of a mixed depressive and paranoid psychosis. In each instance and in line with the theoretical formulation above, the precipitating events for both urticaria and psychosis took the form of rejection and disapproval. Thus, though its frequency may not be great, it may be inferred that for certain individuals psychosis and allergic disorder represent alternative modes of expression of unconscious conflict.

It is, of course, possible that a patient may suffer from a psychological disorder and from an allergic disorder and that the two disorders are not related to each other. Or the same or similar clinical manifestations in different patients may have been brought about by different agents.

But it is also possible that the two types of processes, the allergic process and the psychological process, may be interrelated. Indicative of such an interrelation is the semantic overlap of the words used in both disorders. Both allergic patients and psychiatric patients have in common an oversensitivity to stimuli that are innocuous to others; and in both instances, the oversensitivity, if not inborn, can be

traced back to previous sensitizing experiences. More important, certain psychological features are so commonly found in allergic patients that it is hard to believe that this combination is merely due to chance. More likely, the personality features described are concomitant with an allergic diathesis, and the nature of the response to stressful life situations is determined by the allergic predisposition of the individuals concerned.

Treatment. The therapeutic approach may be from the allergic angle, provided that evidence of existing allergy can be elicited, or from the psychological angle, provided that evidence of emotional maladjustment can be elicited. Each of these measures may have a beneficial desensitizing effect, though it must be borne in mind that removal of a distressing symptom, which can also be obtained by other means, does not resolve emotional conflicts. Psychological disorders arising from them may be more distressing than the psychosomatic disorder from which the patient has been relieved.

Psychotherapy. In practice, it appears advisable to offer psychotherapy to those allergic patients in whom onset and exacerbations of their disorder are clearly related to emotional factors. In patients in whom such factors are not in evidence and in whom test procedures indicate the relevance of allergic factors to the disorder, psychiatric treatment is not indicated.

There are many difficulties in evaluating psychotherapy. These apply equally in the application of psychotherapy to allergy. Nonetheless, the number of sophisticated psychiatric papers appearing in journals relating to allergy suggests that supportive psychotherapy has become increasingly accepted by allergists as an important component in the management of allergic patients.

In general, there has been a high incidence of success and some marked improvement in the published cases. Wittkower treated 21 patients with atopic eczema along analytic lines, and two thirds showed marked improvement. Musaph reported a case of a woman with severe atopic dermatitis and urticaria successfully treated by psychoanalysis. In more recent years, group psychotherapy has been increasingly employed in allergic disease. Groen and Pelsner in a controlled study demonstrated a significant reduction of requirements for symptomatic steroid treatment in the psychiatrically treated group. As might be predicted from the above discussion of the faulty family dynamics, forms of psychotherapy directed at intra-family relationships have proven to be quite successful.

Hypnosis has long been used to intervene in acute allergic episodes, and its application to allergy in general has recently been reviewed by Kroger.

Drugs. A great deal of uncertainty surrounds the use of psychotropic drugs in treatment of allergic disorders. The literature is filled with favorable re-

ports, but most of these have been merely statements of clinical impressions lacking in methodological rigor. A few adequately controlled investigations attest to the usefulness of these drugs.

Lester et al. treated a number of skin disorders, including atopic dermatitis, with psychotropic drugs. They found a positive correlation between dermatological variables and psychological variables, with an over-all dermatological improvement of 50 per cent, as compared with a placebo response of 30 per cent. The basis of the drug selection lay in an understanding of the particular affect state of the patient involved. Thus, when themes of loss, guilt, and depression were most evident, imipramine was the active drug used. In general, the tranquilizers and antidepressants are most effective in the relief of the somatic effects of psychosomatic allergic disorders in that group of cases where the disorder of affect or behavior is most conspicuous. Results have been least gratifying in those cases in which psychopathology appears negligible.

Suggested Cross References

In this section, psychosomatic skin and allergic disorders have been considered from the viewpoint of specificity, according to which specific psychic parameters are related to specific somatic manifestations. For alternate viewpoints on psychophysiological disorders, see Section 29.3 on current concepts of psychosomatic medicine. For a further discussion of the effects of psychological factors in immunological and allergic phenomena, see Stein and Schiavi's section, Section 30.6. Skin disorders of childhood are discussed in Finch's section on psychophysiological disorders of childhood (Section 41.2).

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30.11 RHEUMATOID ARTHRITIS

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Introduction

The expressions "a pain in the neck," and "my aching back" must have stemmed originally from an awareness that emotional conflicts may find expression through the musculoskeletal system. At the same time, such disturbances differ from ordinary conversion reactions in three important respects. First, the organs involved in psychophysiological musculoskeletal reactions are innervated primarily by the autonomic nervous system and are not under voluntary control. Second, unlike conversion symptoms, psychophysiological musculoskeletal reactions do not alleviate anxiety. Third, the anxiety symptoms are physiological rather than symbolic in origin, and tissue damage may result.

A diagnosis of psychogenic reaction involving the

musculoskeletal system should not be made simply by the process of excluding organic disease. There should be positive evidence of neurotic conflict. Typically, repressed rage is the emotion which cannot be verbalized or expressed physically and emerges as a physiological disturbance instead. In addition, objective physical signs, such as elevated sedimentation rate, temperature, or leukocytosis should be absent. Unless the symptoms provide marked secondary gain, accurate diagnosis and psychotherapy should suffice to remove them.

Rehabilitation in cases of disability which has resulted from diseases of the muscles or joints may be prolonged when the disability is in the service of a neurotic conflict. In fact, when it cannot be relieved by surgical intervention, even the pain from a diagnosed ruptured intervertebral disc may be a component of a neurotic conflict. Thus, in general, when patients complain of musculoskeletal pain without direct evidence of organic disease, or manifest physical signs and symptoms which cannot be relieved by the administration of minor analgesics, there is usually a significant neurotic component underlying the symptom. In such cases, careful investigation of psychological factors is mandatory. However, it must be emphasized that only properly planned psychotherapy can deal successfully with symptoms which are primarily psychological in origin.

Definition. Rheumatoid arthritis, a disease resulting in marked tissue damage, is a prime example of a psychophysiological disorder. The disease is not localized only in the joints; it may affect many other tissues in the body. Its cause is unknown; at times it appears to be inflammatory, but its infectious origin has not been proven. It tends to be familial. With the exception of cases of spondylitis which are more common in males, there is a higher incidence of rheumatoid arthritis among females.

Clinical Features

The disease may have its onset at any age, from infancy through old age. Constitutional symptoms may be secondary to the joint symptoms but often appear before there are any objective manifestations in the joints. Typically, these include chronic fatigue, loss of appetite, weight loss, vasomotor symptoms, and morning stiffness. The most common precipitating factors appear to be mental and physical strain, or infection. In one controlled study, strain was the precipitating factor in 27.3 per cent of the patients investigated. The disease may begin insidiously, or have a sudden acute onset, and there may be wide variations between these extremes.

Only one or a few joints are affected in some cases, but the joint lesions eventually tend to become symmetrical, and they are accompanied by muscle atrophy. Fever and tachycardia are common. In addition to the joints, many organs of the body may fall prey to the disease: the skin, lymph glands, the

spleen, and the eyes may be affected. Vasomotor symptoms and signs suggest that the central nervous system has been impaired. In addition to fever and tachycardia, a tendency toward autonomic overactivity (including vasomotor instability, increased sweating, diarrhea, and other gastrointestinal disturbances) is common in patients suffering from this disease and often precedes the joint symptoms. In the study referred to above, 67 per cent of the rheumatoid arthritis patients reported such symptoms, in contrast to only 24 per cent of the subjects in the control group. Vasomotor signs were present in 33 per cent of the patients with rheumatoid arthritis, but in only 9 per cent of the patients in the control group.

Psychophysiological Correlations

Psychological factors. A survey of the literature dealing with emotional and personality factors in patients with rheumatoid arthritis, providing data on over 5,000 patients, showed that there is general agreement as to the personality structure of this type of patient. Thus, in comparison with various control groups, patients with rheumatoid arthritis display certain specific psychological characteristics. More precisely, they tend to be masochistic, self-sacrificing, conforming, self-conscious, inhibited, compulsive, overreactive with respect to their illness, and, on quite another level, interested in sports and games.

The investigators surveyed also agreed that emotional factors played an important role in the etiology of the disease and in influencing its course, although there was no consensus regarding the existence of specific precipitating psychic factors. Finally, the literature reviewed emphasized the difficulties in providing adequate control studies, as well as the need for information on the prevalence of rheumatoid arthritis in various populations and ethnic groups and on the racial and geographic distribution of the disease. To acquire such information, international co-operative investigations must be initiated, based on standardized criteria for diagnosis, clinical examination, and the interpretations of roentgenograms and laboratory procedures for the study of rheumatoid arthritis patients.

The results of a detailed study of the psychological factors operative in eight rheumatoid arthritis patients who were referred for both emotional and arthritic complaints were published by Ludwig in 1954. The study was designed to permit careful psychiatric investigation of the patients in the experimental group, in whom the disease had reached various stages of severity. The research design also permitted investigation of the emotional and environmental factors which led to exacerbation or remission of the disease and, in the process, frequently clarified both the conscious and unconscious meaning of these events. The formulations presented below regarding the relationship between psychic and somatic factors in rheu-

matoid arthritis are based on the findings derived from this study.

Somatopsychic correlations. It is important to differentiate the psychological factors, which represent a reaction to the disease process, from those which existed prior to the onset of the disease and may have played a role in its genesis. Every severe illness will have some emotional repercussion, and this is particularly true if the illness is accompanied by physical disability. Rheumatoid arthritis curtails the patient's physical activities, including his ability to work to earn a living, and his social mobility. It may also interfere with his marital and family relationships. In fact, the disability may be so severe that the patient is reduced to a state of helplessness and must remain in bed. Any illness may lead to some regression to passive dependency. But the physical disability characteristic of severe cases of rheumatoid arthritis makes this an even greater danger, insofar as such disability appears to justify the gratification of infantile dependency needs. Accordingly, some of the patients studied used their severe invalidism to demand direct satisfaction of dependency needs, and some became abnormally dependent, despite the fact that their disability was minimal. On the other hand, a third group of patients denied both their disability and, more important, their dependency needs. These patients attempted to deny their wish to be dependent through physical and intellectual overactivity. They also indulged in ingratiating behavior to this end, only to fall prey to masochistic exploitation. Nevertheless, they found it difficult to accept help and resisted all forms of treatment.

Precipitating factors. On the basis of these findings, it may be speculated that these patients might have been able to remain healthy if their dependency needs had been adequately satisfied by their environment or by family or friends. Lindemann has emphasized the importance of object loss as the traumatic event which often precipitates the onset of ulcerative colitis. Similarly, the patients with rheumatoid arthritis reported that the loss of support or separation from a crucial figure had preceded the outbreak of the illness. One patient reacted with repeated depressions and a flare-up of joint symptoms on the anniversaries of the death of close relatives. Of particular interest is the fact that in three of the eight patients studied, object loss was not accompanied by adequate grief reactions.

Ego organization. All the patients studied were profoundly immature and demonstrated weak ego structure. They complained of marked feelings of inadequacy, found it difficult to express their feelings, and often manifested severe anxiety. They all seemed to react to the stress of frustration, rejection, or separation primarily on a somatic level. Since they commonly used denial as a defense, they often displayed a superficial self-confidence and gave the impression of adequate social and work adjustment.

Concomitantly, because of the denial, in many of the cases, the underlying personality defects did not emerge initially, but only after the patient had been observed psychiatrically for some time. Diagnostically, this group of patients might be said to resemble the so-called borderline case. In fact, transient psychotic symptoms were observed in two of the patients in the study group, and in both cases it was apparent that disturbances in ego functioning had preceded the disease.

Disturbances in affect were common phenomena. One such patient was unable to show any emotional response to treatment for over a year. She finally broke down and wept because her husband forgot her birthday, and shortly thereafter she became "furiously angry" for the first time in her life. This episode was followed by complete recovery from all her symptoms, which had included painful swollen joints and constitutional symptoms of excessive fatigue and morning stiffness, together with compulsive overactivity and excessive drinking. A few weeks later, she demonstrated her extreme vulnerability to stress again by overreacting to a mildly critical letter from her mother. On receipt of the letter, she immediately felt tense and anxious, and within 24 hours she experienced sufficient swelling of her midphalangeal joints so that it was impossible for her to remove her rings. However, after she had dealt with these problems in treatment, her symptoms subsided.

Another patient became physically and emotionally rigid and was almost mute during an interview which followed almost immediately an altercation with her mother. Within 24 hours, pain and marked swelling appeared in her knees. And after another 24 hours, when her psychic stress had been alleviated, the attack subsided and her joint symptoms and signs disappeared.

A third patient experienced an almost shocklike reaction to an interpretation from the therapist which she felt implied that her mother rejected her. She became extremely anxious and withdrawn. Her legs and arms became cold, subjectively and objectively. She looked pale and suddenly began to hallucinate. Within a day, joint swelling appeared. Other transient episodes of psychosis occurred while the patient was under psychiatric observation. This same patient also developed a peptic ulcer while the study was in progress.

One of the patients studied was consciously aware of the fact that her symptoms provided a defense against psychotic disorganization. She described episodes in her childhood when she experienced severe panic in response to her mother's sudden attacks of vomiting. She would feel sharp abdominal pain, and then: "I saved myself by being intensely practical ... thinking of some detail, over and over..." Later in life, she substituted compulsive eating and the psychophysiological mechanisms leading to arthritis for the same purpose: "My arthritis, my withholding of material during my interviews, and my obesity are my reality, my security, and my sanity—without them, I cannot live." She was convinced that if she allowed herself to feel, to relax, or to weep, she would disintegrate. The pattern of depression, suicidal ideas, overeating, joint symptoms, and panic was particularly evident during her menstrual periods. On one occasion, when a treatment session was scheduled during a menstrual period, she had a temper tantrum and screamed at the therapist: "I will eat and eat, smash everything to bits, tear you to pieces, and throw your penis in the sewer." Nevertheless, her control of aggression was striking. For example, she harbored murderous impulses toward her mother's favorite dog. She would approach him with serious intent to kill and then lightly stroke his head with complete calm.

Finally, in connection with the disturbances in af-

fect which were typical of patients in the experimental group, the striking similarity in appearance of certain patients who are severely crippled with rheumatoid arthritis and patients with catatonic schizophrenia must be emphasized. Both display rigid, expressionless faces and mutism. When the arthritis reaches this degree of severity, it is possible that it may represent the physiological counterpart of the psychological state of catatonia.

Developmental factors. Patients who were questioned about their early life provided positive confirmation that maternal deprivation had occurred. More specifically, their mothers seemed to have been generally immature, dependent, and unable to provide adequate maternal care.

One young woman remembered feeling strongly rejected when she was sent to stay with her grandmother at the age of 3. She also remembered her mother's punitive training methods quite vividly. For example, her mother had tied her hands to the bed, presumably to control masturbation. This patient manifested both somatic symptoms and psychotic episodes of short duration. When these became inadequate to catheter her intense destructiveness, she occasionally resorted to self-mutilation with razor blades.

Another female patient described her mother as extremely hostile and controlling. She still demanded subservient behavior from her daughter after she had become an adult. The patient recalled that her mother's standards for good behavior required that a child sit quietly on a chair, touch nothing, and cause no difficulty.

A study by Gerard of the mothers of patients suffering from a variety of psychosomatic diseases (ulcerative colitis, celiac disease, megacolon, duodenal ulcer, asthma, obesity, rheumatoid arthritis, and hyperthyroidism) supports the hypothesis that maternal deprivation may be of crucial significance in the onset of these diseases. Gerard emphasized the nature of the early relationships of these children to their mothers, and has described in detail variations in feeding, holding, and supporting the child, as well as the variations in the consistency of these patterns. Gerard concluded that all of these mothers were interested in their children only because they felt narcissistically enhanced by them. They derived little pleasure from the mother-child relationship per se and lacked the capacity for mature motherliness. In fact, most of these mothers were overtly rejecting. Consequently, all of the children had been exposed to frustration of their dependency needs during a period when the gratification of these needs was vitally important.

To illustrate, the mothers of the children with ulcerative colitis instituted punitive methods in very early toilet training. They were very ambitious for the child to achieve training and independence, but, at the same time, they demanded that the child conform. The mother of the child with rheumatoid arthritis was unemotional and perfectionistic. She held her baby stiffly and so firmly that free movement

was inhibited. The child was never caressed. Gerard postulated that severe reactions may occur in response to such severe deprivation in early infancy because of the minimal *Reizschutz*. She believed that the focus of the mother's rejection in particular areas of physiological functioning early in childhood may be the etiological factor in the development of schizophrenia, as opposed to psychosomatic disease, later in life. And, again, the physiological target of rejection may determine specific organ choice in psychosomatic disorder.

Concurrent Disorders

Patients suffering from rheumatoid arthritis may also be subject to other psychophysiological and psychiatric disorders. In four of the eight patients in the experimental group, a positive diagnosis of duodenal ulcer was made in the course of the study. In addition to a duodenal ulcer, one patient developed obesity from compulsive overeating, and, subsequently, severe bronchial asthma. In another patient, alcoholism and barbiturate addiction occurred concurrent with the joint disease.

Psychotic episodes have been reported in patients with rheumatoid arthritis when somatic symptoms and signs were suddenly relieved by means of endocrine therapy. Lindemann reported that the remission of symptoms in one such patient with a moderately severe form of rheumatoid arthritis, involving both peripheral joints and the spine, was followed by a psychosis which lasted for several months. The psychosis, in turn, was completely relieved when the joint symptoms returned.

In the patient described earlier, in whom the somatic expression of emotion served as a defense against psychotic disorganization, the intellectual concentration, focusing, or obsessional thinking was very similar to the phenomenon observed by Pious in a young man with incipient schizophrenia. This patient, too, attempted to maintain contact with reality by obsessional symptoms. Pious also pointed out that his patient had been subjected to severe oral deprivation in childhood, with resulting fixation at the oral-sadistic level of psychosexual development. Intense oral incorporating drives were mobilized for self-preservation, and the hostile rejecting mother figure was introjected and reprojected onto the outside world. Intense passive dependency wishes were activated, along with the unacceptable unconscious goal of reunion in death with her mother.

Simmel has described a specific constellation of symptoms as characteristic of the gastrointestinal stage of development, at which point loving is synonymous with devouring or being devoured. At this level, gratification of the instinct results in the destruction of the object, in contrast to the genital level of psychosexual development, where instinct gratification is accompanied by preservation of the

object. The patient discussed became aware that her compulsive eating was analogous to the compulsive drinking described by Simmel, in that it served to support her defense against depression and against the destructive drives which were directed against herself and others.

There is a conspicuous similarity between some of these defense mechanisms and the primitive mastery techniques observed by Kardiner and Spiegel in patients with traumatic neurosis. Kardiner and Spiegel's patients tended to react to association to the original trauma by spells of unconsciousness or convulsive seizures and sometimes by episodes of wild destructiveness. In this particular patient with rheumatoid arthritis, expressions through somatic channels, with inhibition of the expression of affect or goal-directed motor activity, were substituted for such primitive attempts at oral mastery.

McLaughlin et al. reported some interesting findings in a study of the emotional reactions of rheumatoid arthritis to adrenocorticotrophic hormone (ACTH). In general, the patients in this study were guarded, remote, and unable to express their feelings adequately. They were also characterized as manifesting a marked passive dependence, a high degree of egocentricity, and a lack of genuine interest in other persons. In 10 of the 12 male patients studied, tension was dealt with by the physical activity of hard work or vigorous sport. The 10 women studied also struggled to repress awareness of their hostility and dependence by excessive physical activity. The authors reported the interesting discovery that 6 of the 10 patients who habitually remembered their dreams continued to dream while on ACTH, and these 6 had the best clinical response to ACTH. The patients who could not usually remember any of their dreams continued to repress their dreams while on ACTH and showed a markedly poor response to the drug.

Barchilon's report on a patient with incipient rheumatoid arthritis is particularly relevant to this discussion. Occasionally she became angry and responded to such feelings by engaging in strenuous physical activity. Barchilon believes that these efforts often took place when the patient's joints were hypotonic. Thus, stress and pain were soon followed by muscle soreness and stiffness, and redness and swelling of the joints. He suggests that long periods of hypotonia might have produced some looseness of the joints, with the result that tension might then press together the joint surfaces more strongly and, in the end, result in actual damage. It is conceivable that such a mechanism might precipitate joint trauma or swelling; however, it cannot explain the widespread extra-articular manifestations of rheumatoid arthritis. One can only conclude that a much more complicated and generalized physiological mechanism must be involved.

Physiological Mechanisms

Autonomic activity. It is possible that the physiological changes which occur in rheumatoid arthritis, both in the joints and in other body organs, may be the result of a complicated psychophysiological restitutive mechanism which operates at an archaic physiological (body language) level. In some instances, these mechanisms act as an alternative to psychotic disorganization following object loss. They may serve also to cathartize intense oral destructive impulses. The emotional isolation and other personality defects observed in the series of patients described were present long before the arthritis began. The fact that patients who develop rheumatoid arthritis commonly report that they experienced the symptoms and signs of autonomic overactivity long before the definite onset of the disease suggests at least a partial use of autonomic channels for the dissipation of affect and anxiety. The degree of interference with circulation in many areas of the body following chronic autonomic discharges may be the variable which determines the severity of the illness in individual patients.

Autoimmune mechanisms. A third possible way in which a psychophysiological mechanism may operate to produce rheumatoid arthritis may be through the so-called autoimmune mechanisms. It is generally assumed that in rheumatoid arthritis there is a "rheumatoid factor," which is described as an autoantibody produced against some components of the patients' own tissue. Originally, tissue damage may occur as a result of the circulatory disturbances from the chronic autonomic activity which so often precedes the disease by many years. There is no conclusive evidence to substantiate this view.

In Alexander's view, the organ neuroses cannot be explained as a symbolic channel for expression. Rather, the channel is the autonomic nervous system, and the organ neuroses represent the physiological consequence of emotional tension. He later theorized that there is a universal need for dependency. If the direct outlets for this need are blocked, overactivity of the parasympathetic nervous system results. At the same time, the attempts to restore the original dependency position become more active, and if these are frustrated, sympathetic overactivity results. Finally, Alexander postulated that parasympathetic overactivity might lead to ulcer, diarrhea, colitis, or asthma, while sympathetic overactivity might lead to arthritis, hypertension, migraine, or hyperthyroidism.

The clinical evidence would seem to contradict Alexander's theory, at least in part, for symbolic expressions do seem to influence the location of early joint lesions. For example, not infrequently, the disease may begin in the midphalangeal joint of the ring finger of a newly married woman. In one of our pa-

tients, joint symptoms were often localized on the same side as her mother's hemiplegia.

The similarity in personality traits, the precipitating factors, and the deprivation experienced in the early mother-child relationships of patients with rheumatoid arthritis and those with other psychosomatic disorders, such as peptic ulcer, hypertension, ulcerative colitis, and Raynaud's disease, are more notable than the differences. Certainly, the simultaneous occurrence of several psychosomatic disorders in the same patient observed in a number of cases in our study would seem to point to some common mechanism of origin. Maternal deprivation, as viewed by Gerard, as a common denominator in many psychosomatic disorders, but with variations in the patterns in different disorders, may be an important differentiating feature, and, as such, it warrants further study and corroboration.

Treatment

From the psychological point of view, at certain specific stages in the illness, the therapy of rheumatoid arthritis may reflect the theoretical propositions delineated above. The first phase in the treatment of rheumatoid arthritis, at which point the patient may be extremely ill and perhaps suffering from a high temperature and considerable physical disability, constitutes an acute emergency for the physician. Psychologically, the patient's security has been shattered; physiologically, he has been overwhelmed by his reaction to the precipitating stress. At this stage, the aim is to diminish the intensity of the uncontrolled destructive drives which have been expressed by the onset of the disease before irreversible tissue damage takes place.

This necessitates active supportive therapy which should consist primarily of action rather than words. Ruesch and Bateson have stated that patients suffering from psychosomatic syndrome suffer a constitutional impairment in the development of that part of the nervous system which is concerned with higher symbolic processes. Therefore, verbal interpretations of dynamics will not help, but recovery can be brought about by providing a permissive nursing environment which makes use of preverbal communication. The medical regimen commonly employed during the acute phases of rheumatoid arthritis provides this for the patient. Probing and uncovering of emotionally charged material is contraindicated in this stage.

Striking and rapid improvement not only of joint symptoms, but of accompanying addictive tendencies as well, has been achieved by means of intensive supportive therapy. It is important that attending medical personnel be available to these patients when their anxiety reaches threatening proportions. Those in charge should also be warned against reacting with counter-hostility to the patients' frequently exces-

sive demands, for negativism is often displayed at this stage. Margolin has elaborated these points by proposing what he described as "anaclitic therapy." But it is doubtful whether the average general hospital is equipped to carry out this regimen, which can become extremely disturbing to other patients in the same ward.

When the acute manifestations of the disease have been controlled during the second phase, psychoanalytically oriented psychotherapy can begin. If there is severe regression, orthodox analytic technique may be too frustrating, and a vis-à-vis technique may be more effective. Until a relationship of trust can be established, these patients seem to react primarily to actions and feelings, rather than to words. Contact is easily lost, and the slightest alteration in the relationship between therapist and patient may cause profound reactions. Much time may pass before the therapist is no longer confused with the original hostile mother and can finally emerge as a friendly ally.

As an adjunct to the medical treatment of rheumatoid arthritis, psychotherapy has the best prospects for success if it is employed before there has been extensive tissue damage, marked disability, or secondary gain. In less severe cases, a thorough investigation of possible emotional stress may lead to improvement or removal of at least one important precipitating element.

The internist who treats patients with rheumatoid arthritis must understand that emotional stress may play a very important part both in precipitating the outbreak of the disease and in its subsequent exacerbation. In many instances, he will be able to deal with these aspects himself, as a part of his general medical care of the patient. If there is evidence of more serious definitive psychiatric illness, formal psychiatric investigation and treatment may be necessary.

Suggested Cross References

In this section the psychosomatic aspects of rheumatoid arthritis have been discussed from a psychoanalytic frame of reference. Alternate conceptual approaches to psychophysiological disorders are presented in Section 29.3, on current concepts in psychosomatic medicine.

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30.12 PSYCHOGENIC PAIN

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Introduction

Human pain is a subjective experience which involves a fusion of mind and body and may form the basis of a variety of psychosomatic syndromes. Pain is first experienced in the life history of the individual as a distinct kind of sensation, a disagreeable feeling which is associated with a specific part of the body. In its simplest form, pain is a somatopsychic phenomenon, a signal that the structural or functional integrity of the body has been impaired, and, as such, it is an important adaptive mechanism. Yet, even this simple process may be complicated by psychic and interpersonal factors. A soldier may not notice his painful wound during the heat of battle when all his attention is focused on the enemy. And women in labor show a wide variation in the amount of pain they experience, depending, among other factors, on their attitudes to motherhood, birth, and their obstetrician.

Psychophysiological mechanisms. Initially, pain develops from various noxious stimuli, arising from the skin, mucous membranes, and internal organs. Thereafter, however, like other sensory phenomena, it may occur without the stimulation of peripheral end organs, in relation to the life experiences of the individual. More specifically, memories of painful experiences which were acquired in childhood may be recalled later, or fantasied, or even hallucinated. In other words, as the human mind acquires the capacity to form symbols by associating concrete experiences with

feelings and ideas, pain is invested with increasingly complex meanings. The etymology of the word "pain," in itself, demonstrates the widespread associations in our culture between the physical sensation of pain and the psychological concepts of suffering, punishment, and repentance.

Psychopathological Determinants

Pain of psychic origin can occur in two forms. It may be a neurotic symptom and represent a symbolic attempt to solve a mental conflict. Or the pain may accompany a psychophysiological disorder which, in itself, is a concomitant of a mental conflict. The underlying conflict in both forms of psychogenic pain may be outside the patient's awareness and involve clashes between dependent, aggressive, or sexual impulses and opposing intrapsychic inhibitions and ideals or external social forces.

Pain as a neurotic symptom. Specific painful experiences in early childhood will determine the individual's perception and response to pain in later life. When the young child experiences physically induced pain, he often associates it with the efforts of crucial persons in his environment to provoke or alleviate such pain. In other words, the perceptive aspects of the pain become fused with emotionally charged life situations. Concomitantly, pain becomes psychologically meaningful and may play a significant role in the adaptive economy of the individual.

In some individuals, for example, such associations may lead to the subsequent use of pain as a way of dealing with life stresses. Such an individual may make a neurotic attempt to solve an overwhelming current conflict by reexperiencing the pain associated with the solution of a similar problem in the past. That is, through the mechanism of conversion, disturbing mental phenomena are withheld from awareness and replaced by bodily phenomena.

Pain is frequently associated with punishment administered in the service of discipline. It is not surprising, then, that this association may be exaggerated in children who are overdisciplined, and made to submit to painful forms of punishment to an excessive degree. As adults, they may be oversensitive to painful sensations originating from physical causes, or they may fantasy or hallucinate pain as a means of self-punishment, in order to abolish or diminish guilty feelings which stem from real or imagined "sins."

Other children, who receive love and attention only when they have a painful injury or disease, are predisposed to another neurotic pain mechanism. Later in life, when these individuals feel the need for more love and care, they may exaggerate a current minor ache or even hallucinate a past pain, in an attempt to regain the sympathy and love they received when they suffered as children.

For some patients, pain is the "currency" which enables them to identify with another person. Here the symptom represents an unconscious imitation of

a pain the other person has or had, or one which the patient wishes the other person would have. Such phenomena are likely to occur in patients who have a hostile-dependent relationship with the person with whom they identify. The painful neurotic symptom keeps the patient from recognizing his aggressive impulses, allows him to express his resentment, and, at the same time, permits a continuation of the relationship.

Finally, for other individuals, pleasure and pain are inextricably intertwined. The equation, set up in childhood, may be used later as a neurotic solution for feelings of guilt in connection with sexual enjoyment. This masochistic type of pain may be experienced along with the pleasure, or it may precede or follow it.

Pain as a symptom in psychophysiological disorders. Many painful syndromes, primarily of emotional origin, are secondary to physiological dysfunctions, which, in turn, are the concomitants of affects such as anxiety, anger, or fear, associated with psychological conflict. This pain differs from the pain which represents a neurotic symptom, described above, in that it is not, in itself, a symbolic expression of mental phenomena. Rather, it represents one aspect of a physiological disturbance associated with an unconscious conflict. The pain results from the stimulation of peripheral end organs, triggered off by the emotionally induced physiological dysfunction. In addition, the peripherally induced pain is often exaggerated by the emotionally disturbed patient.

The pain accompanying psychophysiological disorders may involve many organ systems. Common examples include tension headaches, and some cases of "fibrositis" and low back pain secondary to striated muscle tension; migraine secondary to vascular dysfunction; and cardiospasm and spastic colon secondary to smooth muscle hypertonicity.

Clinical Features

Pain of psychogenic origin is not symptomatic of a specific type of psychological illness. However, it commonly occurs as a prominent symptom in conversion reactions and is frequently encountered in both psychoneurotic and psychotic depressive reactions. In some cases of depression, pain masks or replaces the affective symptoms; in other instances, it occurs concurrently. Pain is frequently part of the clinical picture in anxiety reactions and hypochondriacal syndromes, both neurotic and psychotic. Certain individuals have a life-long proclivity for chronic pain and have been appropriately termed "pain-prone" by Engel. Emotional factors may play a decisive role in the genesis of pain in a number of chronic intractable pain syndromes, such as painful phantom limb, minor causalgia, atypical facial neuralgia, and painful post-traumatic states.

Differential diagnosis. The diagnosis of pain which does not arise from obvious physical causes requires

skill and thoroughness in evaluating the neurological, psychic, and social aspects of the problem. Frequently, psychogenic pain is associated with localized tenderness, changes in autonomic function, functional motor weakness, and hyperalgesia. The pain and its associated phenomena are localized on the basis of the patient's body image, rather than his neuroanatomical constitution. It is often flamboyantly described by the patient in meaningful metaphors or similes: "It's tearing me apart," or "It cuts me like a knife." A description of short-acting, sharp pain suggests the possible presence of a local lesion. A description of long-acting or chronic pain, diffuse in character, suggests that, in some cases, the pain may be primarily psychic in origin.

This history of the patient with psychogenic pain may reveal that he feels threatened or injured because of inner conflicts, or because of distortions in his relationships with persons to whom he has strong emotional ties. A connection can often be established between the site of the pain, some previous painful experience associated with a psychological trauma, and a similar difficult current life situation. A history of obvious conversion symptoms or of depressive illness may provide valuable clues. Finally, a history of frequent previous surgical operations for recurring abdominal pain of obscure origin is often a valid diagnostic criterion in such cases.

Management

Patients whose major symptom is psychogenic pain often present difficult management problems for the physician. If treatment is to be effective, the doctor must encourage the patient to talk freely about his psychological, as well as his physical problems, so that he can gain an understanding of the patient's symptom. He must learn about the patient's personality make-up and life adjustments prior to the development of the painful syndrome, and particularly the psychological setting in which the pain was first experienced.

The doctor-patient relationship is of particular significance, for the symptom may be used in the service of this relationship. For example, pain may be presented as the chief complaint because the patient believes, sometimes correctly, that the doctor will be more sympathetic and helpful if the illness is "physical," than if he were to reveal his underlying emotional problem. The pain then becomes an expression of suffering and an appeal for help.

Treatment may be symptomatic or specific, depending on the potential strengths of the patient to deal with his emotional problems in a healthy manner, the severity and duration of the disability, and the skills of the physician. Relationship psychotherapy alone, or sometimes in combination with drugs or hypnosis, is helpful in some cases. Insight psychotherapy is indicated for patients who are willing and able to deal with their emotional problems. However,

patients who are unable or unwilling to face their problems are likely to become depressed or develop another, even more disabling symptom if their pain is removed; the physician can best treat these patients by helping them to learn to live with their pain.

A wide range of symptomatic therapeutic procedures has been advocated for the relief of these painful syndromes. These include the usual analgesic drugs and a variety of procedures, ranging from injections of anesthetics into the skin and peripheral nerves, to sympathectomy, lobotomy, or ablation of local areas of the sensory cortex. Narcotics are to be avoided because of the danger of addiction. However, the phenothiazines are of value, especially when the patient's primary disorder is a psychotic one; and antidepressant drugs and electroconvulsive therapy may be useful if the pain is a manifestation of a depressive syndrome. But even when he administers symptomatic treatment, the physician must deal with the personality structure and current life situation of his patient and understand the manifold psychological implications of his pain.

Suggested Cross References

For further information regarding the mechanism of conversion, see Section 23.2 on conversion reaction.

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fact, throughout the world, only cancer and cardiovascular diseases outrank accidents as a cause of death. Furthermore, while spectacular progress has been made in the control of many diseases, the annual fatality rate for accidents remains virtually what it was in 1900—about 88 persons per 100,000 population. It is not surprising, under the circumstances, that fields relating to medicine are characterized by less dependable information and a greater prevalence of misconceptions, even among professionals.

Definitions. Even the definitions of accident and accident proneness are subject to widespread misunderstanding. An accident is commonly defined as an event which happens by chance or unexpectedly and, in particular, one which, in Webster's words, is "of an afflictive or unfortunate nature." In a sense, when a pedestrian is struck by a speeding car while crossing the street, or a child falls from a jungle gym and breaks his leg, these events usually do occur "unexpectedly," that is, without conscious foresight or expectation. In other words, these accidents usually are "accidental." On the other hand, however, while such events may be unexpected, they are seldom simply the result of "chance"—of the perverse whims of an unpredictable, uncontrollable fate. Chance implies the absence of cause; current research suggests not only that accidents do have causes, but that it is possible to determine the specific nature of these causes in many instances.

Differential diagnosis. The very term "accident proneness" implies the existence of causal factors, specifically, that an individual's accident pattern is the result of certain enduring psychological, psychophysiological, or physical defects which predispose him to accidents. Yet here, again, misunderstandings arise. The diagnosis of accident proneness is frequently based simply upon a record of repeated accidents. However, a high incidence of accidents does not, in itself, justify such a diagnosis. It is perfectly possible for a person who does not deviate significantly from the norm in his basic psychophysiological functioning to have a higher than average accident rate. Even unloaded dice occasionally turn up with a "seven" many times in a row.

Admittedly, such instances are rare; consequently, when they occur, one is well advised to look further for factors which may be significantly related to their occurrence. But even when such factors can be identified, they may not turn out to be primarily organismic in nature. For example, one individual may have more motor vehicle accidents than another simply because his job requires him to drive many thousands more miles per year; in accident research terminology, his higher accident rate might then be primarily a function of increased "exposure." Similarly, one child may have many more accidents than another principally because he lives and plays in a higher risk environment, physically and socially. The physician cannot exclude the possible role of occupational

30.13 ACCIDENT PRONENESS

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HERBERT S. GASKILL, M.D.

Introduction

Accidents constitute one of the most significant health hazards of our time. In this country, they are the leading cause of death among that segment of the population between the ages of 1 and 36. And, in

and environmental factors from diagnostic consideration in his approach to the problem of accident proneness.

Nevertheless, despite the validity of such factors, both formal, controlled research and clinical observation indicate that the personal characteristics of an individual play an important part—possibly the most important part—in accident repetition. And, in this sense, the term “accident proneness” may have considerable clinical justification. It should be emphasized, however, that the diagnosis, when made, should be based not simply on accident frequency or severity, but on the elucidation of those specific psychological, psychophysiological, and physical characteristics which distinguish the individual accident repeater from persons with low accident rates. Hopefully, the diagnosis will also be based, to some degree, on an understanding of the underlying mechanisms through which these characteristics affect the individual's increased accident susceptibility.

Characteristics which distinguish accident-susceptible individuals from those who are relatively accident-free are described below.

Accidents Involving Adults

Psychological factors. Most of the more carefully controlled studies of the role of psychological factors in accident susceptibility have involved motor vehicle accidents; hence, caution must be exercised to avoid overgeneralization. Nevertheless, it seems reasonable to postulate that similar psychological factors are involved in other kinds of accidents, although some, such as childhood accidents, probably also present significant differences.

In one carefully controlled study of motor vehicle accidents, subjects with higher accident rates showed the following statistically significant tendencies. (1) These subjects had less of a capacity for masking or controlling hostility than the accident-free subjects. (2) They were either excessively self-centered and indifferent to the rights of others, or excessively socially centered; i.e., they manifested an “over-determined” awareness of, interest in, and respect for the rights and feelings of others. (3) They were either excessively preoccupied with fantasy, or extremely “stimulus-bound.” (4) They were more fearful of loss of love and support than the other group (and, by inference, more angry and resentful toward persons viewed as depriving). (5) In general, individuals with higher accident rates were less able to tolerate tension than were the controls. In addition, these subjects were categorized as consistently or occasionally belligerent or covertly hostile more frequently, and as appropriately assertive or unassertive less frequently. In contrast, on the whole, the accident-free subjects were rated as more conventional and better adjusted.

On the other hand, no differences were noted between the accident-prone group and the accident-free group with regard to the following parameters:

reality orientation, castration anxiety, friendship patterns, hostile impulses (without reference to capacity for control), and clinical diagnosis of character type.

In a recent, still unpublished study of 15-year olds (Conger and Miller), it was found that students who later had automobile accidents were rated more unfavorably by teachers than their accident-free peers on a number of characteristics. Accident subjects were rated as having poorer attitudes toward authority, less respect and consideration for the rights of others, poorer work habits, less involvement in meeting group responsibilities, less social and emotional stability, and less sound social values.

Other investigations of motor vehicle accidents have reported a higher incidence of such characteristics as emotional instability, impulsiveness, lack of alertness, egocentricity, irritability, foolhardiness, inadequacy, and poor social and vocational adjustment among drivers with high accident rates, in contrast to those drivers who had not been involved in accidents. And, finally, a number of clinical reports on accident-susceptible patients, based primarily on psychoanalytic observations, have stressed the significance of such precipitating factors as (1) inadequate or incomplete repression of hostile impulses; (2) “unconscious needs for punishment, for sacrifice, or for making restitution for some previous act or wish”; (3) highly specific aspects of the individual-environment interaction (e.g., a woman driver patient with strongly repressed sexual desires had been involved in an accident in which a man “banged into [her] tail”). While the fact that unconscious motives play a dominant role in some accidents cannot be disputed, there is no apparent justification for Brenner's assumption that “insofar as a foreseeable mishap is caused by a ‘human imperfection’ in the performance of some action or other... it was unconsciously intended by the performer of that action.”

Psychophysiological and psychophysical factors. Evidence available to date suggests that the popular concept of the role of physical and psychophysical factors in accident susceptibility may have been exaggerated. In one study of relatively healthy young males, it was found that the traditional measures which are often assumed to represent the crucial difference between safe and unsafe drivers—e.g., reaction time, depth perception, and eye-hand coordination, as well as intelligence—seem to make little difference in most cases.

In this same study, scores were obtained for measures of respiration, muscle tension, psychogalvanic skin reflex, heart rate, and a combined measure of over-all reactivity under rest and stress conditions. There were wide differences in the scores of individual subjects; but none of the measures discriminated between accident and accident-free subjects, although there was some tendency for the accident group to have a slightly faster heart rate. At the same time, however, it should be emphasized that these results

are not intended to indicate that people are not more susceptible to accidents under conditions of psychophysiological stress. On the contrary, a variety of studies indicate that people are more susceptible to accidents (1) when they have been drinking (at least half of all fatal motor vehicle accidents appear to have involved a drinking driver, and, not infrequently, an alcoholic); (2) when they have been taking tranquilizers or sedative drugs; (3) when they are suffering from extreme fatigue. The author of a recent, particularly interesting study determined the point in the menstrual cycle at which 84 regularly menstruating women were involved in various kinds of accidents (Dalton). Her findings showed that more than half of all accidents involving this group of subjects occurred during menstruation or in the four days preceding menstruation (see Figure 1).

Accidents in Childhood

As noted above, children's accidents probably differ in a number of important ways from the accidents of adults. The adult, because of his greater knowledge and experience and his more advanced mental and physical development, is potentially better able than the young child to notice, evaluate, and respond appropriately to risk situations. In brief, basically, the adult is more capable of anticipating and avoiding accidents, and whether or not he does so will depend primarily on special psychological factors. The child's accident rate, on the other hand, may be a function of the safety practices and teachings of his parents to a significant degree and, as such, will depend on the number of potential accident situations to which he is exposed.

Psychological factors. It also appears, however, that some children are more susceptible psychologically to accidents than others, regardless of the state of their knowledge of, or experience with, potential accident situations. Preliminary evidence suggests that children with high accident rates tend to be more than normally anxious, more disturbed emotionally, and more active (both before and after birth), and to show earlier motor development and better coordination. In addition, the parents of such children are more likely to be anxious, insecure, unassertive, and less involved in parent-child interactions.

Accident Proneness versus Accident Susceptibility

It was pointed out earlier in this section that the term "accident proneness" implies that an individual has enduring personal characteristics which predispose him to accidents; on the other hand, the "normal" individual's accident susceptibility will depend on his psychophysiological state at a given moment. Most accidents are accounted for by the "average" person, rather than the habitual accident repeater. And clinical evidence suggests that temporary psychological

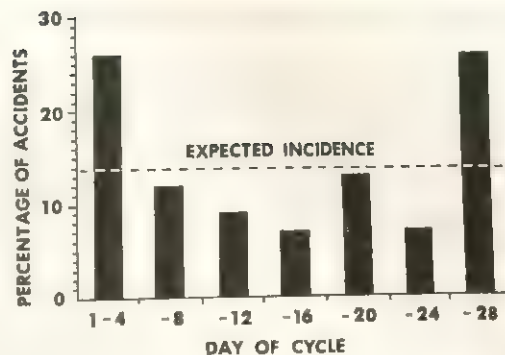


FIGURE 1. Distribution of 84 accidents in the menstrual cycle. (From Dalton, K. Menstruation and accidents. *Brit. Med. J.*, 2: 1425, 1960.)

and psychophysiological stress may constitute a significant causal factor in such accidents.

Dynamics of accident susceptibility. The ability to avoid accidents depends on a number of complex psychological and psychophysiological processes: the individual must maintain an attitude of constant alertness to the external world; an ability to evaluate possible risk situations, together with the capacity to act quickly and intelligently to avoid them; and, finally, the *wish*, conscious or unconscious, to avoid such situations. Anything that interferes with any of these processes, even temporarily, will increase the individual's accident susceptibility. Thus, as mentioned above, such physiological influences as fatigue, illness, alcohol, and sedative drugs may impair a person's efficiency and consequently increase the likelihood of his having an accident.

Emotional influences may have a similar effect. Whenever a person is temporarily tense and angry, unusually elated, or preoccupied with worries, his alertness to potential risk situations and his capacity to deal with them effectively are impaired. Furthermore, clinical observation indicates that he may even fail to care about danger, and, in some instances, he may actually court danger, either consciously or unconsciously.

Management

There are few reports in the literature on the management of patients who are highly susceptible to accidents or on the degree of therapeutic success achieved in such cases. Obviously, psychotherapy is indicated where chronic, unconscious motivational factors appear to be involved. However, the psychiatrist must remember that accident susceptibility may also depend on transient social, emotional, and psychophysiological stresses. And, in some cases, accident susceptibility may be attributed primarily to "educational" factors, such as the patient's lack of sufficient awareness of risk, inappropriate responses in risk situations, and failure to develop habits of minimizing risk. Such additional factors must be taken

into account in any attempt at comprehensive management.

Finally, it should be remembered that simply participating actively in today's complex, rapidly changing world involves risk. In fact, preliminary evidence suggests that persons who are unusually accident-free often have chronic emotional problems, although they differ from the problems of subjects with high accident rates.

Suggested Cross References

Also see Chapter 50 on industrial psychiatry for a discussion of the meanings of industrial accidents. Chapter 47 on geriatric psychiatry contains information regarding the special problems of the elderly with regard to accidents.

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30.14 HEADACHE

ARNOLD P. FRIEDMAN, M.D.

Introduction

One of the most difficult (and often frustrating) problems in medical practice is the treatment of the patient who complains of chronic recurring headache. Since headache is a symptom and not a disease, the meaning of headache can only be considered in relation to the patient and the complete setting in which his complaints occur. However, in the most common headache syndromes, i.e., the vascular types and muscle contraction headaches, no structural changes are evident between attacks, and there is close relationship between the occurrence of headache and anxiety-

producing situations. Psychological factors may be involved in a variety of ways: (1) directly, by precipitating changes in specific physiological function, i.e., cranial vascular changes, sustained muscle contraction, and the increased or decreased activity of various glands; (2) as conversion phenomena, i.e., conversion of an emotional conflict into a physical dysfunction; and (3) as a result of delusional or hypochondriacal states.

Nevertheless, in all patients, a number of organic processes which may simulate these common types of headache must be ruled out before a definite diagnosis can be established. In brief, it is mandatory that every patient with chronic headache be thoroughly evaluated by medical and neurological examination, ancillary tests, and a careful personality appraisal.

Psychological determinants. Many psychological adaptive factors may play a part in determining the symptom choice of head pain. Among them are the positive or negative "identification" with a family figure, and the introjection of that figure. Identification may also play a role in other cases, where symptoms arise from the patient's desire to gain attention or affection. In some patients, the headache may arise as a result of their need to remain dependent.

The chronic headache symptom may occur in persons who previously suffered a head injury or illness in which head pain was a prominent component. The memory of such past experiences is activated when the patient encounters similar experiences or situations, particularly when the patient's pattern of psychological functioning is one in which pain is utilized to alleviate feelings of hostility associated with guilt.

Clinically, the conflicts observed most frequently in headache patients involve hostile and aggressive impulses of an intense and destructive nature. Typically, the headache develops when the patient reaches the limit of his capacity to tolerate his repressed or suppressed anger. In addition, this hostility arises from and gives rise to feelings of guilt which are usually unconscious and which, in themselves, may be responsible for the pain, in which case the punishment (physical pain and suffering) is self-inflicted.

Classification of Headache

A classification of headache by mechanism recently published in the *Journal of the American Medical Association* provides a useful framework for the presentation of pertinent information with regard to diagnosis and treatment. Fifteen types of headache are cited: (1) vascular headache of migraine type: a. classic migraine; b. common migraine; c. cluster headache; d. hemiplegic and ophthalmoplegic migraine; e. lower-half headache; (2) muscle contraction headache; (3) combined headache (vascular and muscle contraction); (4) headache of nasal vasomotor reaction; (5) headache of delusional, conversion, or hypochondriacal states; (6) nonmigrainous vascular headache;

(7) traction headache; (8) headache due to overt cranial inflammation; (9-13) headache due to disease of ocular, aural, nasal and sinus, dental, or other cranial or neck structures; (14) cranial neuritis; and (15) cranial neuralgias.

Vascular headache of migraine type

Clinical features. The essential nature of migraine still remains unclear, but it is unquestionably a complex biological reaction which in some cases is closely related to stressful attitudes and frustrating life situations.

Essentially, the diagnosis of migraine is made on the basis of the patient's history and on the absence of evidence of intracranial pathology. Such headaches occur in recurrent attacks, are commonly unilateral in onset, and are usually associated with anorexia, sometimes nausea and vomiting, or systemic disturbance. In some instances, the migraine attack is preceded by, or associated with, conspicuous sensory, motor, and mood disturbances. Migraine headaches often occur in members of the same family.

Some of the migraine variants exhibit specific phenomena. In classic migraine, the headache is preceded by sharply defined, transient, visual or other sensory disturbance or motor prodromes, or both. Cluster headaches (histaminic cephalgia, migrainous neuralgia) occur in clusters of short duration. In an occasional patient, an ophthalmoplegia or hemiplegia may appear late in the course of a headache attack. The process is usually completely reversible, and the precise mechanism is unknown. Migraine complicated by persistent ophthalmoplegia, facial paresis, hemiplegia, or visual field defects is more difficult to diagnose. Only rarely is a demonstrable intracranial lesion, such as a vascular anomaly, found eventually.

Physiological mechanisms. In all vascular migraine headaches, arterial dilation and a periarterial tissue reaction occur concomitantly. Often, one major artery of the carotid tree becomes dilated; in some cases, the involved artery may constrict before it dilates. The exact mechanism of the arterial dilation and the periarterial tissue reaction is unknown, although the available evidence suggests that the dilation is neurogenic and that the periarterial response is mediated by an accumulation of tissue substances which can induce dilation of small vessels, edema, and tenderness. Undoubtedly, the cerebral cortex and vasomotor centers are involved in initiating the onset of the migrainous attack, but, once again, the specific central pathways are unknown.

Psychological factors. For many years the migraine patient was thought to be relatively free of psychological disturbance between headache episodes. It is now recognized, however, that the personality structure of the migrainoid predisposes him to chronicity. Specifically, most migraine patients were not permitted to express emotions of anger and rage as

children; rather, they learned that love and approval were to be gained only by emotional suppression. Accordingly, they set up mechanisms to control their natural behavior; that is, they rechanneled their hostilities into ambition and striving for success and, in the process, created a way of life which imposed excessive environmental demands. This psychological background, added to a sensitive autonomic nervous system, causes them to over-respond to these demands. Thus, they suffer situational anxieties, as well as those caused by deeper, unconscious conflicts.

Most migraine patients are bright and knowledgeable, with highly developed intellectual techniques for dealing with their life crises. They are overcontrolled and function in a sustained state of emotional restraint, reacting to stress with anxiety. Their personality structure is characterized by perfectionism, neatness, ambition, rigidity, and efficiency. Prolonged stimuli, such as puberty, menstruation, maturation, leaving home, seeking work, and meeting the responsibilities of a job, marriage, or parenthood, can trigger a migraine attack.

However, migraine and other forms of chronic headache may also mask a more serious psychological disturbance. For example, the release of hostility by a migrainoid obsessional patient often causes depression which must be differentiated from the more common types of depression.

Differential diagnosis. It is imperative that the physician be alert to the fact that headaches caused by other conditions sometimes simulate migraine, including aneurysms, vascular malformations, and other expanding intracranial lesions.

In older patients, a late onset of headaches resembling common migraine, with sensory and motor symptoms, may indicate basilar or carotid artery insufficiency. Glaucoma or temporal arteritis must also be considered in these older patients. Polycythemia, anxiety, hypersensitivity (allergy) reactions, depression, and hypertension can also masquerade as migraine and should be considered in differential diagnosis.

Muscle contraction headache

Clinical features. The patient complains of periodic, recurring headaches, which vary in frequency and severity and usually persist for hours or even days. The onset of the headache is often directly related to a specific stress situation. The pain is usually bilateral and suboccipital, although it may also be referred to the frontal region, i.e., the face (causing spasm of the masseter muscles), or be felt around the entire head like a band. Examination at the time of headache reveals excessive muscle contraction; frequently, the patient also complains of tenderness in the neck and sometimes in the scalp. Presumably, tension and emotional stress cause the tightening of the neck and scalp muscles and the prolonged muscle contraction. Ischemia has also been suggested as a contributing factor in the pain and excessive muscle contraction.

Psychological factors. These patients are in a state of chronic anxiety: they are usually tense, apprehensive, sensitive to the opinions of others, easily embarrassed, and worried. Careful history taking uncovers sleep problems, feelings of irritability and restlessness, various psychosomatic disturbances, occasional outbursts of aggression, and fits of weeping. Sometimes the patient mentions his fears of going insane. This, too, is a manifestation of chronic anxiety, which is caused by forbidden, hostile, or aggressive feelings, and unacceptable sexual strivings which threaten to break through the repressing influence of a conscience or the superego. The patient seeks to avoid public exposure of his weakness, by demonstrating the classic symptoms of anxiety; therefore, he stiffens his neck so that his head will not tremble when he feels anxious.

Differential diagnosis. A diagnosis of muscle contraction headache should not be made purely on the basis of the patient's description of the distribution and character of the pain. The possibility of other causes must always be considered: intracranial lesions, intraspinal tumors, cervical spondylosis, fibrositis, hypertension, cervical discogenic disease, and even migraine. All of these may be accompanied by a muscle contraction headache as a secondary reaction. Again, the patient may have migraine headache at one time and muscle contraction headache at another time. In fact, this phenomenon is frequently encountered as a somatic expression of a chronic anxiety in association with the obsessive component in compulsive-depressive reactions.

Headache of nasal vasomotor reaction (vasomotor rhinitis)

Clinical features. In some cases, headache may be associated with bilateral nasal discomfort; these patients often refer to their headache as a "sinus headache." When allergens, infectious agents, or gross anatomic deformities are not demonstrably implicated, the disorder may be diagnosed as vasomotor rhinitis. The patient may complain of nasal obstruction, tight sensations, burning, or rhinorrhea. The nasal mucous membranes may look engorged and edematous. However, chronic sinusitis is not a common cause of headache. Typically, sinus headache is localized in one region, is periodic in character, and is accompanied by localized tenderness, and x-ray evidence of sinusitis is usually present. Vague headache and discomfort without demonstration of definite sinusitis calls for a thorough psychosomatic study of the patient.

Treatment

The treatment of chronic headache encompasses a wide range of therapeutic approaches. In the more common headache syndromes, treatment is focused on the termination or prevention of the headache attack. When headache pain is initiated by a pathologi-

cal process, treatment is aimed at extirpating or ameliorating the pathological process, rather than on the headache symptom. In any event, whatever the cause of the headache, the whole patient must be considered: every patient who suffers severe chronic pain requires psychological support. Moreover, in the vascular and muscle contraction headaches, psychotherapy is the treatment of choice, although pharmacotherapy has its place. A discussion of the psychiatric techniques employed in the treatment of chronic headache lies beyond the scope of this section and is presented elsewhere in this volume.

Pharmacological management

Migraine headache. The pharmacological management of migraine headache is best accomplished by ergotamine tartrate combined with caffeine. When nausea and vomiting occur during the migraine attack, ergotamine may be combined with other drugs (antiemetics, antispasmodics, or sedatives). A number of proprietary preparations of such combinations are available.

As a general rule, the following program of ergotamine therapy has proven most effective. From 2 to 4 mg. of ergotamine are administered orally or sublingually, at the onset of the headache, followed by 2 mg. every hour until the headache has disappeared, or until the patient has taken 10 mg. of the drug. (This limit should not be exceeded.) When the drug is taken rectally, 2 to 4 mg. should be administered at onset, followed by 2 mg. every hour until the headache has disappeared, or until 8 mg. have been taken. Intramuscularly, 0.25 to 0.30 mg. of the drug should be administered at onset. In rare instances, ergotamine may be given intravenously, but in such cases the drug should not be given more often than once in 10 days.

On the whole, the prevention of migraine attack by chemical agents has been unsuccessful to date, but a drug introduced recently, methysergide maleate, has proven an effective prophylactic agent in a considerable number of patients. The drug is administered orally at mealtime or with food in 2-mg. tablets, with an average daily dosage of 6 mg. Patients on methysergide therapy should be seen at frequent intervals so that their dosage level may be adjusted and any side effects evaluated. A few patients have demonstrated serious side effects, such as vasospastic manifestations, psychic reactions, retroperitoneal fibrosis, and cardiac changes. However, the cause and effect relation of the drug to these disorders has not been clearly established.

Muscle contraction headache. Symptomatic relief from muscle contraction headache may be obtained with the use of non-narcotic analgesics, such as the salicylates, combined with caffeine and a mild sedative. Innumerable preparations of this sort are available and are well known to all physicians. It should be noted, however, that muscle contraction headache is

chronic, and many of the patients are great pill swallowers. Therefore, combinations which contain sedatives and narcotics should be prescribed with caution. Tranquilizers may reduce the patient's emotional reaction to stress, but they are of limited value. Prevention by muscle relaxants has not proved convincing.

Finally, it must be emphasized, once again, that the most effective prescription in chronic headache syndromes is dynamic psychotherapy, which allows recognition of conflict and modification of the underlying pathological personality structure.

Suggested Cross References

For a more detailed discussion of the psychiatric techniques employed in the treatment of headache see Area G. Also see Chapter 10 on neurology and Chapter 20 on brain disorders associated with trauma, poisons, drugs, infection, and neoplasm for further discussions of headache.

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this patient population is similar to the treatment of patients whose symptomatology is confined to disturbances of behavior. Thus all of the therapeutic techniques available to psychiatry may be employed appropriately in the management of psychosomatic patients.

There are, however, some special considerations concerning treatment which must be taken into account in the management of psychosomatic patients. These considerations derive from the unique relationship between such patients' psychic experiences and their somatic reactions.

The combined medical and psychiatric treatment of psychosomatic disorders. Psychophysiological disorders involve diseased organs which are vulnerable to the physiological concomitants of emotional arousal. Therefore, treatment must be aimed at both the physical and the emotional aspects of the disease. Often, the management of the psychosomatic patient is the sole responsibility of the internist. Although he will concentrate on the treatment of his patient's somatic symptoms, his efforts will also be guided by careful consideration of psychological factors. Less frequently, the psychiatrist has the sole responsibility for the management of the psychosomatic patient, in which event he must remain alert to exacerbation of the patient's physical symptoms throughout the course of treatment. However, many patients in this diagnostic category require the combined skills of several specialists. Thus, patients with serious organic pathology require the regular services of a surgical or medical specialist, and, in addition, by virtue of his special skills, the psychiatrist's intervention is indicated in those cases where complex psychopathology is considered to constitute a crucial determinant of the illness. The concurrent treatment of psychosomatic disorders by a medical or surgical specialist and a psychiatrist is referred to as combined treatment.

In psychosomatic disorders, psychic and physiological processes are intimately interwoven: the patient's psychic state exerts a continuous and significant influence on the physiological symptoms which are the target of the medical treatment. Consequently, the psychiatric and medical aspects of the treatment process, whether implemented by one or two specialists, should be closely integrated. From time to time, during changes in the clinical course of the psychophysiological disorder, there may be a relative shift in emphasis from one form of treatment to the other. However, both the somatic and the psychic status must remain in proper perspective at all times. For no matter how skillfully planned and executed, medical treatment of an afflicted end organ may fail to achieve its goal unless the treatment regimen also reflects an awareness of the patient's emotional state. To illustrate, medical treatment of acutely bleeding duodenal ulcer by such means as appropriate hemostasis as well as antacids, anticholinergic, and demul-

30.15 TREATMENT OF PSYCHOPHYSIOLOGICAL DISORDERS

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Introduction

Patients with psychophysiological disorders represent a wide spectrum of psychiatric diagnoses and manifest the entire gamut of possible psychological problems. Consequently, the psychiatric treatment of

cent medication has proven highly effective. Nevertheless, this medical regimen may fail to result in healing of the duodenal lesion if the patient is depressed, agitated, guilt-ridden, or acutely psychotic. Such psychic states may have profound physiological effects on the patient's gastrointestinal tract which may interfere with healing and will also affect the action of the medication. For example, 1.5 mg. of Pro-Banthine (propantheline bromide) may effectively reduce the secretion of hydrochloric acid when acting on the quiescent, pale gastric mucosa of a calm patient. However, the same dose of the same medication may be ineffective when acting on an angry patient's hyperactive, red mucosa which is pouring out secretions.

Thus, psychiatric therapy which is aimed at amelioration of the patient's psychopathological state can act synergistically with the medical treatment to facilitate healing of the somatic lesion. On the other hand, medical and surgical treatment also facilitates the psychiatric treatment of psychophysiological disorders. Specifically, the vulnerability of the diseased organ to the effects of emotional arousal is a limiting factor in psychiatric intervention. Thus, medical and surgical treatment, by increasing the patient's physical resistance, permits the psychiatrist greater therapeutic flexibility.

During the acute and physically dangerous phases which are characteristic of some of the psychophysiological disorders, medical treatment inevitably assumes relatively greater importance, although, even in the acute stage of illness management of the patient's emotional state should not be neglected. During the chronic stages, when the illness is in remission, psychiatric treatment, although it is still combined with medical management, generally assumes greater importance. Some clinicians feel that when psychiatric treatment is administered during the chronic stages of psychosomatic illness, it helps to prevent recurrences of acute episodes; it may also help to limit the extension of an existing disease by modifying the underlying psychopathology.

While therapeutic intervention in psychosomatic disease is aimed at both somatic and psychic components, the following discussion will be confined to a consideration of the psychiatric treatment of psychosomatic disorders.

Psychiatric Treatment of Psychosomatic Disorders

Fundamental assumptions. The inclusion of psychiatric treatment as part of the therapeutic regimen in psychosomatic disorders is justified by the basic assumption that psychic factors are important determinants of such disorders. More specifically, psychosomatic disorders are believed to be multicausal in origin: they are the result of the complex interaction of a variety of somatic and psychic factors. Treatment is directed at all accessible symptoms and determinants, including the crucial psychic factors which are often accessible to change through psychiatric inter-

vention. Psychiatric treatment of psychosomatic disorders is based on another basic assumption concerning the mechanism by which psychic factors contribute to psychophysiological disorders. Presumably, the physiological concomitants of emotional arousal constitute the pathogenic intervening variable in the psychic process. Under normal circumstances, the human body can tolerate the physiological upheavals which accompany emotional arousal without undue ill effect. However, if emotional reactions are excessively prolonged or severe or assume a pathological pattern, and if a particular organ is unusually vulnerable to physiological effects of emotion, then psychophysiological symptoms and disease may result. The psychiatric treatment of psychophysiological disorders is based on this conceptual model.

Psychiatric treatment cannot alter basic organ vulnerability, but it can diminish the stress to which the organ is subjected. The goal of psychiatric intervention is to diminish or alter the patient's pathogenic emotional reactions, especially anxiety, in the hope that this will produce a concomitant amelioration in his somatic symptoms. Beyond these general principles, since, as mentioned above, patients who suffer from psychosomatic disorders typically manifest a broad spectrum of psychiatric problems, there is no universal rule with regard to therapy. The psychiatrist's choice of technique used to reduce the anxiety will depend on the specific problems presented by each individual patient.

Variables in the treatment of psychosomatic disorders. In planning a treatment regimen for a patient who suffers from a psychiatric disorder which is limited to behavioral symptoms, such complex psychic factors as the patient's psychiatric diagnosis, behavioral symptoms, psychodynamic organization, adaptive resources, emotional assets and liabilities, as well as the potential assets and stresses of his environment, must be taken into consideration. Planning the treatment regimen for patients with psychosomatic disorders is even more complicated, because in addition to all these psychiatric considerations, complex somatic as well as psychophysiological factors must also be accounted for.

Somatic factors in the treatment of psychosomatic disorders. The somatic factors which are particularly significant in the psychiatric treatment of psychosomatic disorders are (1) the medical aspects of the disorder; and (2) the psychophysiological effects of the psychiatric methods employed in the treatment.

Medical status. The nature and severity of the patient's medical illness, as well as the anticipated effects of emotional arousal on the afflicted organ, the nature of the medical treatment he is receiving, possible future complications, and his dependence on his medical regimen, constitute important data for the psychiatrist because the conduct of therapy and the therapeutic goals are influenced thereby.

As might be expected, the prognosis is also affected by the patient's medical status. In general, the likelihood of obtaining successful results varies with the chronicity of the patient's psychosomatic conditions. The best results are achieved in cases of acute disorder. Those patients who present psychosomatic disorders of long duration which are accompanied by severe organic change and extensive psychosocial disability generally prove resistant to treatment. The type of disorder will also influence prognosis. In general, psychiatric treatment is most effective in those disorders in which psychological determinants are most important. Thus primarily psychogenic physical disorders, such as impotence, diarrhea, and vomiting, have a relatively good prognosis with psychiatric treatment; while the treatment of other conditions, in which somatic determinants are relatively more important, such as hypertension and arthritis, has been far less effective.

Organ vulnerability to the physical concomitants of emotional arousal will depend on two factors—the nature of the patient's psychosomatic disorder, i.e., the "symptom choice," and the severity of the somatic illness. On the whole, patients are more resistant to the physiological concomitants of emotional arousal during the chronic and remittant stages of the physical illness than they are during the acute phase; therefore, psychiatric procedures should vary accordingly. At the same time, while this generalization applies to the majority of patients, there is some variation in certain disorders. Specific indications for various forms of psychiatric treatment are discussed below.

Physiological effects of treatment. Psychiatric treatment, by way of its impact on the patient's emotions, may result in profound physiological reactions. The physiological effects of psychiatric intervention do not usually prove significant in the treatment of general psychiatric patients. But they may be of crucial importance in the treatment of psychosomatic patients. Unlike the general psychiatric patient, psychosomatic patients are highly vulnerable to the adverse physical effects of emotional arousal. Psychiatric techniques which produce profound emotional responses are best used judiciously with such patients.

Psychophysiological factors in the treatment of psychosomatic disorders. The interaction between physiological and psychic factors constitutes another element to be considered in treatment. Often, the first task of therapy is to make the patient aware of the relationship between his emotional problems and his ulcer, hypertension, or skin rash, a relationship which is not always readily apparent. The next step involves the clarification of this relationship.

Individual psychophysiological reaction patterns vary widely and tend to be highly specific. The nature of the symptom, as well as the characteristics of the stimulus which evokes the psychophysiological response, requires careful evaluation in each individual case.

The physiological concomitants of affective arousal, which are assumed to play an etiological role in psychosomatic disease, do not involve the total reaction of the entire autonomic nervous system, but the discrete activation of specific autonomic functions. These activation patterns are characteristic of the individual and may be evoked by a wide range of stressful stimuli. Thus some individuals characteristically respond to a variety of distressing situations with sharply increased gastric hyperacidity, some with increased heart rate, and still others with increased dyssynchronous tension of the head and neck musculature. In other cases there is a degree of stimulus specificity as well. Thus, an individual may react with tension headache to the stimulus of difficult competition with peers, while rejection by a love object may evoke diarrhea.

The significance for treatment of the psychophysiological symptom. The significance of the role accorded the psychophysiological symptom in determining the conduct of psychotherapy is controversial and will depend on the psychiatrist's underlying theoretical assumptions. According to the specificity theory, the "symptom choice" or type of disorder dictates the nature of the interpretations made to the patient, as well as the extent of the therapeutic goals. Specific therapeutic recommendations are made because, according to this viewpoint, the different psychophysiological disorders are causally related to specific psychodynamic problems, which call for specific therapeutic maneuvers. For example, all peptic ulcer patients are assumed to suffer from unconscious dependency conflicts (which, theoretically, have their roots in conflicts that derive from the oral stage of psychosexual development). Accordingly, the resolution of these conflicts automatically becomes the goal of psychotherapy.

The lack of conclusive evidence to support this specificity hypothesis has led to the formulation of an alternate theoretical position. According to the "nonspecific" model, the nature of psychopathology cannot be predicted from the type of somatic symptom. Specific psychodynamics are not associated with specific psychophysiological disorders; and, consequently, psychiatric treatment procedure should not be influenced by preconceived dynamic formulations based on somatic considerations, but should be determined primarily on the basis of psychiatric considerations. Accordingly, the therapist is not justified in automatically assuming the existence of an "oral" problem in each ulcer patient and conducting psychotherapy on the basis of this assumption. To proceed in this manner would clearly do the patient a disservice if his anxiety actually derived from other factors. In fact, according to the nonspecific viewpoint, ulcer patients may suffer from conflicts which center around sexuality or aggression, and which originated during the anal or oedipal phase of psychosexual development. Or their anxiety may be

associated with difficulties in adapting to a current life situation, or with interpersonal problems that might best be handled therapeutically without the prior assumption of basic oedipal or pre-oedipal conflicts.

Many clinicians believe that psychosomatic patients relate to people whom they love in a pathological manner which makes them especially vulnerable to object loss and predisposes them to pathological psychophysiological reactions. Concomitantly, actual loss, or the fear of loss of the object is considered to precipitate the onset of many types of psychophysiological disorders. And, based on this premise, therapy is designed to gratify the patient's emotional needs temporarily in order to compensate for the loss (real or fantasied). At the same time, the long range goal of therapy is to permanently alter the patient's pathological object relationships. The effectiveness of this therapeutic approach in terms of the achievement of this goal, as well as the validity of the underlying hypothesis, awaits confirmation.

The significance for treatment of the stress-evoking stimulus. Formulation of an effective treatment plan also relies heavily on the astute assessment of the stimuli or circumstances which characteristically evoke the patient's pathological psychophysiological response. Stress-evoking situations may vary extensively in nature and intensity. At times, a realistic, readily apparent environmental frustration may evoke the pathological reaction; at other times, the crucial stimulus is highly subtle and best understood in psychodynamic terms. Helping the patient to become consciously aware of his individual psychophysiological reaction pattern and identifying the situations which typically precipitate this reaction may be very helpful.

The extent of psychiatric intervention depends, among other considerations, on the physiological reaction pattern. When the stressful stimulus is readily perceived and limited to an avoidable situation, guidance and environmental manipulation may prove sufficient psychiatric intervention. In other cases, the stimuli may be diffuse and subtle and arise out of distorted object relationships which make it difficult for the patient to avoid stress. Such patients may require extensive psychiatric treatment, aimed at changing basic patterns of relating to objects and other adaptational patterns.

Psychiatric considerations in the treatment of psychosomatic disorders. Of all the considerations determining the therapeutic approach to psychosomatic patients, psychiatric factors are perhaps the most important. For, in the last analysis, the psychiatric diagnosis and the nature of the patient's psychopathology will determine which techniques can be employed most effectively to alter the affective reactions that underlie the psychosomatic disorder.

For schizophrenic and borderline patients who present psychophysiological disorders, establishment of a supportive relationship, guidance, and administra-

tion of antipsychotic medication may constitute the optimal treatment plan. On the other hand, the treatment of choice for a neurotic patient whose psychophysiological symptom is associated with diffuse anxiety reactions may be reconstructive psychoanalytic therapy. In still another type of patient, the pathogenic conflict and anxiety reaction are evoked by a specific and avoidable situation. In such cases, anxiety reduction might be achieved most economically by guidance and environmental manipulation.

Therapeutic techniques. All of the various psychiatric treatment methods have been employed at one time or other in the management of psychosomatic disorders. Individual psychotherapy, group therapy, milieu therapy, and organic therapy all have a place in the treatment armamentarium. However, psychotherapy and pharmacotherapy appear to be the most useful treatment modalities for these disorders. Therefore, the following discussion is confined to consideration of some of the special problems inherent in the application of individual psychotherapy and pharmacotherapy to psychosomatic disorders.

Psychotherapy. As mentioned above, the psychotherapeutic encounter may have physiological effects upon the patient which are important in the therapy of psychosomatic disorders. Some of these effects are beneficial and are evoked deliberately; others are potentially harmful and should be avoided. Among the psychotherapeutic techniques that are commonly employed and which will be considered here from the viewpoint of their physiological effects, are the therapeutic relationship, ventilation, and insight therapy.

The supportive doctor-patient relationship. The establishment of a supportive relationship which permits emotional contact and gratification of the patient's dependency needs constitutes a psychotherapeutic procedure that is considered to be one of the most effective and rapid means of diminishing anxiety, with its accompanying physiological upheaval. This method of inducing physiological calm is of especial value during the acute phases of certain psychophysiological reactions. At such times the patient is extremely vulnerable to the physical effects of emotional arousal, and such rapid psychologically induced "tranquilization" can be of substantial therapeutic benefit and may make a significant contribution to the improvement of the physical disorder and the facilitation of medical therapy.

On the other hand, a major limitation of supportive psychotherapeutic techniques is that its calming effects are temporary and are generally limited to the duration of contact between the patient and the therapist. In addition, as mentioned above, psychosomatic patients are often highly sensitive to separation from the people who are important to them, and termination of treatment or a shift in the therapist's supportive attitude must be handled cautiously if exacerbation of the illness is to be avoided. However, a therapeutic relationship may be of temporary value in

helping the patient through a physical crisis, and in preparing him for more definitive types of psychiatric therapy in the future.

Ventilation. The frequently used psychotherapeutic technique of permitting the patient to "ventilate," i.e., to express emotionally laden material verbally, may be of potential value in certain psychosomatic disease states. Some patients can tolerate transient turmoil and benefit by the consequent calmer emotional state. On the other hand, expressing feelings of anger, fear, or frustration may also precipitate temporary emotional arousal which may be harmful to a medically vulnerable patient. Thus ventilation, like other therapeutic techniques, is best used judiciously with the potential impact of the possible physiological effects on the psychosomatic disease process kept clearly in mind.

For example, the overt expression of emotional arousal is characteristically inhibited in tension headache and some cases of bronchial asthma. In these disorders ventilation has been reported as beneficial in ameliorating physical symptoms and rendering medical therapy more effective. On the other hand, in certain severe illnesses, such as acute ulcerative colitis or coronary thrombosis, the temporary affective arousal which may accompany expression of emotionally charged material represents a potential physical danger and is contraindicated.

Insight therapy and interpretation. The ultimate goal of the psychiatrist is to diminish the patient's anxiety and thereby relieve the psychosomatic disorder. And, in some cases, effective reduction of the chronic anxiety which underlies the psychosomatic disorder can be achieved only by extensive change in a patient's general psychological adaptation or personality structure. To this end, the therapist may employ the techniques of insight therapy. Essentially, this consists of helping the patient to become aware of and resolve the fears, wishes, and conflicts which lie outside his conscious awareness, on the assumption that the conscious perception and resolution of these conflicts will ultimately result in beneficial behavioral changes and, concomitantly, improvement in the patient's somatic status.

The process of insight therapy often involves a temporary disruption of the psychological defenses that ordinarily serve to protect the patient from emotional upheavals. Therefore, when treating the psychosomatic patient, the psychiatrist must be sensitive to the potential somatic effects of anxiety, anger, and depression, which may be transiently evoked by the interpretation and uncovering of emotion-laden conflicts, and the concomitant disruption of psychological defenses. Even the protective mantle of the supportive therapeutic relationship, while helpful, does not afford complete protection against emotional arousal. While analysis of the patient's defenses and discussion of such distressing material as his unconscious wishes and fantasies may be necessary in

order to achieve the ultimate beneficial therapeutic changes, the temporary emotional arousal with its potential somatic upheaval may, in highly vulnerable patients, actually aggravate the psychophysiological process under treatment to a dangerous degree. The solution of the consequent therapeutic dilemma requires exploitation of fluctuations in the psychosomatic patient's vulnerability to the physical effects of emotional arousal.

Sensitivity to the physiological components of affective arousal is not uniform but seems to vary with the medical status of the patient. As mentioned earlier in this section, during acute phases of psychosomatic illness, the diseased organ may be highly vulnerable to the physical effects of emotional arousal, while resistance is greater during the remission phase. For example, the acutely inflamed colonic mucosa which is characteristic during the acute stage of ulcerative colitis is exquisitely sensitive to emotional arousal. Thus, during acute colitis, interference with psychological defenses and discussion or interpretation of stressful psychological material which may arouse anger and anxiety are considered to be detrimental and even potentially dangerous to the medical condition of the patient, whereas such techniques can often be utilized quite safely during the chronic phase of the illness, when the mucosa is not in a state of inflammation and is no longer as vulnerable.

In summary, the psychotherapeutic approach should be flexible; techniques should be shifted and changed frequently in accordance with variations in the patient's medical status. In a sense, the patient's physical symptoms can then serve as an "indicator" or warning signal: their exacerbation alerts the therapist to the fact that the psychic material evoked in therapy has endangered the physical well-being of the patient. The therapeutic emphasis can then be shifted from exploration to support.

During exacerbation and during the acute stages of the illness, psychiatric treatment generally focuses on the reduction of the patient's anxiety. Techniques of relationship therapy, reassurance, support, and, when appropriate, gratification of the patient's dependency needs and reinforcement of defenses are best suited to this purpose.

During the chronic phase, when the illness is in remission, the patient is in a better position to withstand the physical effects of affective arousals. At this stage, it is possible to administer more definitive psychiatric treatment in the form of insight therapy, where psychiatrically indicated.

Controversial issues. The goals and techniques of psychotherapy with regard to psychosomatic patients are the subject of some controversy. According to some psychoanalytically oriented writers, who assume a basic organ vulnerability in psychosomatic patients, the analysis of "id material," that is, techniques designed to bring deeply repressed impulses and fantasies to the patient's conscious awareness, are contra-

indicated in the treatment of psychosomatic patients. For it is assumed that this technique may precipitate acute exacerbation of the physical illness. These therapists suggest that interpretations be limited to "ego material," or distortions in the patient's adaptation to current life situations. The patient is partially aware of these distortions; they are unformulated, rather than repressed. However, this position is based on theoretical assumptions which themselves are the subject of controversy, inasmuch as they are not clearly supported by clinical evidence. Specifically, the nature of the vulnerable organic substrates have not yet been clarified.

The available clinical data seem to be more consistent with the alternate viewpoint, that the physical vulnerability of psychosomatic patients is highly variable. It fluctuates during the course of the illness and can be improved with medical treatment. Therefore, the goals and nature of psychotherapeutic maneuvers should be determined primarily by the psychiatric status within the limits imposed by each patient's specific physical vulnerability. Accordingly, when psychiatrically indicated and medically permissible, therapeutic techniques aimed at clarifying unconscious sexual and hostile wishes (i.e., "id material"), may be safely undertaken with benefit to the patient.

In fact, with specific reference to interpretation, on the basis of the clinical data accumulated to date, the only recommendation which seems warranted for psychosomatic patients concerns the interpretation of the psychic meaning of their psychophysiological symptom. In contrast to neurotic symptoms, such as conversion reactions, the psychophysiological symptom is not usefully conceptualized as a form of resistance, a discharge of "psychic energy," a psychological defense, or a symbolic representation of a psychic conflict. Interpretations attributing such functions to the psychophysiological symptom may have the undesirable effect of evoking feelings of helplessness, anxiety, and hostility in the patient. Actually, psychophysiological disorders tend to arise when psychological defenses deteriorate. Therefore, the patient's symptom can be viewed most constructively, by both therapist and patient, as a concomitant of emotional stress, the sources of which should be explored in the therapeutic process.

It has been noted, however, that psychophysiological symptoms, like many symptoms of ordinary physical illness, may *secondarily* acquire defensive, resistive, and symbolic meanings. The utilization of somatic disability in the service of resistance to psychotherapy and to realistic life adaptations can be dealt with by the psychotherapeutic techniques typically employed in dealing with the phenomenon of secondary gain.

Specialized treatment procedures. Several specialized techniques for the treatment of psychosomatic disorders have been developed. An interesting one among these is Margolin's "anaclitic therapy." This is a

method of individual psychotherapy for psychosomatic disorders, based on the controversial "regression" hypothesis, which states that psychosomatic patients regress to early levels of psychosexual development, physiologically as well as psychologically, in the face of stress. The consequent immaturity of the physiological response pattern is assumed to result in psychosomatic disorders. Accordingly, the anaclitic method is designed to encourage the patient to develop extreme dependency on the therapist and to foster "regression" to an infantile level of psychological and physiological adaptation. An attempt is then made to enable the patient's reintegration on a more mature and adaptive level. In general, therapeutic results with this technique have been disappointing, as have the results of other specialized techniques for the treatment of psychosomatic disorders.

Pharmacotherapy. The psychiatric treatment of psychophysiological conditions is not limited to individual psychotherapy. Other treatment modalities, notably pharmacotherapy, also have a place in the treatment armamentarium.

Psychoactive drugs provide the psychiatrist with a powerful tool for reducing the anxiety that is so harmful to the psychosomatic patient. While psychological treatment methods attempt to reduce anxiety by altering its psychological determinants, such as the patient's unconscious conflicts or inadequate adaptational techniques, pharmacological treatment acts to inhibit the neural substrates that mediate emotional arousal and thereby to diminish anxiety directly, regardless of its origin. Admittedly, drug-induced "tranquilization" is temporary, lasting only as long as the drug is present in the brain, and it does not alter the psychic determinants of the patient's anxiety. Nevertheless, pharmacotherapy is sometimes an extremely useful adjuvant to treatment as it acts rapidly, when time is of essence, to protect the psychosomatic patient against the physical dangers of emotional arousal.

Tranquilizers are the most useful psychotropic drugs for the treatment of psychophysiological disorders. However, some investigators are also exploring the therapeutic possibilities of the antidepressants.

Tranquilizers. Antipsychotic drugs of the phenothiazine type are often effective therapeutic agents in the management of both the behavioral and the psychophysiological symptoms of the schizophrenic and "borderline" patients who also present psychosomatic disorders. These drugs often prove to be the most effective means available for reducing the schizophrenic patient's anxiety. They are useful for the management of the acute stages of illness as well as for maintenance therapy for chronically ill patients. However, psychopharmacological therapy has somewhat less to offer the nonschizophrenic psychosomatic patient as the "tranquilizing" effects of phenothiazine drugs with such patients are questionable.

The so-called "minor" tranquilizers, notably of the chlordiazepoxide group, are sometimes useful in the

treatment of nonschizophrenic psychosomatic patients, insofar as they help to diminish the patient's potentially harmful anxiety during periods of acute stress. But these drugs appear to be more effective for acute anxiety states than for chronic states of anxiety; thus, they are not often useful for maintenance therapy of the chronically anxious psychosomatic patient.

Antidepressants. It has been reported that antidepressant medication is effective in the treatment of some patients with psychogenic somatic complaints, notably enuresis and gastric complaints. These reports have been interpreted as evidence in support of the hypothesis that such somatic symptoms represent "masked depressions," that is, that they are associated with and express underlying depression. Final evaluation of the validity of this hypothesis and of the efficacy of antidepressant therapy in psychophysiological conditions awaits further experience.

Results of the psychiatric treatment of psychophysiological reactions. Psychiatric treatment cannot alter basic organ pathology, if it is present. Rather, it attempts to reduce the stress to which the diseased organ is vulnerable, and in this respect, psychiatric treatment is often valuable. The rationale for including psychiatric treatment in the therapeutic regimen of psychosomatic disorders, such as ulcer and asthma, is based largely upon the clinical impression of its effectiveness and upon theoretical assumptions. Unfortunately, few documented and controlled studies are available to provide reliable "hard" data concerning the effects of psychiatric treatment of psychosomatic conditions.

A notable exception is the recent well designed study by O'Connor et al., which demonstrated that inclusion of psychiatric treatment in the total management regimen of ulcerative colitis patients resulted

in significant medical improvement, in comparison to the medical status of patients in the control group which did not receive psychiatric treatment. This study is of special interest because it employed physical criteria (i.e., the condition of the colonic mucosa, number of bowel movements per day, etc.) to evaluate the effects of psychiatric treatment.

It is hoped that future research efforts will further exploit the unique opportunities for evaluation of psychiatric treatment procedures on the basis of the objective and quantifiable variables provided by the somatic signs and symptoms of the psychophysiological disorders.

Suggested Cross References

For a more detailed discussion of the conceptual models that underlie treatment in psychosomatic medicine see Section 29.3 on current concepts of psychosomatic medicine. Information regarding treatment of specific psychosomatic disorders is contained in the preceding sections in this chapter. For more detailed information regarding the various treatment modalities that were mentioned in this section see Area G, on psychiatric treatment.

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THE PSYCHIATRIC SYNDROMES

Chapter 31

Psychiatry and Other Specialties

31.1 THE CONCEPT OF PSYCHOGENICITY IN MEDICINE

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Introduction

It is generally agreed that psychological factors play an important role in the genesis of many medical disorders. Efforts to assess the precise magnitude of the problem have been hampered by the fact that the criteria of psychogenicity are highly ambiguous. However, the available data indicate that psychically determined disorders are highly prevalent in medical practice. Thus, although the figures from epidemiological studies vary widely, it would appear that approximately one half of the patients who seek medical help for physical complaints have a significant underlying psychiatric problem.

Despite its importance however, the concept of psychogenicity in medicine is not always clearly defined.

Unfortunately such different types of psychogenic somatic disorders as peptic ulcer, hypochondriacal complaints, and conversion symptoms are often erroneously included in a single category without an appreciation of the important differences between them. However, the precise differentiation of the various clinical categories of psychogenic somatic disorders and of their underlying mechanisms is essential for their clear understanding upon which ultimately their effective treatment rests.

Definition. The terms "psychosomatic," "psychogenic," and "psychophysiological" are thus in need of precise definition. In this discussion, the terms "psychosomatic disorder" and "psychophysiological disorder" are used interchangeably and are synonymous with the cumbersome official American Psychiatric Association's designation of "psychophysilogic and visceral autonomic disorders." On the other hand, the term "psychogenic" is used here to signify that the etiology of a disease, sign, or symptom, or its progress or exacerbation, is, at least in part, psychologically de-

termined. As previously mentioned, psychological factors can produce somatic complaints through various mechanisms, and several clinical categories of psychogenicity can be differentiated. Thus, psychosomatic is not synonymous with psychogenic; rather, psychosomatic disorders represent one type of psychogenicity.

Other clinical categories of psychogenic somatic complaints include malingering; hypochondriasis; conversion reactions, i.e., hysteria; and self-inflicted physical disease. They share in common the fact that the various somatic complaints and symptoms which are associated with each of these entities have a substantial psychogenic component.

The clinical categories of psychogenicity are discussed in detail elsewhere in this book. They are summarized briefly below mainly for purposes of definition and comparison and to illustrate the complex interrelationship between psychological and physiological factors in medicine.

Clinical Categories of Psychogenicity in Medicine

Self-inflicted disorders. At any one time, a large proportion of the beds in a general hospital are occupied by patients *who suffer real, and often severe, somatic disease as a direct consequence of their own psychopathological self-destructive behavior.* That is, in a sense, the disease is self-inflicted. It is generally recognized that psychiatric patients, impelled by unconscious self-destructive motives, often destroy their relationships, careers, and sexuality in ingenious and subtle ways. However, the individual can also use his body and his health as a vehicle for self-destruction.

In some instances, as in the case of self-inflicted damage resulting from suicide attempts, this masochistic process is obvious. Less frequent but equally dramatic examples of self-destructive behavior are the self-mutilations displayed by some severely disturbed patients, such as self-castration, hair pulling, head banging, and self-inflicted skin lacerations. In these cases, the patient is fully aware of his desire to inflict damage upon himself, although usually he has no insight into the underlying psychological factors which motivate his behavior. More subtle—and common—are those cases where the patient is *not*

aware of his self-destructive tendencies or of his underlying motivations. He does not see his illness as being self-inflicted.

In fact, the possible motives which underlie self-destructive behavior are numerous and complex. Some patients are motivated by a sense of guilt and a wish for punishment for real or fantasied "wrongs." In other cases, the individual unconsciously cultivates pain and illness, in an attempt to control a relationship or to gain love. Self-destructive behavior may represent an unconscious attempt to avoid an even greater "danger." For example, a patient may overeat, and so expose herself to the destructive physical effects of obesity, in order to avoid what she considers the greater danger of sexual temptation. In contrast, in still another group of patients self-destructive effects are the coincidental sequelae of behavior which do not derive from masochistic motivations. Obesity may also serve to illustrate this type of self-destruction. The obese patient damages her health, her sexual attractiveness, her social relationships, and her career by eating excessively. In some cases, as mentioned above, this behavior is motivated by profound unconscious self-destructive desires. In other cases, the patient's compulsion to eat is not motivated by a wish to harm herself but may stem from her need to control the emergence of intolerable anxiety or to ward off painful feelings of depression.

Clinical manifestations. This category of psychogenicity, whereby self-destructive behavior results in organic injury, encompasses a wide variety of disorders which include, besides obesity, alcoholism, with its many serious medical complications; addiction to narcotics and various other drugs; accident proneness, involving a wide variety of medical and orthopedic complications; and criminal abortion. Even habitual smoking, with its attendant risk of cardiovascular and respiratory disease, may be included in this category.

Treatment. Treatment methods and results vary with the problem presented by the individual patient. Behavioral or symptomatic therapy such as hypnosis and conditioning techniques which are restricted to elimination of the specific self-destructive act may be effective in some cases. This approach has been used with variable results in such conditions as smoking, obesity, and narcotic addiction. When psychotherapy is employed, treatment may be limited to fostering the patient's conscious perception of the self-destructive consequences of his behavior, and the mere realization that his behavior has self-destructive effects may produce the desired results. In other cases, however, the patient must acquire some insight into the motives which underlie his self-destructiveness before he can alter his behavior.

Malingering. Malingering refers to the conscious simulation of illness or disability. It is included in this discussion of psychogenicity because it must be considered in the differential diagnosis of many physi-

cal complaints. The motive is usually consciously recognized gain. For example, the criminal who is trying to avoid a prison sentence may disclaim responsibility for his actions by simulating a psychiatric disorder; the soldier may feign physical illness to avoid the dangers of combat. Both the criminal and the soldier are consciously aware of the fact that they are malingering. However, the more complex factors underlying the criminal behavior in one case and excessive fear in another, which motivated their malingering, may be much less clear.

Individuals who have no diagnosable psychiatric disorder may be malingerers. However, malingering is often seen in sociopathic individuals, and it may even mask other more serious psychopathology. For example, in pseudopsychopathic schizophrenia, malingering may form a prominent part of the syndrome and may be considered as an expression of the underlying schizophrenic process.

Clinical manifestations. The nature of the simulated symptoms tends to vary with the type of gain sought. Children who wish to stay home from school often complain of abdominal pains; persons seeking compensation payments may complain of symptoms related to their injury. When the gain sought is obvious, malingering is relatively easy to detect. On the other hand, the symptoms simulated by patients whose motivation is more obscure and does not involve clearly recognized gain are highly varied, and it is often difficult to arrive at the diagnosis of malingering in such cases.

Great ingenuity and effort may be displayed by simulators and all manner of vague pain, vertigo, and weakness and dysfunctions have been simulated. A favorite symptom is fever of unknown origin, which patients simulate by hiding extra thermometers which they heat with light bulbs to produce an apparent increase in temperature.

Treatment. Not surprisingly, the malingering patient may evoke an angry reaction from the physician who has devoted a great deal of energy to the diagnostic work-up and care of the patient and now feels that he has been exploited. Unfortunately, however, this reaction may interfere with his objective evaluation of the psychiatric aspects of the case. A therapeutic attitude is important, because malingering may be a symptom of the patient's deep underlying distress, which may often be relieved by psychiatric treatment.

Hypochondriasis. Hypochondriasis may be defined as a preoccupation with and exaggerated concern or anxiety about an imagined or real somatic sign or symptom. The patient's manifest concern may focus on a part of his body which is functioning normally, a mild illness, or the physiological concomitants of an emotional state which he has misinterpreted as symptomatic of a dangerous medical condition. Although the patient is firmly convinced that he is physically ill, actually his problems are of psychic origin.

On a psychodynamic level, a hypochondriacal symptom may be described as an anxiety or depressive equivalent. The true source of the patient's anxiety is seldom his somatic symptom but usually stems from a variety of deeply personal and often unrecognized factors, such as approaching old age and death; the impending or feared loss of a love relationship; or deteriorating psychological defenses in the face of emerging sexual or aggressive impulses. In hypochondriasis, the intrapsychic anxiety or depression is displaced onto a bodily organ or function without the patient's awareness and is expressed in the form of concern about a somatic problem. At times, the choice of the organ or function which is the target of hypochondriacal concern has a symbolic relationship to the underlying problem. For example, adolescents with sexual conflicts commonly show great concern about venereal disease. In any event, it must be emphasized that hypochondriacal patients are not consciously malingering; they are often anxious and in distress.

Clinical manifestations. Common hypochondriacal symptoms currently seen in the general hospital include complaints about bowel function, chest pain, rapid pulse, dyspnea, abnormal sexual functioning, and fears of serious disease, such as venereal infection, cancer, or heart disease. Psychiatric disorders also may be used in the service of hypochondriasis. Adolescents, at this difficult stage in their development, frequently become concerned about the possibility that they may be harboring schizophrenic or homosexual tendencies.

Treatment. Treatment which is directed at the manifest somatic complaints and includes reassurance regarding the patient's physical health and the administration of medication to relieve medical symptoms (analgesics, laxatives, etc.) is generally unsuccessful because it cannot alleviate the patient's underlying anxiety. Psychiatric treatment toward this end is likely to yield better results.

At the same time, however, hypochondriasis, as well as anxiety and depression which it often masks, is not a specific psychiatric disorder, but rather a symptom of psychological distress. In clinical practice, it is encountered in a wide range of psychiatric conditions, including the psychoneuroses, depressive reactions, schizophrenias, and organic conditions, such as arteriosclerotic brain disease. Indeed, hypochondriasis may be present in normal individuals during periods of stress. Therefore, no specific recommendation can be made regarding the conduct of therapy which must be directed at the specific underlying psychiatric disorder.

Conversion reaction (conversion hysteria). This most dramatic of psychogenic conditions is seldom seen in its pure clinical form today. However, conversion reactions may contribute to the clinical picture of many disease states.

A conversion or hysterical reaction refers to a so-

matic symptom, motor or sensory, which is not caused by physical pathology but is due to unconscious psychological factors, such as conflict, trauma, or frustration. Conversion reactions are neurotic symptoms which are expressed in the form of somatic complaints. The patient is *not* consciously malingering and often shows little distress (the classical *la belle indifférence*) about his symptom although it may restrict his functioning markedly.

A detailed discussion of psychoanalytic hypotheses regarding the mechanism of conversion lies beyond the scope of this section and is presented elsewhere in this volume. A simplified explanation of this complex phenomenon is included here primarily to permit comparison between hysterical and psychophysiological reactions.

Theories regarding the mechanisms of conversion reactions operate on a purely psychological level of description and typically employ such psychodynamic constructs as unconscious conflict, repression, regression, symbolism, psychological defense mechanisms, and the stages of psychosexual development. Essentially, the conversion symptom is conceptualized as resulting from a pathological solution of a psychic conflict, the issues of the conflict being outside of the patient's awareness, or "unconscious." It is further postulated that there is a symbolic relationship between the unresolved conflict and the conversion symptom, whereby both the repressed wish and the inhibiting force are expressed in the neurotic symptom. Conversion also has the important function of serving as a psychological defense, in that it reduces or prevents the anxiety which would arise were the repressed wish to enter consciousness.

According to the classical Freudian school of thought, the unconscious conflict involved in conversion reactions always stems from repressed sexual impulses, specifically unresolved oedipal wishes, and involves a regression to the phallic stage of psychosexual development. According to other theoretical viewpoints, conflicts involving aggression and dependency, which derive from pre-oedipal levels of psychosexual development, may also result in hysterical reactions. Indeed, it may be speculated that anxiety resulting from interpersonal difficulties or situational stress, which are not related to neurotic conflicts deriving from either the oedipal or the pre-oedipal stages, may also be handled by conversion by certain patients. Furthermore, while according to the classical viewpoint conversion symptoms are said to occur in "hysterical" personalities, such symptoms may also be seen in other personality types and in such diverse psychiatric disorders as mixed psychoneurosis, and schizophrenia.

Clinical manifestations. The form taken by conversion symptoms seems to be sensitive to social factors and tends to change with time and place. The dramatic "grand" hysterical seizures which occurred at the turn of the century in Vienna are rarely encoun-

tered today. Symptoms seen in current practice include various paralyses, pareses and flexures, tremors and abnormal movements, convulsions, sensory deficits, vomiting, swallowing difficulties, sexual anesthetics, and rather exotic disturbances in behavior.

Treatment. The treatment of choice is psychotherapy, which is usually aimed at analyzing and interpreting the defensive meaning of the conversion symptom and at attempting to foster insight into the nature of the underlying unconscious conflicts, in order to permit their rational resolution. Successful removal of the conversion symptom directly, without resolution of the underlying psychopathology by means of suggestion or hypnotism or with the aid of intravenous barbiturates, has also been reported. However, the results of such methods in terms of the patient's global status are controversial. Some therapists report good results with enhanced feelings of worth and better global functioning. In other cases, removal of the hysterical symptoms has precipitated serious deterioration of the patient's psychiatric condition in the form of overt psychosis and depression.

Psychophysiological disorders (psychosomatic disorders; psychophysiological and visceral autonomic reactions). *A psychophysiological or psychosomatic symptom or disease always involves some actual somatic pathology or dysfunction which is caused, at least in part, by psychic factors.* According to this concept of psychosomatic disorders, psychic factors are seen as one of several contributory determinants which combine to result in the final disease state. Theoretical and therapeutic concepts of psychophysiological disorders are exceedingly complex and are considered in detail elsewhere in this book. The present discussion is confined to a brief description of basic principles.

The basic mechanism by which psychic factors contribute to such organic disease is essentially simple: psychophysiological disorders result from the physiological concomitants of affective states. Emotional arousal is normally accompanied by profound physiological reactions, involving changes in vascularity, secretion, motility, and tone of every organ and system of the body which is under nervous and hormonal control. Acute emotional reactions, if quickly resolved, normally cause no harmful effects in the healthy organism. However, chronic, unrelieved, and frequently recurrent states of emotional arousal, with their accompanying physiological upheaval, or affective states accompanied by excessive or pathologic physiological arousal may result in the organic pathology of psychosomatic disorders in those susceptible individuals who have an organic vulnerability to the physiological effects of emotion.

Although affective reactions, such as rage and depression, may be involved in the genesis of psychophysiological disorders, the affect most commonly implicated is chronic anxiety. Psychiatric treatment tends to focus on one highly prevalent source of such

anxiety, namely intrapsychic conflict, the nature of which is usually outside the patient's awareness. Often such conflict involves vicissitudes in interpersonal relationships, especially the relationships of the patient with a significant love object.

Thus, given a certain predisposition, psychosomatic symptoms may be expected to appear when the patient responds with anxiety to some stress in his life situation because his adaptive capacities are inadequate and his psychological defenses have failed to protect him against excessive emotional arousal.

Clinical manifestations. Psychophysiological reactions may affect every organ system of the body. Some of the common symptoms and diseases which are generally believed to have important psychosomatic components are as follows: (1) cardiovascular: psychophysiological cardiac reactions, essential hypertension, vasomotor syncope; (2) gastrointestinal: dysphagia, dyspepsia, peptic ulcer, ulcerative colitis, ileitis, diarrhea, constipation; (3) respiratory: bronchial asthma, vasomotor rhinitis, dyspnea, hyperventilation; (4) genitourinary: impotence, premature ejaculation; (5) obstetric and gynecological: menstrual disturbances, frigidity, sterility, disturbances in labor, disturbances of lactation; (6) endocrine: thyroid disturbances, diabetes; (7) skin and allergy: pruritis, eczema, various dermatoses; (8) musculoskeletal disorders: back pain, rheumatoid arthritis; and (9) miscellaneous psychophysiological conditions: headache.

Treatment. Psychiatric therapy cannot alter the organic substrate; rather, its goal is to diminish the pathogenic anxiety to which the patient is vulnerable. Since many types of individuals are subject to chronic and recurrent unrelieved emotional arousal, it is to be expected that psychosomatic symptoms will be manifested by patients with widely differing psychiatric diagnoses. And, in fact, psychophysiological reactions are seen in relatively normal individuals who are experiencing some transient stressful adaptations, in neurotics with deeply disturbed object relationships, and also in disorganized psychotic patients. The choice of treatment method depends on an accurate assessment of the specific underlying psychopathology, and is limited by the patient's physical vulnerability.

Comparison of Psychogenic Somatic Disorders

The criteria for differentiation of psychophysiological reactions and other types of psychogenic somatic disorders, especially conversion reactions, may be summarized as follows:

Organic pathology. Psychophysiological disorders always involve organic pathology and/or pathological functioning. Such organic damage is totally absent in conversion reactions and, if present in hypochondriasis, is a secondary consideration.

Symbolic meaning. In contrast to hysterical and hypochondriacal symptoms, the psychophysiological

symptom is not a neurotic symptom and has no primary symbolic meaning for the patient (except as such meaning is acquired secondarily). Hypochondriacal symptoms and symptoms of malingering may or may not have a primary symbolic meaning.

Relation to anxiety. Psychophysiological symptoms do not serve as psychological defense mechanisms; i.e., such symptoms do not diminish anxiety or tension. Rather, it is when the psychological defenses fail to reduce anxiety that psychosomatic symptoms, which represent the physiological concomitants of such anxiety, appear. Conversion symptoms, on the other hand, serve as a defense against anxiety. Hypochondriacal symptoms, while being anxiety equivalents, also serve to contain or limit the anxiety. Finally, malingering may help the individual to avoid anxiety-evoking situations.

Multicausality. While psychic factors constitute the primary determinant in such psychogenic disorders as conversion reaction, hypochondriasis, and malingering, and in self-destructive behavior, a psychosomatic disorder is always the result of multiple somatic as well as psychic determinants.

Autonomic and voluntary nervous control. According to the classic viewpoint, conversion symptoms always occur in the sensory or voluntary motor systems, whereas psychophysiological reactions always affect organs innervated by the autonomic nervous system. Alexander included such a differentiation between visceral and sensorimotor involvement in his original distinction between psychosomatic and conversion symptoms, which has been generally accepted and is reflected in the American Psychiatric Association nomenclature, "psychophysiological and visceral autonomic disorders." While this concept holds true in many instances, its universal validity should be questioned. Such conditions as tension headaches and certain cases of low back pain represent the concomitants of the increased striated or voluntary muscle tension which accompanies affective arousal in some patients and thus might best be classified as psychophysiological reactions. Conversely, pain resulting from the psychological mechanism typically attributed to hysteria or conversion is often experienced as originating in viscera innervated by the autonomic nervous system.

Multiple Mechanisms

Five different kinds of psychogenicity have been described to illustrate some of the various mechanisms by which psychic factors contribute to medical disorders. For the didactic purpose of clarification discrete clinical categories have been separated. In practice most cases are of mixed origin, in that several psychogenic components may contribute to any one case. For example, a hypochondriacal patient may be concerned about death and preoccupied about cancer but may also have an actual psychophysiological condition, such as a duodenal ulcer.

Combinations of psychophysiological and conversion reactions are also common. Thus, for example, after gastrectomy for a peptic ulcer which is a psychophysiological condition, some patients continue to complain of epigastric pain. The subsequent postgastrectomy syndrome which now occurs in the absence of the organic substrate may be attributed to a conversion mechanism.

Suggested Cross References

More detailed descriptions of the self-inflicted disorders may be found in the following sections: obesity, Section 30.3; accident proneness, Section 30.13; habitual abortion, Section 30.8; addictions, Sections 27.1 and 27.2; and alcoholism, Section 27.3. Malingering is further discussed in Chapter 50 on industrial psychiatry; additional information regarding hypochondriasis may be found in Section 32.3, while Section 23.2 contains a detailed discussion of conversion. Current concepts of psychosomatic medicine are presented in greater detail in Section 29.3. The reader may obtain further information regarding the treatment of psychophysiological disorders in the sections in Chapter 30 which deal with the specific disorders and in Section 30.15 on the treatment of psychophysiological disorders. Psychosomatic disorders in children are described in Section 41.2.

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31.2 PSYCHIATRY AND MEDICINE

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By broad definition, consideration of the relationship between psychiatry and medicine refers to the role of psychological factors in the etiology, onset,

and course of somatic illness, and to the patient's psychological reactions to the experience of illness. While the precise mechanisms which underlie the interaction between psychological and physiological processes are not always known, it is generally recognized that psychological factors, which may be psychosomatic or somatopsychic in sequence, or both, to some extent, play a significant role in almost all illnesses. The psychophysiological mechanisms which are operative in specific illnesses and the general concept of psychogenicity in medicine are discussed elsewhere.

This section will attempt to explore still another facet of the "mind-body problem." More specifically, this discussion will focus on the following elements: (1) the medical patient's psychological reactions to consultation and treatment, and possible physiological concomitants; (2) the physician's psychological functioning (and the psychological role of those with whom he works and consults); (3) the interaction between patient and physician; and, finally, (4) the ways in which these factors may foster or impede the patient's recovery from or adjustment to his medical illness.

These variables will be considered in the context of: (1) the office visit; (2) hospitalization; (3) discharge from hospitals; (4) diagnostic procedures; (5) treatment; (6) chronic invalidism and rehabilitation; and (7) death. Obviously, each of these situations has many psychological ramifications; consequently, this discussion is limited to consideration of representative phenomena.

The Office Visit

Psychological implications of somatic dysfunction. The patient's psychological status prior to his initial visit to the doctor's office is often as important as his reactions to the visit itself. More specifically, if the patient has a psychological need to deny his illness, he may delay seeking medical attention and, as a result, lose precious treatment time while his disease progresses to a more serious or irreversible stage. The implications of this reaction for a patient with a malignancy are obvious, but it can be equally dangerous for the patient with crushing substernal pain, who procrastinates on the basis that "it's probably only indigestion," and the patient who attributes his melena to "something dark I ate." People deny illness for a number of reasons. In some instances, the disruption of normal physiological function is experienced as an overwhelming threat. Unconsciously, it may mean a dreaded loss of instinctual control. It may reactivate unconscious fears of castration, fears of separation from loved ones, and the threat of passive submission to others. Some patients, therefore, try to "wish" their symptoms away, rather than confront disease and call a doctor. Furthermore, the physician may unwittingly play into his patient's delaying tactics, if he has and conveys an attitude of

intolerance toward patients who "give in" to illness too quickly and without a "struggle," if he tends to overalarm his patients about symptoms, or if he sounds annoyed when they call for an appointment when his schedule happens to be particularly busy.

In contrast to those patients who try to avoid medical consultation, hypochondriacal patients may, of course, seek reassurance from their physicians with unnecessary frequency. However, this may present a less serious problem for the physician as well as the patient, although it may be more overtly annoying for the physician. The fact remains that these patients, at least, establish communication with the doctor.

Once he has arrived at the physician's office, other important inner and outer stimuli affect the patient. Even if he comes to the office for a routine physical examination, he will probably be anxious as he awaits his turn. And if the patient is consulting a doctor because he is experiencing unfamiliar symptoms, his anxiety will be compounded: "What will the doctor find?" "Will I have to go to the hospital?" "Will he hurt me?" "What about the expense of all this and the time off from work?"

Psychological reactions to diagnosed illness. In the face of the stresses of medical illness, it is very likely that the patient will regress to less mature forms of behavior, the degree of regression depending upon the nature and severity of the illness, the patient's early life experiences, and the quality of the doctor-patient relationship. In general, however, certain immature character patterns which are reasonably well attenuated during periods of health may emerge with particular clarity when illness strikes. For example, profound regression may be manifested by the stunned, withdrawn, uncommunicative behavior of one patient or in another's guarded suspicion of the physician. Other behavioral patterns may be similarly interpreted as indicative of regression to earlier levels of psychosexual development. The patient may "plead" for care, attention, and love, or he may demand it aggressively; both modes of behavior reflect the reactivation of infantile oral conflicts. In other cases, anal conflicts may find expression in behavior which ranges from extreme self-control, obedience, and cooperativeness to rebelliousness and outbursts of temper. Finally, evidence of unresolved problems associated with the phallic level of development may appear in one patient's dread of being hurt physically and in another's wish to compete with and take over the doctor's job. Whatever form the patient's behavior may take, its regressive components are evident; that is, such behavior is usually motivated by the patient's wish to have the physician "take over," in the role of a confident, authoritative, omnipotent, protective parent who will safeguard him during his illness.

These reactions are not necessarily restricted in time to the patient's first office visit, of course. They

may occur at any point in the course of treatment. Increased symptomatic discomfort, hospitalization, surgery, and diagnostic procedures must, inevitably, have some psychological impact, which may elicit a pathological reaction from the patient.

Concomitantly, the tolerance, flexibility, and understanding which the physician demonstrates in his responses to these reactions in his patients will foster such regressive tendencies or reduce them to a minimum. And his responses will depend, in turn, on his capacity to look beyond the frequently exasperating surface behavior of his patients. Almost any physician can deal satisfactorily with patients whose neurotic patterns happen to mesh well with his own personality needs. The quality which distinguishes the exceptional physician is his ability to deal with the unpleasant situation, with the problem patient, when this requires investigation of his own reactions so that he can better understand the subtleties of his relationship with the patient.

Evolution of the therapeutic relationship. The therapeutic relationship between the physician and his patient evolves during the initial office visits. This often requires working out problems which could interfere with their mutual goal of restoring the patient's health. The evolution of this relationship can be depicted as follows. Two people, separated by some distance, begin to walk toward each other. As they get closer, they look each other over, and at times they spar to test out reactions and counter-reactions. Ultimately, they stand opposite each other, and at this point, they may choose to remain at a stalemate, uncommitted, in a relationship of mutual distrust, in an endless toe-to-toe battle, in a clinging dependency of the patient on the physician, or in some other unproductive type of relationship. On the other hand, they may both turn in the same direction and join in a cooperative venture along the road of complete evaluation and treatment of the illness. This road will have its pitfalls, but if the relationship they have established is strong enough, it will withstand the jolts which tend to disrupt it.

Other psychological stimuli

The out-patient treatment setting. The treatment setting presents other psychological stimuli which will affect the patient's reactions to the physician and to his illness. The attitudes of the nurse and receptionist, as well as other personnel, can sharply influence the patient's response. Curtness leads to distrust; too informal an atmosphere will lead to concern as to whether his illness will be taken seriously enough. A cold, impatient response to a phone call for an appointment or an inquiry about medication can play havoc with the relationship the physician has worked so hard to develop. The cleanliness and general appearance of the office, the time the patient must spend waiting to see the physician,

the sounds emanating from the treatment room, even the vintage of the magazines in the waiting room contribute to the patient's concept of what his doctor feels toward him. All these stimuli can evoke feelings of positive acceptance and reassurance, on the one hand, or feelings of frustration and anger, rivalry and jealousy, and alarm and fear, on the other. Such feelings often carry over into the relationship with the physician: they influence the patient's confidence in the physician, his cooperativeness, and his ability to relate personal history, and they may evoke physiological responses which are reflected during the physical examination.

History taking. The history-taking phase of the initial office visit brings physician and patient together in close interpersonal contact, and the atmosphere in which it is conducted should contribute to the optimal functioning of both. It is particularly important that this interview take place in a quiet, relaxed milieu, conducive to introspection, so that the patient may determine and describe his internal physical sensations as accurately as possible and, in addition, try to remember specific factors which were associated with the onset and exacerbation of symptoms. The physician may also ask him to describe psychological reactions and interpersonal relationships which have influenced the course of his illness. If the patient feels rushed, or if his account is interrupted too frequently when the physician is called away to see other patients, to answer the telephone, to answer the nurse's questions, or whatever, his ability to provide the vital information the physician needs for diagnosis will be seriously hampered. It is equally important that the physician be able to give the patient his full attention, without distraction, if he is to interpret and integrate the data supplied by the patient. Ample time must be assigned for this purpose.

Privacy is essential, of course, not only because the intrusions are distracting, but also because the patient may be relating highly personal information. There are few things more distressing to a patient than to have his illness made public. If he has the feeling that others can overhear his conversation with the doctor, he may omit pertinent details or distort the history he relates to the physician. In fact, those patients who are seated where they can overhear another patient usually find this experience equally distressing. It can be embarrassing to the listener, and it can elicit the uneasy feeling that he may well experience the same fate. In this connection, it is important that files (office and hospital) be kept confidential, and that everyone working in the office be thoroughly aware of his responsibility toward patients in this regard. Needless to say, the physician, himself, must rigidly protect the privacy of the patient's communications and other information he has about the patient's illness.

The problems inherent in obtaining a history from

a patient with physical complaints differ from those encountered during the initial interview of the psychiatric patient who recognizes that he has an emotional problem. The psychiatric patient is prepared to launch into a description of his personal problems and is usually restrained only by unconscious resistances over which he has little control initially. In contrast, while the medical patient is willing to talk about the physical manifestations of his illness, he is usually reluctant to reveal information, which may be equally relevant, concerning his thoughts, fears, behavior, and interpersonal relationships. This problem may be complicated if the physician is embarrassed and reluctant to become involved in matters which he considers to lie "outside his domain." And, assuming that the physician has worked out his own problems in this regard, the problem arises as to how he can encourage the patient to pursue this line of thought. The physician's apparent interest in such details and his willingness to listen may be enough. On the other hand, at times it is necessary to explain to the patient why it is important to review his personal life. A simple explanation to the effect that it is important for the physician to know the patient as a person in order to understand his illness may suffice. Other patients, who are less sophisticated, may require a more elementary approach. In such cases, it may be helpful to emphasize the fact that emotions normally evoke certain physical reactions in all of us and then to demonstrate this hypothesis by citing some familiar psychophysiological correlations, such as embarrassment and blushing, fear and trembling, rage and sudden pallor, disgust and nausea. The physician can proceed from this point to remind the patient that people with peptic ulcers or hypertension may become ill when they are annoyed. These introductory illustrative statements may make the difference between eliciting the patient's cooperation in this connection and arousing the feeling that the physician is just being "nosey."

The physical examination. The physical examination is often the most highly charged aspect of the office visit. On the one hand, it arouses the patient's concern about the disease process the physician may discover, which may or may not be realistic. On the other hand, the prospect of being exposed, inspected, and probed by another human being (regardless of his professional status) may give rise to irrational feelings of resentment, fear, and helplessness. Thus, for example, the patient who watches the face of the physician so intently as he uses his stethoscope may be thinking: "Is there anything wrong with my heart?" "Why did he frown just then?" "Mother had heart trouble. Do I?"—and so on, endlessly. The patient may be frightened: "Will he press that sore spot?" "If he pushes that stick back in my throat any farther..." Or the patient may feel embarrassed. Obviously, adequate draping is necessary, and certain phases of the examination should be conducted in the

presence of the nurse. Some women are terrified by a vaginal examination because of unconscious rape fantasies; rectal examination can mobilize the deeply hidden homosexual concerns of some men. It is important for the physician to be aware of the multiple psychological meanings of specific aspects of the physical examination and of the fact that the anxiety or tension precipitated by these procedures can affect the very physiological functions he is observing.

The physician should also be aware of his own attitude toward the physical examination. Does he consistently avoid performing some necessary procedures because he is squeamish or overcautious? Does he, for example, usually omit the rectal examination, with the possible consequence that he may subsequently find that he overlooked an early malignancy of the rectum or prostate? Does he do only a cursory examination because he is overly sensitive rather than realistic about embarrassing the patient?

Hospitalization

Psychological implications. The psychological meaning of hospitalization will vary with the individual patient, depending on his personality structure; the nature, extent, and duration of his illness; and the "character" of the hospital. In any case, the hospital does not always represent a place of refuge and security, where the patient is assured protection from stressful stimuli. Rather, hospital admission is a trying experience for most patients, and especially for those who are involved in a symbiotic relationship with someone at home. Separation anxiety can be intense. The thought of remaining bedfast; the loss of independence, with associated feelings of vulnerability; and the fear of death, however remote, can be extremely stressful. In any event, the reactions to the unconscious meanings of hospitalization can range from feelings of intense fear and anxiety to a sense of euphoria at the prospect of entering a protective, "maternal" atmosphere.

Psychological reactions to the hospital milieu. The hospital is usually, though not always, a relatively strange place for the patient and, as such, requires his adjustment to many new experiences. These may include using bed pans; eating different food at different hours; enduring intubations, immobility, venipunctures, and oxygen tents; watching other patients suffer and die; and, above all, seeing many new faces. Some hospitals are "cold" and "impersonal"; others are "understanding" and "warmly receptive." This will depend primarily on the prevailing attitudes of the staff toward the patients in their care. One way of assessing the variety of experiences which will affect the course of the patient's illness during his hospital stay is to classify them under three broad rubrics, as follows: (1) patient-staff relationships, (2) interpatient relationships, and (3) interstaff relationships. Inasmuch as these relationships will in-

fluence the patient's clinical state favorably or unfavorably, they are of more than passing interest.

Patient-staff relationships. Physicians and nurses are often cast in the role of omnipotent parents. And, concomitantly, if childhood experiences with parents were predominantly unfavorable, either because of excessive frustration or over-indulgence, they may affect current medical relationships adversely. By and large, however, the patient is willing to yield his adult autonomy temporarily and to place himself under the care of the hospital staff.

This commitment by the patient places an obligation upon the physician and the staff. Often, and particularly in public charity hospitals (as opposed to private hospitals), the staff seems to take it for granted that the patient will maintain his attitude of childlike trust and obedience, and he is treated accordingly. It is not surprising, then, that the patient is quite sensitive to the attitudes of the physician and nurse. He is disappointed easily, angered when his expectations are not fulfilled, depressed and apprehensive when the physician or nurse is not available, and responsive to their harsh handling. On the other hand, many patients are so concerned about alienating these people on whom they are so dependent that they stifle their resentments rather than express them and risk disruption of the relationship. The suppression of these intense feelings can have an unfavorable effect on physiological function: It can, for example, precipitate an asthmatic attack, accentuate hypertension, increase the frequency of attacks of angina pectoris, and affect the course of the patient's illness in other ways. Ideally, the patient should be made to feel secure enough to discuss openly his smoldering feelings of anger, fear, and shame.

Interpatient relationships. Patients on wards or in semiprivate rooms and especially those who are hospitalized for prolonged periods of time will, inevitably, be exposed to a variety of meaningful interpatient relationships. These, too, may be beneficial or detrimental. On the positive side, a patient with strong maternal instincts may establish a close relationship with another patient who thrives on such attention, and both may benefit as a result. On the other hand, when both patients in the same room have intense sibling rivalry problems, each may react adversely to any special attention the other may receive from the doctor or nurse. The disruption of a meaningful interpatient relationship as the result of the discharge or death of a fellow patient can be quite stressful. Moreover, the variety of interpatient relationships to which the patient is subjected may influence his already altered physiological functions.

Interstaff relationships. Finally, patients are often sensitive to the relationships among members of the staff. This has been amply demonstrated in hospitalized psychiatric patients; it has become increasingly evident that it is applicable to medical patients as well. For one, unresolved discord between

physician and consultant, resident, or nurse can provoke anxiety in the patient, for he must then cope with his divided loyalties. But, with particular reference to the medical patient, interstaff disagreement may have even more serious consequences: it can reduce the efficiency of patient care and, as a result, impede the patient's progress. To illustrate, a resident who does not support the recommended treatment program of the staff physician may unconsciously rebel against the staff physician's authority by simply neglecting to provide the care prescribed for the patient. A nurse, who is angry at an attending physician for some reason, may unconsciously interfere with his efforts by forgetting to give the patient his medication on schedule. In order to resolve some of these interpersonal difficulties that affect the patient's progress, regular meetings attended by members of the staff, designed to foster open discussion of grievances, are helpful in resolving some of the inevitable interpersonal conflicts between staff members which may affect the patient's progress.

Hospital Discharge

Psychological implications. Paradoxically, many patients experience apprehension when leaving the hospital. Certainly, this seems in contradiction to the atmosphere of smiling faces, warm handshakes, and pleasant "good-byes" which surround the patient as he is whisked out the hospital door. In fact, however, the patient is often unaware of his deeper concern about leaving. Reactions of an emotional or physical variety, or both, may occur. This is especially likely to happen if the patient has been hospitalized for a long time, if his illness was serious, or if there is an ominous threat of reactivation of his physical disorder after he leaves. Or, he may hesitate because of the prospects of facing an unpleasant family, social, or work situation on his return to his former life situation.

Psychological reactions. As a result, prior to discharge, such a patient may experience transient or severe exacerbation of his illness or even develop new physical symptoms. Or he may experience anxiety or other symptoms of emotional turmoil, such as hysterical representations of the symptoms of physical illness. Some patients try to find rationalizations for remaining in the hospital longer. Others overtly express their anger at being "thrown out."

It is not surprising that anyone who has allowed himself to regress to a role of being cared for and protected may find it difficult to give this up. For some patients, latent excessive yearnings to be dependent may be gratified, to some extent, during hospitalization. On the other hand, there are those who abhor such "dependency" and push for discharge much too soon.

Whenever a patient is eligible for discharge, it is important to recognize that these problems may arise. Careful observation can help to explain the develop-

ment or exacerbation of symptoms, when this occurs. The patient can then be encouraged to talk about his feelings about leaving and thereby be helped through this transitional period.

Diagnostic Procedures

In both the hospital setting and within the framework of out-patient treatment, patients must submit to experiences which are strange and unfamiliar and, consequently, perplexing and frightening. Innumerable procedures require the use of strange instruments which cause painful or erotic sensations and are often carried out in weird surroundings by unfamiliar technicians. It is not surprising, then, that patients may fail to appear for office visits when such procedures are scheduled or even sign out of the hospital prior to a dreaded diagnostic procedure. Physicians often forget that, although these medical techniques are a routine part of their daily practice, they can be deeply terrifying for the patient.

Psychological implications. Some diagnostic procedures are genuinely uncomfortable; others are unpleasant because their anticipation arouses certain fantasies. An extremely uncomfortable bone marrow biopsy may be less painful for someone who is familiar with the procedure; on the other hand, an unsophisticated patient may be quite traumatized by a painless electrocardiogram because he expects to be shocked by the gadget which is attached to him by electrodes. A youngster who is afraid of the dark may find even a crude spinal tap less uncomfortable than an upper gastrointestinal x-ray series. In brief, diagnostic procedures will evoke different reactions, depending on the patient's psychological status, the area of the body being studied, and other things. A cystoscopy will be more traumatic for a man with intense castration anxiety than it is for most other patients, and a breast biopsy will be more difficult for a woman with excessive concern about her femininity. On the other hand, diagnostic procedures which must be repeated and cause only mild discomfort can have the opposite effect: the dependent patient who desires a great deal of attention may perceive such procedures as evidence of the physician's interest and care.

In any event, it is important to understand that the patient's response to diagnostic procedures may be psychologically determined, in part. Therefore, it is important that the physician explain the procedure as clearly as possible beforehand. This will not completely eliminate the patient's fears, but it may reduce them, and it will certainly enhance the physician-patient relationship. The physician should also be aware of the fact that patients are usually apprehensive about the outcome of diagnostic procedures and should be informed promptly of the results (to the extent the doctor feels it advisable).

Treatment

Psychological aspects. In large measure, the psychological aspects of the treatment of medical disorders are a function of the physician's relationship with his patient. In fact, this relationship constitutes one of the most powerful therapeutic tools available to the doctor. Yet, unfortunately, this is often overlooked, not only to the detriment of the patient, but also to the detriment of the physician, who may erroneously attribute therapeutic effects to medications or to procedures, rather than his "personal touch" or to the air of optimism and confidence he conveys.

Psychophysiological correlations. Physiological activity is highly responsive to interpersonal relationships. As such, blood pressure, gastric secretions, bowel activity, skin response, and other physiological functions will respond to the physician's subtle and gross communications to his patients. The pharmacological effects of a drug may be enhanced or diminished by the color of the medication, its mode of administration, its size, shape, and taste, and last, but not least, whether or not the prescription is handed to the patient by a warm, smiling physician, or one who is irritable and scowling.

It seems almost trite at this stage in the development of psychosomatic medicine to remind physicians of the need to treat the whole patient, rather than a single diseased organ or a disease process. Furthermore, not only must the patient be treated as a complete organism, but also in his total family and social context, if he is to achieve—and maintain—optimal health. It is useless to heal a patient's peptic ulcer in the hospital and then discharge him only to have it recur because he must again face the very stresses which precipitated the onset of the ulcer.

Chronic Invalidism and Rehabilitation

Psychophysiological correlations. In addition to physical factors, psychological attitudes can spell the difference between rehabilitation and chronic invalidism. Partial or total invalidism is, of course, an inevitable fate for some who have fallen ill, but many patients who are potentially capable of being rehabilitated remain in hospitals because of unrecognized emotional conflicts. In many such instances, rehabilitation will be more successful if the patient can be motivated sufficiently to this end. Recovery from illness involves giving up a somewhat childlike status and regaining the role of adult. The patient's desire to achieve this transition and his success will depend on such factors as his level of maturity prior to the illness, the type of illness, its duration, the extent to which the patient was cared for, his deeper psychological needs, the life situation he faces should he recover, and, finally, the willingness of the staff and others to promote growth in the patient, as opposed to maintaining him in a dependent state. Ex-

perience has shown that patients who were previously considered unmodifiable can respond to a "total push" program of an energetic, interested, and informed staff.

Death

Psychological implications. Everyone is faced with the prospect of eventual death, but illness, and especially hospitalization, may precipitate a more open confrontation with it. At such times, death may be of greater concern to some patients than to others. In any event, since death is a state virtually impossible to conceive of, its meaning must be related to past experiences. In this context, death may be conceived of as an almost welcome relief from torturing pain. Or it may represent a reunion in an afterworld with loved and loving ones. It awakens repressed childhood fears of abandonment in other patients. The suicide patient conceives of death as a justified punishment for his aggressive, destructive impulses. Whatever its psychological implications, when death is imminent, the patient needs a close, trusting relationship to help him face the unknown. Unfortunately, however, because the dying patient often arouses great anxiety among those around him, he is usually neglected or avoided. It is sometimes easier for the physician to walk past the room of the patient who is dying from cancer than to face him and the questions he may pose.

What does one tell the dying patient? Should he be told he will die, if he seems unaware of it consciously? This question is still debated. On the one hand, there is probably some justification for the argument that the patient should not be told, on the grounds that if his hope is completely shattered, any possibility—however remote—of a remission of his illness will be shattered as well. On the other hand, however, there is some evidence that the patient is better able to deal with death if his physician discusses it with him openly. The patient then knows where he stands; he can take care of necessary family and business arrangements; and he can maintain a more open relationship with his family and his physician, who, in turn, will be more comfortable in his dealings with the patient. Still, many patients probably could not withstand such a confrontation. They vigorously deny the obvious, and it is probably best to allow them to continue to do so. Perhaps the best position for the physician to take is that the decision about what and how much to tell the patient should depend upon his psychological evaluation of the person in his care and that the way he handles the matter should be tailored to the specific needs of the individual patient. This would be in contradistinction to establishing a set pattern for handling all dying patients, determined primarily by the psychological needs of the physician.

Suggested Cross References

The reader is referred to Chapters 29 and 30, which deal with psychosomatic disorders. For a further discussion of the effects of the hospital environment on the patient, see Chapter 36 on milieu therapy.

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31.3 PSYCHIATRY AND SURGERY

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Introduction

This section will discuss human psychological reactions to surgery, which may range from typical, average, expectable disturbances to profoundly psychopathological disorders. It will include a description of the patient's psychological reaction to every phase of the surgical experience, from the patient's initial discovery of his illness, to diagnosis and the physician's recommendation for surgery, to his hospital admission, to the stressful period he spends in the hospital prior to surgery, to the administration of the anesthesia, to the recovery phase, and, finally, to

the period of convalescence. The section will conclude with a comprehensive summary of the psychological implications of surgery. Consideration will also be given to the physician's possible influence on the psychological processes which affect the surgical patient and the course of his illness.

Psychophysiological interaction. The prospect of undergoing surgery must, inevitably, evoke a psychological reaction in the patient, although the overt expression of that reaction may be stifled or expressed in altered form. In fact, the anxiety, fear, anger, or depression which arises in response to the psychological meaning of the illness, or the operation, or both, can be transformed by the individual's psychic defense system, so that his "public" adjustment to surgery can be quite misleading. Moreover, the possibility of severe and disabling postoperative depression may be greater in a sweetly cooperative patient who is able to repress his fears and anxiety, than it is in a patient who expresses these feelings and, in the process, becomes a difficult management problem.

Whether or not they are expressed, the nature and intensity of the patient's feelings about his illness, hospitalization, and the hazards of surgery may have physiological concomitants which will influence the course of his illness and his recovery from the operation. And this psychophysiological interaction, which is particularly apparent in relation to the surgical experience, can be cumulative. For example, it has been observed that preoperative anxiety about surgery for a duodenal ulcer can deter effective postoperative gastrointestinal function, which, in turn, will give rise to unfavorable emotional reactions which will further impair gastrointestinal function.

Psychological Reactions to Surgery

Regressive reactions. Surgery always causes psychological stress, to varying degrees; in the absence of an ideal adaptive system, this stress causes regression. Simply defined, stress is a stimulus which demands an adaptive response. For a variety of reasons, regression is the most common psychological response to the stress of surgery.

With specific reference to the surgical experience, the phenomenon of regression can be defined as follows. In the face of physical illness, pain, and discomfort, separation from home and family, and admission to a "cold" and alien hospital, where one is confined to bed and left alone to anticipate the prospects of anesthesia and an operation, there is a strong tendency to revert to earlier modes of coping with intangible environmental stresses and the pressures of inner conflict. In some patients, this regression to earlier modes of defense may mobilize personal strengths, but it may also reactivate old fears and conflicts. For example, the patient's unconscious regressive fantasies of going to sleep with the mother

or father anesthetist may ameliorate his fears of anesthesia. On the other hand, however, he may see himself as a helpless child once again, who must submit to a procedure which is unconsciously viewed as punitive.

The manifestations of regression in reaction to surgical stress will differ in individual patients. The regression may be apparent in the patient's thinking or feelings, in his actions, or in his interpersonal relationships. The point is that these modes of emotional expression were adequate and comforting in the past; hence, the patient resorts to them once again, in the face of this current, acute psychological crisis. However, this concept of regression as a chronological phenomenon requires further elaboration: more specifically, the fact that the patient employs modes of thinking and feeling which were appropriate to an earlier stage in his development also implies some decline in ego strength and a resurgence of superego and id forces. Concomitantly, conscious and preconscious secondary thought processes give way to the unconscious primary processes which characterized early levels of psychological functioning. Thus, the surgical patient who has experienced some degree of regression will find it uncommonly difficult to tolerate delay of gratification and frustration, for example, although, as a patient, greater demands may be made on him in this regard. He may be less able to substitute thought for action, and while his need to take action may be limited to a general restlessness or occasional insomnia, it may also provoke a sudden decision to leave the hospital or to advance the date for surgery and "get it over with."

Fantasy production. When the patient's capacity for discharge of feeling through action is blocked, as it usually is while he is in the hospital, the patient's thinking is more likely to be dominated by fantasy. The surgical patient, in particular, may indulge in innumerable fantasies about his doctor, the nurses, his illness, the wound, the operation, the medication, and the anesthesia. This increase in fantasy and imagery, as an aspect of regression, is characteristic even of those patients who are most reality-oriented under normal conditions. It is not necessarily deleterious.

Expression of aggressive and libidinal impulses. As a concomitant of regression, the patient's emotional expressions take on a wishful quality and become less complex or subtle, and aggressive and libidinal components become more apparent. Aggression may be mobilized by the feelings of frustration and helplessness engendered by the illness and the loss of motility. The patient's feelings of helplessness also reactivate certain early libidinal impulses, e.g., passive-receptive wishes and the desire to be cared for.

Interpersonal relationships. As the illness progresses and the day of the operation approaches, regression becomes increasingly apparent in the pa-

tient's typical mode of relating to other people. Thus, to varying degrees, his current relationships with the physician, surgeon, and nurses, as well as his relationships with relatives and friends, will take on the characteristics of his earlier relationships with crucial figures in his environment, such as his parents.

Psychogenesis of regression. The psychogenesis of regression—whether beneficial or deleterious—with specific reference to the surgical experience can be conceptualized as follows.

Quantitative determinants. On the one hand, the regression associated with the surgical experience implies that the patient's adaptive strengths have been quantitatively overcome, and, in this sense, regression may be viewed as a concomitant of a traumatic neurosis. More specifically, the patient's concern and anxiety over his illness and the impending operation tend to exceed his capacity to maintain emotional equilibrium. Thus, individual differences in the severity of regression will depend upon the intensity of the patient's feelings of isolation, immobilization, and the general depletion of his psychological resources, as a result of his fear of injury or death.

Qualitative basis. Regressive phenomena can also be understood in relation to the meaning and content of the stress associated with surgery. That is, from the psychodynamic point of view, the specific meaning of surgery for the individual patient is considered to play a more significant role in the genesis of regression than the quantity of stimuli or stress precipitated by the surgical experience. In fact, the psychogenesis of regression in this patient population can best be understood when both quantitative and qualitative factors are considered in combination. Nevertheless, those who subscribe to this view maintain that regression in the surgical patient is analogous to a transient psychoneurosis rather than a traumatic neurosis.

Within this frame of reference, Deutsch has postulated, on the basis of her psychoanalytic study of surgical patients, that the stress which gives rise to transient psychoneurosis consists of two types of anxiety—narcosis anxiety and castration anxiety.

Narcosis anxiety. By definition, narcosis anxiety refers to the fear of anesthesia. In a broader sense, it encompasses the fear of dying, of not awakening, of separating and slipping away from loved ones, as well as feelings of helplessness, fear of loss of power or control over one's muscles and senses. As such, narcosis anxiety may find many forms of expression. At times, the fear of anesthesia is expressed overtly; at other times, it is displaced onto some other element of the surgical experience. For example, the narcosis anxiety may take the form of a strong aversion for bed rest, or emerge as an insomnia which increases as the day of the operation approaches. In such instances, sleeping medication may be refused or prove ineffective, particularly

when angry feelings about surgery predominate over anxious feelings about the operation. Finally, the patient's repressed fear of anesthesia may emerge as a general, free-floating sense of anxiety which cannot be associated with a specific environmental factor or event.

Even when the patient is consciously aware of his fear of anesthesia and expresses this fear overtly, reactions will continue to be unrealistic and overintense if he is not consciously aware of the emotional significance of this experience, and if he does not fully understand its significance on an emotional level.

A young woman, scheduled to have surgery performed to correct mitral stenosis, was brought down to the operating room three times. On each occasion she had such adverse physiological reactions to the induction of general anesthesia that, finally, surgery had to be postponed indefinitely. In fact, the patient's fear of anesthesia had been evident from the outset and had been expressed overtly. While she was awaiting surgery, the patient had reported repetitive dreams of the actual operation which clearly indicated that there was an unconscious association of administration of the anesthesia to traumatic experiences with angry parents in early childhood. Thus, the patient's fear of anesthesia was intense and overt, but its psychogenesis, the specific psychological determinants which made it excessive to the point where it made the induction of anesthesia impossible for all practical purposes were complex and deeply repressed.

Castration anxiety. According to Freudian theory, "castration anxiety" has its genesis in the young child's typical fear of the loss of genitalia. As a determinant of emotional disturbance and regression in surgical patients, the meaning of castration anxiety may be extended to refer to the fear of injury to, or loss of any body part as a result of surgery. The danger to body parts is, of course, a realistic threat in any surgical procedure. However, this fear may be increased beyond realistic proportions by the reactivation of these early unconscious fantasies, i.e., the child's intense fear that he will be punished for his sexual impulses toward one parent and his aggressive, rivalrous impulses toward the other by the loss of his genitalia.

This phenomenon of emotional association of the fear of bodily damage through surgery and reactivated childhood fears of retaliation from the powerful parent is encountered frequently on surgical wards, but some patients are more likely to manifest this reaction than others. In particular, the stress which is an inevitable concomitant of surgery can be expected to reactivate castration anxiety when these childhood conflicts have not been resolved by the "passing" of the Oedipus complex. The genesis of the anxiety evoked by the revival of these childhood fantasies may be obscured by the mechanisms of repression, displacement, and substitution, but the anxiety itself will be evident in the patient's restlessness; his withdrawn and sullen behavior; his preoccupation with self, or concern about his family at home; his hypochondriacal complaints; his rebellious-

ness and uncooperativeness, or, conversely, his excessive passivity. The castration anxiety underlying these symptomatic manifestations will emerge in his dreams and fantasies or, if these data are not available, it may be uncovered by projective tests.

In summary, the surgical experience is intrinsically stressful. As such, it will inevitably evoke intense feelings, whether these feelings are expressed or repressed. When the patient's previous over-all adaptation has some weakness, a degree of psychological regression is also inevitable from the stress precipitated by surgery. This regression is manifested by alterations in the patient's typical modes of thinking, feeling, behaving, and in the quality of his interpersonal relationships. Considered in combination, the stress, the intensity of feeling, and the ubiquitous regression may be conceptualized as a traumatic neurosis, i.e., as a psychoeconomic event in which the adaptive apparatus is overcome by the sheer quantity of threat or stimuli. But these phenomena can also be understood as a transient psychoneurosis which arises when conflicts leading to narcosis anxiety (i.e., fear of separation) or castration anxiety (i.e., fear of bodily injury) or combinations of both are reactivated.

The psychological consequences of the surgical experience. Whether it is viewed as a traumatic neurosis or a transient psychoneurosis, at least in theory, the regression is entirely and rapidly reversible when the patient's illness has been successfully ameliorated by surgery and the stress is over. In fact, however, the reversibility of regression, like the effects of anoxia on nerve tissue, depends upon the duration and intensity of the regression, and this, in turn, will depend on the adaptive strength the individual brings to the surgical experience. For purposes of this discussion, adaptive strength may be defined as the flexibility, the ego resilience, which enables the individual to cope with the adversities and vicissitudes which are a normal part of life. The individual who can permit some degree of conscious awareness of the anxiety or depression he feels in conjunction with the surgical experience, to the extent that he can accept the fact that he must be confined to bed, his need for care, and the concern of his relatives and friends without feeling too submissive or helpless, has sufficient ego resilience to ensure his recovery from regression once he is no longer under stress.

On the other hand, some patients have a brittle mode of adaptation. That is, the anxiety and depression evoked by the surgical experience are vigorously fought through the defense mechanisms of suppression, repression, denial, or reaction formation. In these patients, the repressed, i.e., nonverbalized, tensions or depressions appear, instead, in the form of disorders of behavior, such as excessive passivity, submission, and feelings of helplessness, or cantankerous rebellion and resistance to treatment. Or the

anxiety appears in masking psychological symptoms. In these cases the patient's adaptation to his illness and to surgery becomes more stressful and difficult. The un verbalized anxiety, for example, may find expression in the patient's increased irritability, in his intensified demands for care, or, conversely, in his adamant rejection of all offers of help. These reactions, in turn, affect the patient's relationships with his doctor and with ward personnel. Thus, the patient's ability to mobilize his defenses so that he can deal effectively with stress is further diminished. Similarly, when depression cannot be verbalized, it will be manifested in apathy, withdrawal, sleeplessness, and somatic complaints, including some increase in psychogenic pain. The patient's essential ability to adjust to medical and surgical routines is thereby diminished.

Brittle defenses such as denial and reaction formation further deplete the resources of the surgical patient who is under stress by their energy-consuming and -bottling up effects. In addition, there is the further danger that these mechanisms may produce a more rapid and profound regression which may deprive the individual of the capacity to mobilize effective defenses against the anxiety and depression which are components of the surgical experience. More specifically, while regression may serve a useful purpose in that it permits the reemergence of an earlier form of adaptation appropriate to being sick, being cared for, and having an operation, when the patient does not have enough energy to control the regressive process to some degree he may become helpless, dependent, and overwhelmed by anxiety or depression. In these patients, anxiety and depression have painful and corrosive effects; they do not serve an adaptive function, i.e., act as a signal to the patient to mobilize his emotional resources. And, not surprisingly, such patients frequently require special help from the surgeon or a consulting psychiatrist in order to avoid severe emotional debilitation as a consequence of the illness and surgery.

Effects of regression on the surgeon-patient relationship. Some reference should be made in this context to the various phases in the patient's relationship with his doctors, particularly the surgeon, and other medical personnel during the surgical experience. The patient's relationship with his doctor is a complex phenomenon which has been discussed at length in medical literature. However, the surgeon-patient relationship may differ in form and content from other doctor-patient relationships. The special aspects of the relationship between doctors and surgical patients are conditioned by the process of psychological regression which accompanies the stress of the illness, hospitalization, and the patient's anticipation of anesthesia and surgery. In particular, the regressive influences on the surgeon-patient relationship stem from the reactivation of problems of trust and autonomy. Erikson has pointed out that one of the

crucial developmental "tasks" of infancy and early childhood is to acquire a sense of trust in the environment and significant persons in the environment, to replace the basic mistrust of the environment and the objects in it. This sense of basic trust comes from "good" experiences with consistent, reliable, and reasonably gratifying parents. The second developmental task is to acquire a sense of autonomy which will withstand basic feelings of shame and doubt. Inevitably, the surgeon-patient relationship, while offering strength and support, will also include a reactivation of conflicts of trust versus mistrust and autonomy versus doubt.

Trust versus mistrust. The patient struggles consciously with the problem of whether he can trust his doctor and nurses at every phase of the surgical experience. And, contrary to general opinion, it is important to remember that this problem has little to do with an objective evaluation of the surgeon's professional competence. Rather, the patient's personal feelings, reactivated from an early period in his development, are at issue, which explains the patient's unusual sensitivity to apparently irrelevant events, because these events have deep meaning in the emotional interaction of surgeon and patient with regard to problems of trust. Consistency in the attitudes of doctors and nurses toward the patient may help significantly to correct possible distortions in the patient's feelings affecting his relationship with the doctor. However, trust is not a matter of logical decision. It is a feeling which derives, for the most part, from forgotten aspects of early child-parent experiences. It follows, then, that the surgeon's ability to empathize with the patient, that is, to emulate the good parent, will prove more effective than a logical, intellectual approach in increasing the patient's confidence in his professional skills.

Autonomy versus doubt. The reactivation of early conflicts involving autonomy may also influence the patient's feelings and attitude toward the surgeon. The bed rest, intravenous fluid, the bed pan, and all the other immobilizing, or dignity-impairing experiences to which the surgical patient is exposed give rise to feelings of impotence, doubt, and inferiority, especially in relation to the doctor. Thus, once again, he must resolve an issue which was of crucial significance when he was a child and under parental control. Specifically, he must rediscover whether it is possible to function independently, as a separate individual, and at the same time accept the essential support of a surgeon (parent) who is considerably more powerful.

Above all, it must be emphasized that these phenomena are not "real" in a logical sense. However, the possible influence of mistrust and haunting self-doubts on the patient-surgeon relationship is certainly real in an emotional sense. Furthermore, although there may be a tendency to do so, the potential effects of these aspects of early parent-child inter-

actions on the current relationship between patient and surgeon should not be minimized. Ideally, the surgeon's response to these primitive needs will be empathic, consistent, and neutral, yet sympathetic. Clearly, the physician should not try to gratify the patient's infantile demands; nor can he react as though the patient's mistrust or self-doubts were justified. Yet he must respond to the emotional reality of the patient's feelings, which means that he must learn to restrain or work through in himself the tendency toward demonstration of anger or impatience which might be warranted in other social interactions.

Delay, polysurgery, and psychosis. There are three psychological reactions to the surgical experience which manifestly interfere with the efficacy of surgical treatment. These are delay in seeking diagnosis and treatment, the tendency to use surgery as a means of dealing with emotional conflict, and psychotic reactions.

Delay. The patient who delays in seeking diagnosis and treatment for an illness requiring surgery is endangering his life or at best prolonging his own discomfort and disability. Yet, such behavior is typical of 30 to 40 per cent of those patients who require surgery. When individuals in this patient category are carefully interviewed, it is evident that the great majority have had some awareness of their illness for a considerable period of time. Usually, they rationalize their failure to consult a physician by claiming ignorance of the significance of their symptoms. In fact, however, such delays must be attributed to psychological factors, rather than a lack of medical sophistication.

Precipitating factors. The psychological mechanism of denial of reality, in this case denial of illness, because it might mean loss of life, loss of livelihood, and separation from one's loved ones is frequently an important determinant of delaying behavior. Denial of illness may occur even in the face of vivid evidence to the contrary, and in such cases the denial must be maintained by exceedingly complex distortions and rationalizations.

Guilt and self-punishment may also motivate delaying behavior. The patient's conscious suffering or the knowledge that his condition is growing worse serves to alleviate his unconscious guilt feelings which stem from unacceptable wishes. Or, again, the patient's delaying tactics, which represent a passive aggression against the self, may serve as a means of gaining love when love is unconsciously associated with suffering and punishment.

Finally, delay in seeking diagnosis and treatment can also be a means of discharging hostility. Although the aim of such behavior would appear, at first glance, to be self-destructive, there is an unconscious secondary goal. The patient's self-inflicted suffering is designed to make the true object of his hostility feel

sorry (and guilty), to the degree that he will join in the patient's suffering.

Polysurgery. The psychological factors which underlie the unconscious attraction to surgery in the "polysurgical addict" are almost mirror images of those which cause other patients to delay surgery. The operation addict who repeatedly presents puzzling symptoms requiring abdominal exploration or last resort elective procedures to resolve ill-defined symptoms and those few patients whose symptoms can imitate acute illnesses requiring emergency surgery may also be motivated by guilt, by self-punitive means of gaining love, and by the need to express hostility by turning upon the self. Additional factors in these cases include strong exhibitionistic impulses, an attraction to martyrdom, or an attempt to resolve psychological conflicts by submitting to an operation for imagined removal of unacceptable feelings.

Psychosis. The recognition of psychosis on a surgical service may be a problem. That is, the excited or agitated forms of psychosis, accompanied by a thinking disorder, are easily recognized, of course, but quiet patients with withdrawn depressions, paranoid reactions, and incipient delirious reactions often go unnoticed. Nevertheless, feelings of isolation may precipitate delirium or an acute brain syndrome, and disturbances in the internal management of aggression may lead to paranoid reactions in surgical patients.

Apart from acute brain syndromes, the psychotic depressive reaction is the form of psychosis encountered most frequently on surgical service. In fact, depressive phenomena, ranging in degrees of severity from reactive or situational depression, to a more severe and lasting neurosis, to a psychosis with disabling withdrawal and immobilization, constitute a most formidable problem in surgical practice. The effects of depression can be devastating: depression saps the patient's vitality and energy; it depletes his will to cooperate in the treatment, and it diminishes his desire to exert even the slightest effort to help himself to cope with the stress to which he is exposed. Depression gives rise to an apathy, withdrawal, and hopelessness which, in themselves, appear to have deleterious psychological effects in many cases. Consequently, there is considerable support for the current clinical opinion that patients with existing severely neurotic or psychotic depression should not be subjected to surgery if it can be delayed. There is increasing evidence that postoperative depressions, either neurotic or psychotic, forecast a poor recovery from surgery, recurrence of the original symptoms, or the onset of new physical and psychological symptoms.

Psychological Implications of Specific Surgical Problems

Casting and traction. Advances in orthopedic techniques allow more rapid mobilization and ambulation of the patient after injury or after operation. These

advances have also enabled more complete restoration of function. And this progress in orthopedic surgery has, in turn, greatly reduced the potentially harrowing psychological effects of prolonged immobilization which is a concomitant of casting and elaborate modes of applying traction. These advances have not eliminated the need for casting and traction, however. In many patients, especially older ones, the encasing or suspension of part or all of the body in traction has a psychologically regressive effect.

A healthy young man without clinically noticeable neurosis was involved in a traffic accident and as a result required plastic surgery and extensive repair of a shattered femur. The surgery was followed by prolonged traction. To relatives and friends, he seemed especially cheerful and courageous during this ordeal. To the professional observer, however, the anxiety precipitated by his immobilization was evident in some of his humor, in the urgent press of speech over many weeks' time, and in the increased sensitivity he manifested in his relationships with others. Thus, he complained that visitors "would not talk to me," although, in fact, his stream of speech did not allow interruption. Minimal psychotherapy alleviated his tension.

The basis for the anxiety which is a frequent phenomenon among patients in casts or traction apparatus is their feeling of helplessness, which is enforced by immobilization. Actually, they are helpless in traction, and this helplessness gives rise to a different, more regressed mode of adaptation. For example, the patient in traction for the fracture of a cervical vertebra is, in a sense, helpless for the duration of treatment, but his adaptive response to the situation will decrease or exaggerate this feeling of helplessness. It may increase if he is pessimistic about the success of the treatment, if he denies that it is necessary, or if he generalizes the body immobilization, so that he feels that his thinking and emotions are stifled too. The dreams and fantasies of a patient capable of an affective response to the stress will demonstrate a preoccupation with dancing, climbing, running, or making love. On the other hand, the dreams and fantasies of the patient who finds it difficult to adjust to his situation will display a preoccupation with themes of isolation and desertion, and a lack of daring in aggressive expression, or even a lack of movement. One may speculate that patients who, prior to surgery or injury, had conflicts surrounding aggression find it more difficult to adjust to the immobilizing cast or traction because the imagined punishment appears to fit the imagined crime.

Eye surgery. It is interesting to observe that children who have had eye surgery and have spent several days with their eyes bandaged frequently refuse to open their eyes immediately and look at the world when the bandages are off, though they complained bitterly while they were on. Furthermore, this behavior is typical even if the bandages are removed in a dark room and even after they have peeped and know that the light will not hurt. A possible explana-

tion of this phenomenon may help us to understand the psychological implications of eye surgery.

Some psychiatric research recently has been directed toward sensory deprivation and isolation experiments. In fact, naturally occurring isolation experiments, involving the reduction of sensory input, have been conducted on eye surgery wards for many years. The eye patient who is deprived of sensory stimuli suffers an upset in ego balance similar to that described in psychiatric reports of such research. With the onset of the temporary blindness and the cutting off of visual experience, there is a shift toward increasing imagery from within. Children do not want to have their bandages removed because they have been able to establish a new balance. They do not want to disturb it once again by a flood of visual stimuli.

For some patients, the isolation which accompanies temporary blindness is a pleasurable, novel experience; others find it very disconcerting. However, if the patient has been adequately prepared for the effects of sensory reduction, they can be less disconcerting. First, loss of vision means an immediate and inevitable decrease in the patient's sense of mastery over his environment. The permanently blind person will ultimately adapt to this situation by increasing the power of other senses and other functions. The patient who is blind temporarily will have to engage in the same struggle for as long as he must remain incapacitated.

A little girl who was just learning to talk had eye surgery which required that her eyes remain bandaged for 5 days following the operation. She became sullen and irritable and even refused to communicate with her mother. The gift which finally broke through the barrier was a talking telephone with a little girl's voice which spoke friendly sentences when the telephone was dialed. It seems reasonable to attribute the success of the gift to the fact that it enabled the child to regain her sense of mastery, at least to some degree. She could make the girl in the phone talk; she could then respond to it and to others.

Gynecology and urology. The psychological implications of urological and gynecological disorders are discussed in detail elsewhere in this volume. Research findings on the psychophysiology of the menstrual cycle reported by Benedek and others constitute the basis for the understanding of the psychological implications of gynecological surgery. It has become increasingly evident that knowledge of the interplay between menstrual dysfunction and feminine psychology should be a part of every gynecologist's armamentarium, and, of course, these psychophysiological mechanisms should be well understood by the psychiatric consultant. Most often, complaints of menstrual dysfunction will not be successfully treated or even diagnosed accurately if the physician does not investigate the influence of mood and psychic conflict on menstrual function and, conversely, the effect of normal and abnormal menstrual function and endocrine balance on mood and con-

flict. It is generally recognized that dysmenorrhea, amenorrhea, and menometrorrhagia are often physiological concomitants of deep emotional conflicts and that these conditions occur in women who have not acquired adequate psychological defenses against these conflicts.

With reference to gynecological surgery, the effects of hysterectomy and ovariectomy on the woman's psychological functioning are deep and pervasive. The comment of a patient several months after a hysterectomy that she felt like "a shell of a woman" tells us a great deal about the psychological effects of the operation. Although her observation may seem rather trite, it is psychologically valid: in the female, apart from their significance for childbearing, intactness of the body and the capacity to reproduce are the unconscious symbols of femininity and womanhood and, hence, the bases for self-esteem. Every patient who has had a hysterectomy will experience some problem on this score as a reaction to the operation. Therefore, this procedure would certainly seem to warrant preventive psychotherapy.

The clinical observer on a urological service cannot fail to be impressed by the prevalence and intensity of pain as a pre- and postoperative complaint in the male patients. Undoubtedly, this phenomenon can be attributed to the sensitivity of the anatomical structures being treated, but another explanation suggests itself: specifically, the pain may be an expression of rage over the threat of castration by urological surgery. The rage is defensively transformed into submissive masochistic suffering, permitting a more acceptable expression of anger. Put another way, the fear of castration, which looms as a particularly realistic possibility in urological surgery, stimulates the patient's anger at the doctor, which enhances his anxiety because it makes the threat even more real. As a defense against this anxiety, the patient turns his anger inward and suffers it in the form of increased pain. This hypothesis is supported by clinical evidence that suppressed or repressed anger often increases pain sensitivity. This hypothesis further suggests that psychotherapeutic measures might be helpful in decreasing pain sensitivity, which is a major problem in urological surgery.

Plastic surgery. Two categories of psychological problems influence the patient's attitudes and reactions to plastic surgery.

Reparative surgery. The first, and most important, group of problems occurs as a consequence of time-consuming multistage reparative procedures following destructive injuries and burns. The feelings of discouragement, hopelessness, shame, and self-loathing which can accumulate during this period while the patient must endure painstaking rebuilding of his face or some other area of his body should be carefully diagnosed and treated lest such reactions undermine the effects of surgery. However, the fact that the treatments are encouraging and results are visible

operates in the patient's favor. Presumably, if the patient's endurance can be strengthened, these unfavorable reactions can be reduced to a minimum.

Cosmetic surgery. The second type of problem, which has been dealt with more frequently in the literature, is the neurotic distortion and unrealistic expectations which bring some people to the plastic surgeon for repair or remodeling of imagined or, at least, exaggerated defects in their self-image. The decision to have cosmetic surgery may stem from several motives, some of which may seem contradictory, although actually they are not. In any event, in each case the decision is indicative of a deep psychic conflict.

When the individual's motives are primarily narcissistic, he is convinced at an unconscious level, although this conviction may be conscious at times, that if he didn't have the kind of nose, mouth, or chin he has, everybody would love him. Another motive is associated with castration anxiety. In these cases, the individual unconsciously equates the body part to be operated on with the sexual organ. In applying for plastic surgery, such an individual may be unconsciously pleading with the omnipotent father (surgeon) to restore a defective phallus, or he may be asking to be allowed to sacrifice a little part of his phallus in order to protect the whole.

The fantasies described here in oversimplified form are elaborated and disguised in some patients who seek surgery. They merit investigation, for the consequences of surgery may be disturbing if it was motivated by unrealistic fantasies which were wrecked by the real operation, in which event the patient's isolating defenses may be rendered useless. Because of these considerations, today plastic surgeons ask for a psychiatric consultation when they suspect that their prospective patient may be motivated by a neurotic distortion of his self-image.

Amputation. A brief case report may serve as a useful preamble to consideration of the psychological implications of amputation.

A middle-aged woman had a mid-thigh amputation. In keeping with her religion and the custom in the rural North Carolina town in which she was born, the limb was buried. Later, during a visit, she begged a relative to disinter the limb and uncross the second toe from the big one because the position was causing great pain. He did and the pain was gone.

Perception of a phantom limb and a wide range of accompanying sensations are almost universal phenomena following amputation, although patients rarely report such experiences spontaneously, probably because they wish to avoid embarrassment and would rather deny the sensations. These phenomena can be explained by neurological and psychological factors. The neurophysiological explanation refers to the integration of spinal neural levels with cerebral levels which maintain the postural model of the body. These concepts border on the mental image of the body, which is formed and modified by experi-

ence. With amputation, the postural model fades slowly (perhaps never); the image of the missing body part is defended by the individual's deep need to maintain an integrated body image. Pain in the phantom limb, then, represents the patient's grief and mourning over the lost body part.

When it begins to fade, the phantom seems to "telescope," that is, the percept of distal parts, which are sensed most vividly, moves slowly inward toward the stump until the toes or fingers remain closely attached to the stump. Treatment is necessary only if there are unpleasant symptomatic manifestations, that is, when pain becomes a problem.

Colostomy. Somewhat related to the phantom phenomenon because it is central to the problem of body image and self-image is the patient's reaction to colostomy.

The colostomy requires a reworking of the patient's feelings about himself and his body, specifically with regard to the control of bowel and bladder function, and the correction of attitudes toward self and the relationship between filth and sin. It is generally recognized that in the child the acquisition of bowel and bladder control is associated with the mastery of aggressive impulses and motility. The outcome of this early learning and the way in which these learned patterns are connected with other aspects of personality formation and functioning will determine the degree to which a colostomy will demand a modification of basic personality structures. In any event, only very rarely will the patient avoid all conflict and emotional discomfort about his colostomy as he learns to deal with the practical problems of control. These feelings of discomfort will be further stimulated by occasional odors and uncontrollable noises and the reaction to these events by other people. This process of relearning can be facilitated by psychotherapy. Colostomy clubs, whose membership consists solely of colostomy patients who face similar dilemmas, may provide considerable support and understanding during the relearning period.

Surgical Outcome and Treatment Possibilities

The concept of vital balance. Menninger has suggested that we consider human problems in terms of a vital balance. More specifically, ego resources and capacities should be evaluated in relation to the support the patient receives from his family, his success in social adjustment, and other strengths. These factors should then be balanced against the ego's integrative task and the stress imposed by forces within or outside of the organism. This idea is eminently applicable to the surgical patient at the end of his recovery and convalescence. The success of surgery will vary, depending on the patient's capacity to resume his former personal, vocational, and social activities. Thus, when the outcome of surgery is considered in terms of this vital balance,

the operation would be considered a success if the patient's previous symptoms have been alleviated and he has sustained no lasting detrimental change in the effectiveness of his modes of coping with emotional conflict and social adjustment. On the other hand, surgical treatment may have left the patient with difficult emotional, social, and vocational problems; or the stress of an otherwise successful operative treatment may have depleted psychological resources so that the balance regarding personal, social, and vocational tasks is less effective than it was previously. These are but three of the possible variations in vital balance in the surgical patient at the end of his convalescence. In brief, the true outcome of the surgical experience should be evaluated in light of the total effectiveness of the patient's functioning after his illness has ended. Its total effectiveness will depend on his vital balance, which will depend, in turn, on the interaction of factors arising from his psychological and physiological adaptation to the illness, the operation, the recovery, and the convalescence.

Maintenance of the vital balance. The maintenance or improvement of the vital balance of patients undergoing the successive phases of the surgical experience is the combined responsibility of the surgeon, the anesthetist, and the general physician, often in collaboration with a consulting or liaison psychiatrist. Ideally, four variables act to facilitate and implement their diagnosis and therapeutic response to the emotional changes in surgical patients when the inevitable stress gives rise to psychological regression and the reactivation of early conflicts. First, they are aware of the high frequency of temporary emotional disturbances as a concomitant of the surgical experience. Second, these physicians possess a practical empathic understanding, the capacity to know what the patient is feeling and the intensity of these feelings. This is not a mysterious gift; it derives from a developed and practiced ability to perceive the patient's feelings from his words, intonation, facial expression, rate and volume of speech, and bodily movement and posture. Third, they have the ability to develop a relationship with the patient and to use that relationship in the patient's best interests. Finally, they can impart their knowledge of the patient to other members of the therapeutic team, i.e., other doctors, nurses, and attendants, who can then contribute to the patient's progress.

If the surgeon knows from experience and training what to expect in general, he can apply this knowledge through practical empathic understanding to the thoughts, feelings, and behavior of the individual patient. The same capacity permits him to decide when to limit the patient's feelings or behavior, when to call for expression of feeling, when to defer treatment, when to reassure the patient or increase information giving, and when to share his observations of the patient's feelings or behavior

with the patient himself. All of this depends on a constructive surgeon-patient relationship and a supportive emotional milieu provided by the coordinated efforts of the entire staff on the surgical ward.

Suggested Cross References

For an alternate viewpoint about the dynamics of reaction to stress, see Section 28.1 on gross stress reaction. Sensory deprivation is further discussed in Section 5.5 under the rubric of experimental psychopathology. For more information regarding the psychodynamics of gynecological disorders see Section 30.8.

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31.4 PSYCHIATRY AND DENTISTRY

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The dental patient brings to the treatment situation not only his rational realistic needs for dental care, but a wide range of feelings related to dentistry—conscious and unconscious, realistic and unrealistic, rational and irrational. Inevitably, he will manifest certain attitudes toward dental pain and toward the dentist as well. And these attitudes, in turn, will reflect vague but powerful feelings of fear and anxiety, and prejudice toward figures in authority.

Furthermore, while the dental patient will, of course, present oral pathology which is due primarily to constitutional, local, and systemic factors, in all probability, the health of his teeth and their surrounding and supporting structures has been profoundly affected by psychological factors. Consequently, all too frequently, the local care of dental caries, of periodontal disease, of leukoplakia, and even of lichen planus does not eliminate these conditions. Indeed, suggestive evidence that emotional factors play a large role in oral dystrophies has been substantiated by research investigations. In this section an attempt will be made to explore and describe the psychological and physiological elements operative in the dental patient which relate to, initiate, or follow in the wake of dental disease.

Psychophysiological Mechanisms

Emotional factors may play a determining or provocative role in the alteration of normal physiological processes, such as salivary flow, endocrine function, resistance to infection, circulation, and other vegetative responses which, in turn, lead to oral pathology.

Salivary flow. Both laboratory and clinical studies have shown that patients with acute anxiety develop a dry mouth (i.e., salivary flow is meager or slow), and, concurrently, the tongue tends to stick to the roof of the mouth, the lips become dry, swallowing is difficult, and the taste buds lose their ability to distinguish food tastes accurately. Concomitantly, it has been shown that the rate of dental decay increases when salivary flow is sparse over long periods of time.

Other authors have correlated psychological dysfunction with increased salivary flow. More specifically, Finesinger and Sutherland postulated that emotional upset leads to increased salivation, and inhibition of affect produces a decreased salivary flow. There is ample evidence to corroborate this hypothesis. In cases of cerebral palsy, tonic impulses overflow into the autonomic nervous system, producing excessive salivary flow and a constant drooling, accompanied by uninhibited, uncontrolled tooth grinding. Again, even after they have been anesthetized, patients who are having their teeth prepared for fillings often release a 5- to 6-inch stream of saliva from the sublingual glands as evidence of tension.

Endocrine dysfunction. Estrogen is prescribed in small doses by gynecologists as postmenopausal therapy to maintain tissue tone and simultaneously evoke a healthier emotional status in their patients. The low production of this hormone is often associated with the gingivitis which accompanies amenorrhea in early adolescence. Thus, in this context, both gingivitis and amenorrhea may be attributed to endocrine dysfunction. More specifically, several authors have attributed amenorrhea to emotional conflict, which may affect pituitary gland function via the sympathetic nervous system and the hypothalamus. Since the pituitary gland controls cellular metabo-

lism, such conflicts may also alter carbohydrate metabolism and calcium metabolism. These metabolic changes affect mouth tissues, and this, in turn, induces gingivitis.

Resistance to infection. Patients who are acutely disturbed emotionally frequently show marked increases in gingival bleeding, ulceration, and salivation, with a marked tendency to soft tissue infection. This observation has been confirmed by research investigations, such as the study undertaken by Moulton, who concluded that emotional depression tends to decrease the body's defense against infection by decreasing the flow of antibodies in the blood stream, thereby facilitating bacterial infection. Thus, with specific reference to oral symptomatology, Schluger observed that the incidence of Vincent's infection reached epidemic proportions in a group of soldiers who were under extreme stress, nervous, and fatigued, and that the high incidence of the infection was due to these emotional factors, rather than transmission by direct contact. Other studies have supported this hypothesis concerning the relationship between necrotizing gingivitis and emotional upset. On the basis of these findings, it can be speculated that depressed patients tend to eat soft foods, which are easy to chew and swallow and might be described as emotionally comforting, rather than foods which are fibrous and coarse. However, this diet leaves the gingiva soft, pale, edematous, and vulnerable to infection by the flora of the host's mouth.

Circulation. Circulation is controlled by the autonomic nervous system. Thus, the patient who is anxious or tense may become flushed, and, in addition, his gingiva may feel full and bleed easily on instrumentation. In contrast, the depressed patient does not develop gingival bleeding, and the tissues remain pale, bluish, and edematous. Positive concern with self will manifest itself in regular active brushing and gingival stimulation and exercise. And once circulation is stimulated, the tissues will become firm, pink, and keratinized once again.

Chewing and swallowing. The function of chewing is learned by imitation of the dominant parent. Moreover, it is voluntary and, therefore, cannot be classified as an unconscious process. However, the terminal phase of swallowing, when the bolus strikes the rear of the soft palate, is performed involuntarily. And at this point the clinical manifestations of tension may find expression in globus hystericus, or the inability to swallow certain types of bulky or coarse foods. On the other hand, the patient may have a regurgitative response, so that masticated food is expelled involuntarily, leaving enough remnants to produce dental decay or sensitivity at the necks of his teeth. Gagging, which is a common physiological expulsive response to oral irritants, may have underlying emotional components. Psychiatric studies have shown that, in essence, gagging is the unconscious expression of aggression or hostility. While, on the surface, it is

an attempt to rid the body of repulsive or disgusting substances, specific aggressive fantasies or recurrent thoughts typically accompany the inability to retain food boli and give rise to gagging.

Physiological concomitants of psychological disturbance

Dental caries. Dental caries is undoubtedly due primarily to carbohydrate intake, together with susceptibility to bacteria. However, emotional factors may play an important role in the etiology of this condition, as illustrated by the following clinical example.

An Indian student, enrolled in the doctoral program of a leading law school in a large city in the United States, began to develop peculiar eating habits as a reaction to the stress of adapting to a new and alien environment and excessive scholastic demands. Moreover, his diet continued to reflect his increasing anxiety and sense of isolation, so that it was soon restricted to sugar-sweetened black coffee, doughnuts, and soft pulpy foods, eaten at irregular intervals. Within an 8-month period, rampant decay had set in, superimposed upon an angry looking marginal gingivitis. As soon as the dentist at the University's clinic indicated a personal interest in the patient's realistic problems, his dietary habits changed, and he was able to undergo extensive dental reconstruction. Thus, in this case, while the direct cause of oral pathology was excessive carbohydrate intake, it may be speculated that the patient's pathological eating pattern, in turn, represented a regressive reaction to a stressful situation.

Regressive tendencies are also manifested by other patient categories. For example, the strong complaints of some patients about the sensitivity of their teeth to sweets and thermal changes are quite out of proportion to the minor tooth decay detected by careful examination. Nevertheless, these patients continue to probe with a fingernail or hairpin, almost as though they wanted to prove to themselves, as well as the dentist, that they have a major dental problem. Obviously, such behavior can only be interpreted as an infantile bid for attention. On the other hand, their "pain" is real. For one, the pain threshold of these patients is low enough to register minor environmental changes. Second, the sensitivity of their teeth is enhanced by sucking motions. Recent investigations have demonstrated that rubbing dry filter-paper strips over decayed areas (which simulates sucking on teeth) tends to create a vacuum which pulls the odontoblasts of the pulp out of their normal positions; these changes in position are registered as pain. It has been suggested that this self-engendered pain is precipitated by and reinforces the patient's need to complain and to regress into infantile patterns of behavior.

Other patients continue to chew gum and eat chocolate and other kinds of candy despite the fact that they are well aware that these substances will destroy their teeth. This form of compulsive eating has been interpreted in the psychiatric literature as indicative of the patient's hostility to the outside world,

and as an attempt to alleviate his frustration, particularly his ungratified sexual desires.

Temporomandibular malfunction. Temporomandibular joint syndrome, which was formerly diagnosed as Costen's syndrome complex, has been clarified and redefined as a pathophysiological disturbance usually related to malocclusion of individual teeth or to a specific anlage of personality problems. Such patients suffer from "clicking of the joint," pain on translation into chewing positions, and pain in spasms of the encasing musculature because of neurotic overwork of the joint. The patient usually attributes the onset of the acute temporomandibular disturbance to the fact that he suddenly, and accidentally, opened his mouth very wide to bite a particularly thick sandwich or a large apple. Typically, the acute symptoms of pain, swelling, and impaired function last for 2 weeks.

In some instances, however, patients become wholly absorbed in the joint pain, center all their emotional concern in the situation, and continue to traumatize the joint by making unusual jaw movements or by opening their mouths wide when eating. The self-destructive, masochistic nature of such behavior is readily apparent. As a result, the patient may develop a chronic spasm, so that the jaw is moved to one side in a crippled motion. This perverted motion further aggravates the situation; one must now contend with the problem of treating the "tic." A variety of treatment techniques may be applied in such cases, including muscle relaxants, suggestion, placebos, heat to the part, rest, and, above all, discussion of the emotional factors which precipitated the patient's self-destructive behavior and the consequent aggravation of his condition. Adjustment of the occlusion should be done very cautiously, for varying the bite may serve to further center the patient's attention on his mouth. In that event, an occlusal neurosis may be triggered which is alleviated only with great difficulty.

With specific reference to the psychogenesis of this disturbance, it has been suggested that it represents the displacement of personality problems onto a specific symptom complex. More specifically, sexual dysfunction and oral-aggressive or paranoid personality organization have been cited as common psychic variables in this condition. It follows, then, that psychotherapy is frequently the treatment of choice for temporomandibular joint syndrome.

Periodontal disease. A brief summary of a research project designed to investigate the psychophysiological concomitants of periodontal disease is relevant in this context. The project was initiated by the author, with the collaboration of Ruth Moulton and William Theaman, and carried out at the Columbia University School of Dentistry. Twenty-three patients with periodontal disease of varying degrees of severity were studied; in each case, a consultant dentist took the patient's psychosomatic history; a periodontist established the diagnosis of the gingival

condition; and a psychiatrist interviewed each patient for the underlying dynamics and the personality picture.

The psychosomatic history obtained from each patient was based on the following outline.

- I. *Patient identification*
Name, age, sex, race
Present status (economic and social, occupational)
Family constellation (parents and siblings, marital partner (age) and children)
- II. *Presenting complaint*
Reason for coming to dentist
Patient's description of symptoms (Comment if description of symptoms is bizarre or exaggerated.)
Patient's emotional reaction to symptoms (Is it out of proportion? Is there embarrassment, anger, fear, self-pity, or pleasure in describing complaints?)
- III. *Present illness*
In what other ways (besides those cited above) does patient feel sick? (appetite, digestion, rest of mouth, fatigue, anxiety symptoms—not to be elicited directly)
When did illness start? Constant or recurrent? (Affected by what—e.g., tension, effort, etc.?)
Can onset be related to changes in general life situation?
Any earlier bouts of illness? Related to what?
Similar illness in family or friends?
How is illness affecting patient's life, in general?
What does patient think caused illness?
What are his expectations and/or fears regarding treatment?
- IV. *Developmental history, with special emphasis on the mouth*
Attention should be directed to:
Psychosomatic illnesses or symptoms related to anxiety and emotional conflicts
Emotional and social adjustment at each stage of development
Temporal relationship between significant physical symptoms and the life situation or specific emotional crisis which preceded or coexisted with these
 - A. *Infancy and preschool age*
Birth abnormalities (harelip, cleft palate, etc.)
Feeding (nursing, weaning)
Introduction of solids. (When? Results?)
Speed of eating; enjoyment or lack of it
Food preferences and idiosyncrasies (allergies)
Appetite (anorexia, need to be forced to eat)
Gastrointestinal disturbances (vomiting, colic, weight, bowels, bed wetting—until when?)
Oral habits (Finger-sucking? How much? How long? Nail biting? Teeth grinding? Chewing objects?)
Teeth (Teething early or late? Missing teeth?)
Chewing patterns? Biting excessive?
Extractions or injuries?
Second teeth (When? Unusual in any way?)
Early care of mouth (Age brushing started? Who taught? Reaction?)
Introduction to dentist? (By whom? General reaction to doctors and dentists)
General health (Illnesses and emotional reactions to these)
 - B. *Late childhood and adolescence*
Continuation of childhood oral habits (sucking, nail biting, oral breathing)

- Food habits (amount of food eaten)
Preferred foods, especially sweets
Eating between meals
Dental experiences (orthodonture, replacements, gum condition)
Patient's feelings about his appearance (especially facial. Did he feel awkward, ugly, shy, fearful, sexually unattractive?)
Any marked changes in life situation or feelings with onset of puberty?
- C. *Adulthood*
General health (significant medical history)
Present eating habits (Diet?)
Oral hygiene (Brushing?)
Gums (soft or hard, bleeding, sore, burning)
Salivation (quantity, foul taste?)
Dental experiences and emotional reactions to them:
Extractions, fillings.
Dentures or replacements (When made? Why?)
Previous dentist (Reason for changing?)
Changes in mouth (during pregnancy, menopause, tension)
Oral habits (smoking, chewing, biting objects, grinding, drinking, gagging, spitting, compulsive coughing)
Importance and meaning of mouth to patient

The research findings indicated that gingival bleeding was characteristic in cases of necrotizing gingivitis. In addition, on psychiatric examination these patients manifested strong oral dependency needs and concurrent anxiety. The most outstanding feature was the apparent fact that the disease had been precipitated by acute anxiety. The emotional factors leading up to the sudden outbreak of the infection had gradually gathered impetus over a period of days or weeks and were obviously related to the onset of the acute gingivitis. Most of these patients were also quite anxious and concerned about their condition, but this represented a secondary emotional response to physical illness which was superimposed on the deeper personality problems.

The two youngest patients in the group studied were girls. Both had left home for the first time to look for work, and in both cases, the separation had given rise to feelings of loneliness and anxiety—and concurrent longings for home and mother. Both these patients had developed acute attacks of gingivitis 2 months after they arrived in New York.

In a third patient there was a sudden recurrence of gingivitis 14 months after the original attack when she was dismissed from the social work training program in which she was enrolled. The patient had a strong impulse to return home but decided to stay in New York and take on a new job. Moreover, she had made this decision without discussing it first with her parents. Since this patient had been overprotected by her mother, this act of independence gave rise to a great deal of anxiety.

In four other cases, the precipitating conflict appeared, on superficial examination, to be sexual in nature. However, in one instance, the psychiatric implications of the patient's symptoms later proved more serious. A young man, who was subject to recurrent attacks of gingivitis, also complained that his mouth had a foul odor, which he attributed to the extraction of a wisdom tooth. His complaints had their onset after a traumatic sexual experience; specifically, the patient had been impotent with an older woman. Several months later, when there was still another recurrence of the gingival bleeding and complaints

of mouth odor, the patient also expressed his fear that he might be a homosexual. He was subsequently hospitalized with a diagnosis of paranoid schizophrenia. In light of these developments, the patient's complaint of mouth odor, which had absolutely no foundation in fact, was regarded as a symptom of the incipient psychosis.

Psychological Determinants and Effects of Oral Pathophysiology

The health of the teeth and gingival tissues may be adversely affected by a number of factors, all of which have emotional components.

Diet. The psychological significance of eating as a major source of emotional gratification has been described at length in the psychiatric literature. Thus, according to Ribble, "There is a great deal of pleasure associated with the function of the mouth area of the body. The lips and tongue are well supplied with nerve end organs, highly sensitive to food and drink. The greatest pleasure to the human being during his first year of life comes through this mouth area in the acts of nursing, eating and drinking." However, apart from the fact that it is a direct source of pleasure in later life, as well as infancy, eating may serve to ameliorate frustration, and in this capacity it may have psychopathological implications. The obesity which results from overeating is the visible manifestation of the patient's uncontrolled persistent frustrations and his neurotic attempts to eliminate them.

On the other hand, the patient with acute anxiety may limit his diet to the degree that he develops avitaminosis, or even anorexia. During periods of mourning, the depressed patient may limit himself to liquids or soft pappy foods; and the accumulation of such foods about the teeth over a period of time may initiate gingival softening and bleeding. Again, infantile dietary habits may persist if the patient is fixated at, or regresses to, an earlier stage of development. Typically, such patients select soft, mushy foods and avoid the need for heavy chewing, which is a requirement of the adult diet. However, this pattern of food selection may have serious consequences. For example, the geriatric patient, who "deliberately" loses his dentures so that he may have an excuse to adopt a more satisfying soft diet may soon become moribund.

Food and calcareous deposits. Depressed patients tend to permit food debris, stains, calculus, and bacterial plaque to accumulate over extended periods of time. And these encrusted and entrapped bits of matter result in halitosis, or mouth odor. Extreme self-neglect of this type may suggest self-destructive or masochistic attitudes, engendered by the patient's greatly diminished sense of self-worth.

Oral hygiene. Physical neglect of the mouth—omission of proper brushing, rinsing, and general debridement—is frequently due to feelings of depression or acute anxiety, or may be a general expression of the patient's rebellion against persons in authority, i.e., parents, teachers, physicians, and dentists alike. As mentioned earlier, insofar as dental decay may be

attributed to the patient's deliberate overindulgence in refined carbohydrates, it may represent an unconscious self-destructive act. Viewed from another perspective, however, the failure to assume responsibility for adequate personal care of the mouth is an expression of the oral passivity of the dependent individual. For these patients, the dentist represents a parent surrogate; consequently, his criticism and admonition gratify their desire for attention.

Nevertheless, dental caries, which is particularly prevalent during adolescence, is unattractive cosmetically. Adolescents and young adults are frequently embarrassed and disturbed by their unsightly, discolored teeth, and when the patient is excessively concerned with his personal appearance, this may have an adverse effect on his social adjustment.

In patients between the ages of 18 and 30, poor oral hygiene may result in periodontal disease of a necrotizing type. These patients are usually ashamed of the appearance of their gums, and they may harbor the unconscious conviction that they were contaminated by sexual contact. Again, the reaction is one of depression and melancholia. When the disease follows its usual course of remission and exacerbation, cancer phobia may intrude to the degree that the patient may be so panic-stricken that he is unable to function normally.

The Psychological Significance of Teeth

The particular psychological meaning the patient attaches to his teeth will, of course, directly effect his patterns of oral hygiene.

The prospect of losing a tooth may elicit a healthy emotional reaction in the child who associates this experience with growing up. And when this experience is given a similar interpretation by his parents, the child's sense of well-being and of personal progress will be reinforced. This is a basis for future attitudes of self-worth and, concomitantly, of self-care. In contrast, when the environment is a rejecting one, the child who accidentally breaks or chips a tooth may be strongly admonished or punished by his parent. However, this will not increase his concern with the care and preservation of his teeth. Rather, such a reaction will elicit feelings of guilt, anger, and self-blame, which are the bases of self-destructive future attitudes. Thus, according to psychoanalytic theory, when a child is emotionally insecure, he may dream that he has lost his teeth as an expression of his fear of death, punishment, or castration.

According to the old adage, the loss of a tooth means the "loss of a friend," but for the adult it may also mean the loss of strength, i.e., virility. On the other hand, the neurotic patient may derive a masochistic satisfaction from the extraction of his teeth. More specifically, such patients demonstrate an unconscious need to be punished. In other words, these patients deliberately seek pain in dental treatment for they feel they are getting just what they deserve.

Again, extraction and restoration may be compli-

cated unduly by the patient's atypical psychological reaction to these procedures.

Weiss and English have described a man who had to have six teeth extracted at the same time. The patient became very angry after his teeth were extracted, and he was quite unable to tolerate the bridge which was to serve for the teeth he had lost. The patient's extraction had served to remind him that his father had died of a coronary thrombosis shortly after some dental extractions. More important, this memory had reactivated feelings of guilt, for the father had agreed to undergo oral surgery largely at the patient's insistence. He defended himself against these guilt feelings by a strong sense of identification with his father and, concomitantly, intense feelings of hostility toward the dentist. The patient was able to accept his bridge as an integral part of himself only after he understood and was able to resolve the psychological conflicts surrounding the extraction of his teeth.

Finally, the menopausal woman may regard the loss of the last permanent teeth and the insertion of dentures as the "last straw," so to speak. And this reaction may be followed by withdrawal or chronic invalidism; the patient's depression may be so severe, she may even attempt suicide. Other patients, whose immediate reaction to this experience is not so dramatic, may begin a soft, pappy diet lacking in nutrition, evidence a progressive deterioration, and ultimately develop anorexia.

Oral habits. Oral habits which are common phenomena in childhood, such as thumb sucking and nail biting, may distort dentition and produce malocclusion if they persist beyond the age of 5 or 6. However, only two-finger sucking, and the presence of adenoids when they impede breathing, produce facial and dental deformities. On the other hand, Pearson has observed that parental management which results in the sudden forceful cessation of an oral habit may produce stuttering, antisocial behavior, enuresis, and tongue thrusting.

With respect to the etiology of such oral habits, it has been postulated that inadequate sucking of the nipple, due to the use of nipples with large openings which require little or no effort on the part of the infant, may give rise to a persistent need for oral gratification. Inadequate sucking may also have broader psychological implications for personality development. Thus, Abraham hypothesized that the premature curtailment of breast-feeding in infancy will produce a specific type of adult personality. Typically, these individuals are selfish, jealous, greedy, never satisfied, always discontented, easily offended, and preoccupied with the idea that they have been deprived of their "rights." Sucking time is an equally important variable in the genesis of these oral habits. And, in addition, inadequate sucking time may produce underdeveloped hypotonic oral musculature, poor speech patterns, and an inability to grasp objects properly with the lips.

Thumb sucking. Dentists and psychiatrists have been concerned with the problem of thumb sucking or finger sucking for many years. It has been suggested that finger sucking fulfills a basic sucking need and is

a normal source of oral organic pleasure. It has also been suggested that when thumb sucking persists beyond the age of 4, it may reflect a lack of maternal warmth and attention during the earliest feeding periods. However, as mentioned above, the dangers of strong interference with the habit on the part of one or both parents have been stressed. Such interference may evoke hostility against the parent. The habit may then be overevaluated as an expression of that hostility and, in that event, persists beyond the stage at which it would normally be renounced. Thumb sucking is then used by the child as an avenue of retreat from reality into a world of fantasy, an escape from the unpleasant realities which disturb his sense of well-being.

Various techniques have been recommended for the alleviation of thumbsucking. (1) When sibling rivalry appears to constitute a problem, the child should be encouraged to talk about his feelings toward his siblings. (2) Special care should be taken to make sure that the child is well fed and well nourished. (3) Toys or pacifiers, or rusks, toast crusts, or foods which require heavy chewing should be given to the child as a possible substitute for the thumb at those times of the day when thumb sucking usually takes place. (4) The child who indulges in excessive thumbsucking is usually a lonely child who is frequently left to his own resources. Such children need more contact with their peers, as well as the adults in their environment. In particular, the child should receive special attention at bedtime, to minimize his feelings of isolation, loneliness, and anxiety.

The habit may be discussed openly with older children, and clinical experience has shown that if the dentist or orthodontist has established a sound relationship with his young patient, the child himself may ask for his help in breaking the habit. In such cases, parent education is a vital aspect of the retraining of the patient. Parents must be made to realize that thumb sucking does not involve any moral issue and that, above all, the child should not be punished for the habit.

Nail biting may follow the curtailment of thumb sucking. It has been speculated that nail biting expresses not only the need to persist in finger sucking, but also the child's feeling of hatred for the parent who has forbidden the finger habit.

In the adult, persistent biting of a pipe stem, constant candy sucking or gum chewing, and even mustache twirling have been cited as extensions of the thumb sucking of childhood. In other words, these habits might be described as socially acceptable means of gratifying the infantile sucking needs which have persisted in the adult. Viewed in this light, one can better appreciate the difficulties involved in giving up smoking. For the addiction to tobacco has deep psychological roots, namely, the patient's strong impulse to gratify his unconscious oral needs. It becomes equally apparent that these patients can rarely break such persistent oral habits by conscious will

power, no matter how sincere and conscientious they may be in their efforts to do so. When these habits may be attributed to distortions in the mother-infant relationship, psychological intervention is usually a prerequisite for their permanent eradication.

Bruxism. Bruxism refers to the habits of clenching, clamping, and grinding the teeth. Tooth grinding is usually a nighttime activity and may be performed in the patient's sleep; clenching and clamping are generally considered to be daytime activities, although they may be conscious or unconscious. The persistence of these oral habits imposes excessive stress on the gingivas and their encasing bone, producing swelling, fibrosis, and improper soft tissue architecture. In addition, this may have a resorbent effect on the underlying bone, leaving the necks of the teeth exposed. A number of contributions to the psychiatric literature have dealt specifically with the psychogenesis of tooth grinding. It has been speculated that grinding represents the unconscious expression of repressed aggression and rage. Furthermore, clinical studies have shown that at times this aggression and rage are so intense that some patients almost push their teeth out of their sockets. In accordance with this hypothesis, the etiological climate which produces this organ neurosis is established in early childhood when excessive moral restrictions prohibit any expression of hostility or anger on the part of the child.

The success of the dentist's efforts to reconstruct the mouth of such a patient will require the patient's insight into the emotional factors which have produced the habit and also the removal of these factors. In the meantime, the dentist can only provide the patient with a thin plastic protector to cover the biting surfaces of the teeth which the patient can insert in his mouth at night when the habit is most active. Obviously, this device cannot correct the condition; rather, it serves a preventive function in that it postpones the ultimate breakdown of the mouth which is inevitable unless the patient receives psychological help.

Bruxism may appear in modified form as excessive gum chewing, nut cracking, crunching of hard candy, chain smoking, and clenching a pipe stem between the teeth. All of these neurotic manifestations are possible substitutes for tooth grinding. It has been hypothesized that all these habits have as their basis maternal rejection, which may have taken a variety of forms, in early childhood. Similarly, all these habits are directed toward the same goal. They seek to satisfy the unfulfilled needs of infancy by providing immediate, highly satisfactory oral gratification. When the patient's immature habit is intermittent or, more accurately, when it appears and disappears in cyclical fashion, one might speculate that it is triggered by current conflicts which reactivate early feelings of inferiority and rejection.

Psychological reactions to morphological abnormalities. Major disfigurement of the face or

mouth will, inevitably, have a profound emotional effect on the patient. Harelip, cleft palate with accompanying disturbances in speech and swallowing, anodontia (agenetically missing teeth), buck teeth, rabbit bite (underslung mandible), disturbing tooth forms or positions, and tooth discolorations (green stain, black stain, tobacco stain, pitting of the enamel) are commonly encountered in dental practice. The social stigma attached to each of these problems may give rise to serious disturbances in ego functioning and concomitant character disorders. For example, the patient may overcompensate for his physical disfigurement by indulging in impulsive, asocial behavior. The dentist can try to prevent the patient's psychopathological reaction to his affliction by support and reassurance. He can also try to provide more tangible help, namely prosthetic devices and orthodontic appliances.

His efforts will not always be successful, however. In some instances, the wearing of appliances has a positive therapeutic effect, in that the patient feels free of anxiety and even develops a sense of well-being for he now feels accepted as part of his peer group in school or in the community. In brief, in a sense, the patient has had his "face lifted," and in the process he has been transformed into a socially acceptable, and even attractive, person. On the other hand, some young patients consider the wearing of such appliances a further disfigurement; and under such circumstances, their insertion in the mouth is likely to cause great anxiety. Obviously, before initiating treatment, the orthodontist would do well to take a history of the patient which is sufficiently detailed to enable him to assess the patient's attitudes toward the appliances and the long term therapy involved.

It may also be assumed that morphological changes in the mouth which are associated with certain chronic syndromes will have a significant effect on the patient's psychological functioning. These would include the unusual and rather bizarre facial changes which occur with rickets (i.e., quadrilateral form of the head, irregularity of dentition, and hypoplasia or pitting of the tooth enamel); achondroplasia, a disturbance of bone and cartilage formation of genetic origin (i.e., saddle nose, small face, and prognathic mandible, giving the appearance of a pushed in face); acromegaly; Paget's disease; leontiasis ossea; Albers-Schönberg disease; microcephalus; pituitary dwarfism; and muscular dystrophy.

Dental Treatment of the Psychiatric Patient

The phobic patient. Phobias, which are an expression of morbid anxiety, may interfere with the effectiveness of dental treatment. For example, in the dentist's office, the phobic patient may repeatedly express his fear of infection from dental instruments which he is convinced are unclean, frequently demand that the dentist wash his hands, and check the freshness of the towel placed about his neck. The phobic pa-

tient may also express concern that the last patient who sat in the chair left something behind on the arms or seat that might contaminate him and demand that the chair be wiped with a fresh towel. The female phobic patient may fear the taste of blood in her mouth, just as she fears the blood of the menstrual flow; to these patients, all the fluids of their bodies are "dirty," and they frequently engage in elaborate rituals to "cleanse" themselves of normal secretions.

As might be expected, the dental treatment of the phobic patient presents serious problems. It is time-consuming, and their suspicions and innumerable questions may sorely tax the dentist's patience. The dentist should be prepared to refer such a patient for psychiatric help, if his phobic behavior seems to indicate strong paranoid trends, if he is unduly agitated, or if there are other indications that a psychotic breakthrough is imminent.

The hypochondriacal patient. The dental hypochondriac continues to complain of symptoms, pain, discomfort, poor function, to protest that there is "something wrong," in his mouth, despite the fact that repeated, thorough examinations fail to uncover pathophysiological changes in the mouth. However, these patients cannot accept the dentist's reassurance; in fact, nothing can shake their conviction that they will lose their teeth shortly, that the color of their gingiva is conclusive proof that they are very ill.

Hypochondriasis has been ascribed to the deprivation of love during the early crucial years of life. This patient population has also been characterized, in general, as lonely, fearful, unhappy, irritable, and depressed. With respect to his physiological functioning, apart from his complaints about the condition of his mouth, the hypochondriacal patient belches frequently, has fullness after meals, and suffers from general gastrointestinal discomfort for which there is no detectable physical or physiological basis. If the dentist sees such a patient in middle age, when the distress has continued over a considerable period of time and there is intense concern with bodily functions, he is dealing with the syndrome of hypochondriasis. Such a patient requires maximum reassurance and minimal dental care. For, in fact, any reconstructive dentistry, no matter how competent, will be regarded as inadequate by the patient. In fact, the patient may be so pessimistic about the outcome of treatment that he may develop a serious depression, to the point where he may even harbor thoughts of suicide.

The hysterical patient. The expression of a mental conflict which is unacceptable to the conscious mind by means of a physical symptom, such as a paralysis, a tic, or a vague pain which has no detectable physiological basis is not uncommon in psychiatric patients. These hysterical or conversion systems are the unique creations of the patient and, in a sense, are invented by the unconscious for the outward expression of particular repressed psychological material.

Thus, the frustration of deep-seated sexual or inter-

personal needs may underly such somatic complaints as headache, tachycardia, gastritis, and colitis, or the mouth and its parts may be used for such abnormal expression. Nail biting, thumb sucking, chain smoking, and excessive gum chewing may be hysterical expressions of such unfulfilled needs.

The hysterical patient may also complain of vague pains about the mouth which radiate through the tissues in a disparate, confused neurological pattern.

A male patient hospitalized with chronic rheumatoid arthritis involving most joints also complained that he was unable to open his jaws to eat. During the initial interview, the patient also revealed that the inability to move his temporomandibular joints bilaterally had produced anorexia. Radiographs of the condyles revealed no ankylosis, no spur formation, no flattening of the condylar head. Examination by an oral surgeon suggested that the malfunctioning of the joints was attributable to fibrous union of the condylar capsule to the glenoid fossa. The patient was duly prepared for surgery, in order to perform a bilateral condylectomy and thereby free the ramus sufficiently to permit active chewing. As general anesthesia was being induced, the mandible dropped open to reveal soft, flexible tissues. Manual jiggling of the mandible revealed no unusual restriction of movement. After consultation with the hospital's psychiatric staff, the diagnosis was changed accordingly to hysterical closure of the mandible in a patient with a chronic anxiety neurosis.

Hysterical adolescent girls and menopausal women who give a history of frigidity or a complete lack of sexual experience or contact, typically present burning tongue symptoms, and/or flashes of pain in the palate or cheeks. In contrast, the male hysteric rarely presents such symptoms. When he does, however, one usually elicits a history of impotence. Other patients in this category complain of vague dull spots about the mouth, extremes of wetness or dryness (xerostomia), and the inability to swallow (globus hystericus), all of which are without visible somatic bases. By their very nature, the specific psychological factors which precipitate a hysterical reaction present a serious—and frequently insurmountable—obstacle to successful dental treatment. For one, the hysterical patient's fear of pain is so acute as to reach panic proportions. As a result, he will fight the dentist's attempts to insert any type of instrument into his mouth. Secondly, such patients frequently have unconscious fantasies of rape or seduction by the dentist, who may represent an attacking father. Concomitantly, the movements of the dentist's fingers about the mouth may be experienced as erotic and thus may threaten further the hysterical patient.

The Dental Treatment of Children

The role of the mouth in psychosexual development. During infancy, the mouth plays a crucial role for it is the vehicle which enables the infant to fulfill his basic physiological needs and permits his earliest emotional expressions and gratifications. At birth, the fifth and seventh nerves of the mouth are fully developed and prepared to perform the mouth's most important function, the sucking reflex. The infant whose sucking reflex is impaired, either neurologi-

cally, muscularly, or emotionally, may demonstrate the physical or psychological consequences of such impairment at later stages of development.

The infant indulges in three types of oral activity:

(1) nutritional, which includes tasting, chewing, partial digestion, preparing the bolus for swallowing; (2) emotional, i.e., smiling, kissing, crying, spitting, vomiting, and gagging; and (3) intellectual, i.e., nonverbal sound making. Concurrently, during infancy, the facial and perioral musculature develop, determining the ultimate shape and form of the lips, teeth, and affecting mimetic expressions.

The mouth is the first source of sexual gratification. The separateness of the nipple and breast from the infant provide the basis for his first awareness of the separateness of self from the outside world. The proximity of the breast and the warmth of the milk and the skin are his introduction to comfort, love, pleasure, and predictability. On the other hand, absence of the breast, irregularity of feeding, poor feeding, and impatient handling during feeding, individually or in combination, are equated with frustration, anger, anxiety, and insecurity. The active sucking of the infant, the redness of his face, the grasping hand, the sounds of satisfaction, and the sleep which follows have been likened to the adult sex act in all of its components. Through the mouth—the tongue, the developing teeth, the buccal mucosa—the infant reaches out to establish his first relationship with his mother. In this way, the mouth serves as the vehicle for introjective and extrojective acts which clarify the infant's relationship to the world around him. The mouth takes in air, food, and objects which are evaluated on the basis of their size, shape, and taste.

The mother, in turn, can assess the quality of the infant's relationship to her and the world around him from his sucking, lip movements, the sounds he makes, from his salivary output, and gagging reactions. The mother who is unable to interpret these phenomena on a nonverbal, unconscious level and thereby to understand what is happening between her and her infant is unprepared to establish a full active relationship with the infant. Concomitantly, the mother who is preoccupied with her own conflicts, fears, worries, and anxieties may lay the foundation for emotional difficulties in the infant. The infant interprets hasty, inadequate, or careless feeding as evidence of rejection by the mother, and these feelings of rejection, in turn, may give rise to inordinate sucking needs; unfulfilled sucking needs may produce thumb sucking or finger sucking, and, as mentioned earlier, when these oral habits persist, they may ultimately result in deformities in dentition.

In addition to the malocclusion, the infant whose oral needs were not gratified may become the obese adult, or the patient who attaches extraordinary emotional and sexual value to his mouth. Abraham characterized the "oral" personality as demanding, whining, and complaining. Spitting, gagging, mouth ties,

and other typical habits reflect their feelings of disgust, displeasure, and dissatisfaction with their lot in life. For such people, the mouth serves as a medium for the communication of negative attitudes; these are the oral-aggressive and oral-dependent personalities who have remained emotionally fixated at an oral-dental level. Inadequate oral gratification in infancy may produce a tendency toward sadistic lashing out in later life. On a primitive level, the teeth are used for biting; on a more sophisticated level, words are used for verbal attack. The dirty mouth (and discolored teeth) and the lack of regular dental care reflect the masochistic attitudes of the orally deprived personality who, because of his lack of self-esteem and feelings of rejection, continues to seek out self-destructive situations.

Treatment techniques. In view of the crucial role of the mouth in psychosexual development, some degree of psychological insight is clearly a prerequisite for effective dental treatment of the child. Ideally, the child makes his first visit to the dentist between the ages of 2 and 3. This is a training period: the child is learning toilet habits, table manners, and how to dress himself. And because he seeks the love and recognition of his parents, the child goes through this training quite willingly. The first visit to the dentist should be part of this training.

The child should be prepared for his initial visit to the dentist by some discussion at home and by first attempts to teach him to brush his teeth. He may even play "going to the dentist." Kits sold in toy stores which are equipped with dental "tools" made of plastic which resemble the actual instruments in the dentist's office provide a good initial exposure to the treatment situation. When the child arrives at the dentist's office, it may be helpful to permit him to examine the equipment and to "clean" his teeth, so that the dentist's hands, voice, the dental chair, the light, and the mouth mirror and explorer become familiar and are no longer a source of anxiety.

The mother may be present during this first visit. However, only hand instruments should be used, and the simplest procedures performed, even if decay is present. The dental drill should not be employed for fillings until the child is older and can understand just what "making a filling" involves. In all probability, he will reach this stage at the age of 4 or 5. At this time, the dentist should administer an injection slowly, deliberately, and without any pressure, after using a topical anesthetic.

The effects of the anesthesia should be described before the actual symptoms of numbness set in. In fact, the child should be prepared beforehand at all times for the usual sequelae of treatment. Although the mother need not remain in the treatment room after the initial visit, she should be within calling distance. It is quite proper to reward the young patient for being treated. In giving the child a small present, such as a balloon or a plastic toy, the dentist assumes

the role of the good father who gives the child comfort and pleasure, as well as dental treatment. These measures avoid anxiety and help to prepare the child patient for more extensive dental care in the future. More important is the fact that rage and resentment are avoided, and dental "pain" is dealt with in a way designed to engender positive, healthy attitudes. Pedodontic offices which cater exclusively to the child dental patient have an advantage in that the furniture, decor, books, and toys combine to produce a more natural and normal setting for dental treatment.

With the end of infancy and the onset of childhood and adolescence, there is a change in the psychological significance of the oral zone. The growing child willingly accepts the social mores of his parents and attempts to adapt to their social criteria. At this stage, permanent teeth begin to erupt, many teeth are missing, and the new ones seem to be out of line. If the child is accepted warmly and wholeheartedly by his parents, teachers, and peers during this "ugly duckling period," his emotional development will be perfectly satisfactory. If his parents express constant disapproval, if his facial appearance is ridiculed by his peers, the child may regard himself as despicable and useless. And he may begin to regard his mouth and ugly teeth as the chief source of his emotional difficulty. He may then become neglectful of home care and tooth brushing and may even regress to "childish" patterns of dependency. Rampant dental decay and gingivitis may ensue.

The dentist who is aware of the emotional implications of this period for his child patient will encourage regular visits, will form a firm friendship with the patient, and will be fully familiar with his hobbies, sports, interests, and dietary habits. Sugar intake should be discouraged, and the child should be encouraged to eat a balanced diet. He should be rewarded for good oral hygiene, but, above all, the dentist should represent a sympathetic, understanding figure rather than a critical authority. Father substitutes, such as the teacher, the pediatrician, and the dentist can help the child through this awkward period. It is usually wise to postpone orthodontic care, so that the patient need not suffer further embarrassment about wearing metal, banded appliances.

Adolescence is an even more difficult period of adjustment, and once again, dental problems may be intimately related to the emotional problems of the emerging young adult. The adolescent does not yet have all his permanent teeth. Retention of deciduous teeth in this period makes the mouth unsightly and embarrassing and gives rise to feelings of awkwardness, self-consciousness, or anxiety. The adolescent's rapid growth is accompanied by an increase in food intake. Enormous amounts of carbohydrates are ingested, so that the highest incidence of dental caries occurs during this period. Malocclusions, rat-bite, retracted mandible, and missing teeth will, of course, contribute to the adolescent's sense of inadequacy.

In addition, the adolescent brings to the dental treatment situation his fears and concern about nocturnal emission, menstruation, pubic hair, long limbs, and social adjustment. Consequently, if treatment is to be effective, it must reflect the dentist's deep sympathetic understanding of the problems faced by his patient. The patient should be addressed as an adult and his opinions valued seriously, and he should be informed of all the dental work that is necessary. If possible, the patient should be encouraged to work so that he can pay part of his dental fees. The patient's willingness to accept his responsibility indicates an ability to meet adult problems, and the dentist will be associated with his feelings of pride in his accomplishment. Finally, the cosmetic, health-giving, preventive value of dental treatment should be emphasized by the dentist.

The prepsychotic adolescent may present a serious problem in the dental treatment setting. The morose, withdrawn adolescent should be injected with an anesthetic slowly and carefully, and extractions are best done under a local anesthetic in such cases. In fact, general anesthesia is frequently threatening for the adolescent and should be avoided whenever possible. When there is some indication of psychopathology, the adolescent patient should be referred for psychiatric consultation.

The Dental Treatment of Adults

The psychological meaning of the mouth. Psychologically speaking, then, the mouth is related, either directly or symbolically, to the major human instincts and passions. By its function, it preserves; it feels and recognizes through its feelings; it participates in mating; it expresses love, as well as hate and anger, the desire to receive and express pleasure on the one hand, and the wish to injure and to kill, on the other.

The taking of a good dental history may elicit unusual expressions of these emotions and their etiological role in relation to dental dysfunction. Such a history may also permit a fairly accurate prediction of the patient's reaction to treatment.

Psychological reactions to treatment. Most adult patients are afraid of dental treatment, although they are well aware of its importance. The patient brings with him to the dentist's office his reactions to dental pain, to dental care, and to the dentist himself; he brings anxiety and fear and his attitudes toward figures in authority. The anticipation of pain or the removal of a tooth may be felt as an invasion of the patient's integrity or physical wholeness. In other words, the patient's fear of extraction may, in fact, represent his fear of castration, that is, of the loss of a precious sexual part. Consequently, the patient's anxiety with regard to dental treatment may exceed his fear of many other forms of treatment.

The patient's attitude toward the dentist is an ambivalent one in which feelings of fear and hatred

for the attacker coexist with feelings of respect and love for the healer, the "all-knowing father" who can treat tissue breakdown in the mouth and cure it. More specifically, on the one hand, the patient endows the dentist with mystical powers and the ability to ward off and control dental ills. On the other, the patient has feelings of anger and hostility toward the dentist because he causes pain and discomfort and because dental treatment is costly and time-consuming. These feelings are the basis for the patient's attitudes toward dental burs, injections, the sound of steel against teeth, blood and saliva; in each case, they require careful attention and deep understanding by the dentist.

The dental patient whose mouth is decayed feels that he has been betrayed by his own body, and he is outraged that his body should do this to him after he has given it such good care. The emotional end product is anxiety. In the psychologically "normal" patient, the anxiety is short-lived and realistically related to the actual toothache or the pain of treatment. The patient learns from experience that the use of drugs and anesthetics can make treatment brief and tolerable. The patient who required multiple extractions and found that his treatment involved only minimal discomfort because he received an intravenous anesthetic may emerge with comparatively little fear of future dental experience.

The patient who has an abnormal anxiety reaction to dental treatment may consistently procrastinate when he must make a dental appointment, and once the appointment has been made, he may be unable to sleep the night before, arrive late for his appointment, or even faint on his arrival at the dentist's office. Each visit may be an ordeal for the patient. His predominant feelings are resentment and hostility, together with a sense of panic. These feelings are manifested in the physiological reactions commonly associated with anxiety, e.g., sweating, pallor, rapid heart beat, hand tremors, and dry mouth. This anxiety response is the key symptom complex in the dental patient, and it is this emotional pattern which must be understood and resolved by the dentist.

The adult's feelings about the value and meaning of the mouth differ markedly from those of the infant and the child. And his specific reactions to treatment will reflect these feelings. Thus, the patient may feel a sense of helplessness when he is asked to "open wide," which may be attributed to an unconscious fear of sexual attack. Other patients feel that work in the mouth interferes with their breathing; consequently, they harbor the unconscious fear that dental treatment may endanger their lives. The narcissistic patient, who regards his teeth as objects of beauty, may resent any procedure which may disturb the status quo; accordingly, dental treatment is considered to represent a potential threat to his appearance, his vigor, and even his sexual vitality.

Even as he continues to do so, the adult patient

may feel inordinate shame because he has neglected his mouth, and he may hesitate to expose the ugliness of his teeth because he is well aware that they represent his negative attitudes toward himself. As mentioned earlier, such a patient may regard the discomfort or pain which may accompany dental treatment as justified punishment for his biting impulses, his hostility, and his sadistic sexual fantasies.

In summary, then, the adult dental patient with oral pathology of varying degrees of severity may overreact to the degree that he feels his mouth is disintegrating, and that his sense of wholeness and completeness has been disturbed. The discovery that his teeth are loose may so weaken his sense of security that a general regression will begin to take place. The manifestations of this regression may be limited to the dental treatment situation, or they may persist outside the treatment setting. In such patients, childlike responses are substituted for more mature patterns of behavior. Specifically, the patient is totally preoccupied with his own well-being, to the exclusion of everyone else in his environment. In addition, he may become very dependent on the dentist, particularly if treatment extends over a period of time, as it must for dental reconstruction, for example.

Psychodynamics of the Dentist-Patient Relationship

Fear is fundamental to dental treatment. The patient is the recipient of the discomfort, and the dentist is the aggressor, the one who metes out the pain. Yet, despite the fact that he operates under a severe psychological handicap, the dentist must establish a positive, enduring relationship with the patient, which will enable him to treat the patient effectively over a period of months or years.

To establish such a relationship, the dentist must be able to function competently, that is, to make calm judgments and decisions regarding therapy in a climate filled with anxiety. When this anxiety is acute, the dentist must be particularly careful to maintain an objective attitude toward the patient, to observe, listen, and evaluate without becoming "involved" in the patient's neurosis. Nor is the dentist immune from psychological conflicts or distortions in his emotional reactions. In fact, the very nature of his professional duties may give rise to masochistic or guilt feelings. Consequently, it is important that the dentist has some insight into the nature of these conflicts and some understanding of his unconscious needs. For once he has acquired such insight, he can lay them aside and treat the patient calmly, sympathetically, and with minimal pain. Concomitantly, once he is convinced that his own psychological problems are not interfering with treatment, it will be easier for him to accept the fact that he is not personally responsible for the patient's negative reactions to the treatment situation.

The dentist is further handicapped in that he cannot use standard techniques in his effort to establish a "good" relationship with the patient. That is, the dentist should not suggest that there will be no pain; he should not deprecate his patient's reactions; nor should he be oversolicitous. The patient is likely to interpret false reassurance as indicative of the dentist's contempt for him; and the dentist's indifference to his discomfort may be regarded as an expression of his hostility. Instead, the dentist can implement such a relationship by demonstrating his sensitivity to the patient's reactions to the lights, the chair, the towels, the instruments, the telephone interruptions, the dentist's hands, the slightest clumsiness, the condition and position of the headrest, the doctor's gown, and, finally, by his awareness of the patient's tension.

The dentist must divide his attention between the mechanical procedures he must perform and his patient's subjective state, and, actually, the latter represents the more difficult aspect of the work. It is quite impossible to judge the presence of tension and anxiety from the patient's facial expression or his subjective reports. It is much safer to assume that anxiety is an inevitable reaction to dental treatment and proceed from there on. Such an attitude will initiate and enhance the dentist-patient relationship over many years.

Suggested Cross References

For more detailed discussions of the psychiatric disorders mentioned in this section, including hysteria, hypochondriasis, schizophrenia, and thumb sucking, see Sections 23.2 and 32.3, Chapter 15, and Section 40.6, respectively. The psychoanalytic concept of "orality" is further discussed in Chapter 6, while the other sections in Area C present alternate concepts re-

garding motivation and personality development. Information regarding the psychiatric examination and descriptions of the various psychiatric symptoms may be found in Area E, on psychiatric assessment.

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THE PSYCHIATRIC SYNDROMES

Chapter 32

Psychiatric Disorders Not in Standard Nomenclature

32.1 UNUSUAL PSYCHIATRIC DISORDERS AND ATYPICAL PSYCHOSES

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At the end of the 19th century, Kraepelin's bold masterstroke cleaved the huge block of functional mental diseases into two well shaped and clearly defined endogenous psychoses: schizophrenia—or, as he called it then, dementia praecox—and manic-depressive psychosis. It soon became apparent that this division accounted indeed for most of the functional psychiatric disorders, but not for all of them. There remained a good number of smaller fragments that had their own characteristics, their specific forms of crystallization that could not be fitted easily into the great dual system. These were the unusual psychiatric syndromes—the rare, the exotic, and the atypical mental disorders.

Like most unusual things, these syndromes are often less important but more dramatic and interesting than the common varieties. Many psychiatrists may never encounter a patient showing some of these syndromes, but a comprehensive presentation of psychiatry must include at least a brief review of these interesting varieties of deviant human behavior.

Classification

The following classification of unusual psychiatric syndromes is proposed: (1) Situation-specific syndromes. Behavioral manifestations that occur only in a certain constellation of environmental conditions that are essential factors in the pathogenesis of the syndrome. (2) Idiopathic syndromes. No special conditions are known to give rise to the syndrome other than a postulated constitutional predisposition and certain hypothesized psychodynamic factors. Under the heading idiopathic, one may further distinguish autonomous and associated phenomena, depending on

whether the observed syndrome presents itself as an isolated phenomenon or as a particular modification of another mental disorder. (3) Culture-bound syndromes. Psychiatric syndromes restricted to specific cultural settings. (4) Atypical psychoses. Psychotic syndromes that seem to belong to a well known diagnostic entity but that also show certain symptomatic features which are difficult to reconcile with the generally accepted typical characteristics of this diagnostic category.

Situation-Specific Syndromes

Ganser's syndrome. The German psychiatrist Ganser published in 1898 a report about patients who showed a peculiar hysterical twilight state characterized by what he called "passing by" or "passing beside the point" (*Vorbeigehen*) whenever they were replying to questions. For example, a 22-year-old steel worker presenting this syndrome was asked how many windows there were in the room—there were two—and he answered, "Three." He was asked his age, and he answered, "Forty-eight." He was asked what time of the day it was—it was noon—and he answered, "About 9 P.M." The most remarkable feature in this psychiatric disorder is this phenomenon of the patient's giving an utterly incorrect and often ridiculous reply, although it is quite clear that he has understood the sense of the question. Furthermore, although these patients, according to the information they give, often appear to be disoriented in time and place, their general behavior usually leaves no doubt that they are alert and not confused in the usual sense; they are capable of comprehending the meaning of questions, and they behave, in areas other than the verbal, like persons who are capable of appreciating their environment.

There has been a good deal of discussion in the literature about the similarity of the speech of these patients to "talking past the point" (*Vorbeireden*), which is most typically a manifestation of negativism in catatonic patients. However, the incorrect answer of the catatonic is the first thing that comes to the pa-

tient's mind; it lacks precision because of defective inhibiting processes of the associative apparatus responsible for the selection of appropriate concepts. On the other hand, a patient with Ganser's syndrome gives the unmistakable impression of selecting purposely—though unconsciously—the wrong answer. In other words, the schizophrenic talks past the point by default, and the patient in a Ganser state talks past the point by design.

Auditory and visual hallucinations, hysterical analgesia, true spatial and temporal disorientation, circumscribed amnesia, and lack of insight may also be associated with the Ganser state. It seems, then, that this syndrome frequently bears the marks of a psychosis. Though many authors agree with Ganser's original diagnosis of a hysterical dissociative state of a special kind, Goldin and MacDonald point out that "all of the cases reported since the early German literature appear to have had some kind of psychosis in addition to the Ganser state."

In the differential diagnosis one must consider schizophrenic thought disorder, epileptic twilight state, toxic-organic confusion, and malingering. In most cases it is not difficult to arrive at the proper diagnosis if one carefully observes and analyzes the patient's symptoms in the context of his premorbid personality make-up and his immediate life situation.

Epidemiology. Ganser's syndrome is a very rare disease and is most frequently observed in prisoners. Wertham referred to the Ganser reaction as a "hysterical pseudostupidity which occurs almost exclusively in jails and in old-fashioned German psychiatric textbooks." The first part of this statement is partly correct, and the second part may be true. Old-fashioned German psychiatric textbooks gave more room to careful psychopathological description and analysis than many modern publications do. Several reports have been justly criticized by reviewers because they were based on incorrect diagnoses and discussed cases that did not truly represent Ganser's syndrome.

Etiology. Ganser's syndrome is a functional psychiatric disorder that occupies a strange intermediate position between psychoneurosis and psychosis and between disease and malingering. It may be thought of as a rare, hysterical manifestation, a dissociative state in which the central phenomenon is the patient's unconscious attempt to mimic the disorganized behavior and thinking of a psychotic patient according to the naive and personal mental image he has of madness. The secondary gain of the patient seems to lie in the fact that he escapes a threatening or frustrating reality by conveying the impression of being insane to the people in his environment.

In almost every case the patient presenting this syndrome finds himself in a confining situation. This may be due to actual imprisonment or, as in the case of the young man mentioned above, due to the voluntarily accepted chemical restraint of an alcoholic who is undergoing disulfiram (Antabuse) treatment or,

as in another case, due to the restrictive anxiety provoked by the threat of impending blindness in a patient with a serious eye disease. The last patient was a quiet, chronic schizophrenic who for years, until the onset of his eye disease, had shown few acute symptoms.

Most authors agree that Ganser's syndrome may occur as an isolated dissociative state or may occasionally be temporarily superimposed on other functional or organic mental diseases. The premorbid personality of the patient is often characterized by certain hysterical features. It has been pointed out that this condition has never been observed in persons of superior intelligence.

Treatment and prognosis. Like most hysterical twilight states, Ganser's syndrome is usually short-lived, and the patient recovers within a few days or weeks. Electroconvulsive treatment has been effectively used in these conditions, but it hardly appears necessary to use such drastic physical approaches. Psychotherapy, tranquilizers, and possibly intravenous injections of amobarbital (Amytal sodium) are usually effective in speeding the patient's recovery. Follow-up therapy of the patient has to be considered, as in any other patient who, under stress, has developed a dissociative state.

Folie à deux (double insanity). *Folie à deux* or *folie communiquée* was first described by Lasègue and Falret in 1877. Double insanity and psychosis of association have been proposed as the equivalent English terms. The disease is characterized by the occurrence of psychotic symptoms that have a common delusional link in two or more persons living in close and intimate association.

De Montyel proposed a division of *folie à deux* into three separate conditions: *folie simultanée*, *folie communiquée*, and *folie imposée*.

Folie simultanée refers to the coincidental appearance of psychotic symptoms in members of a family strongly predisposed to the development of an active psychosis, which happened to occur in them simultaneously, but independently, while they were living together.

Folie communiquée is the term used for the appearance of psychotic manifestations in two closely associated persons who are hereditarily predisposed to psychotic breakdowns but who adopt one or more delusions from each other or from others in their environment and retain them in spite of separation.

Folie imposée refers to the phenomenon most frequently given the name *folie à deux*. Psychotic symptoms—most frequently, delusions—are transmitted from a sick individual to a healthy one, who frequently elaborates on the induced delusions. Sometimes more than one person is affected by such an induced psychosis. *Folie à trois*, *folie à quatre*, and *folie à cinq* have also been observed. Goduco-Agular and Wintrob have recently reported on *folie à famille* affecting seven members of a family in the Philip-

piners. The eldest daughter induced in her sisters, brother, and parents a psychosis that culminated in a state of religious frenzy, during which their aunt was beaten to death.

Lasègue and Falret, who published the first paper on *folie à deux*, summarized their observations in nine conclusions, which in the main are still valid and may be paraphrased as follows:

1. Under ordinary circumstances, psychotic symptoms are not contagious from a psychotic to a healthy or another psychotic person.

2. Such contagion of psychotic symptoms can only occur in exceptional conditions.

3. These conditions are: (a) One individual is the dominant one. He is usually more intelligent than the other and gradually imposes his delusions on the more passive and originally healthy partner. (b) The two individuals have lived a very closely knit existence in the same environment for a long period of time, relatively isolated from the outside. (c) The shared delusion is usually kept within the limits of possibility and may be based on past events or certain common expectations.

4. The observations and conditions relating to this disease are very similar in character wherever they are found.

5. This type of psychosis is found more frequently among women.

6. Heredity may be predisposing cause, particularly where two persons from the same family are concerned.

7. The main therapeutic indication is to separate the two patients, in which case the second one may recover once he is cut off from his source of delusions.

8. The second patient is usually not so deeply affected as the first.

9. In some cases the pressure of the psychotic person may be extended to a third individual or even to more persons in the environment. However, it is usually sufficient to isolate only the actively psychotic person from his sphere of influence.

Epidemiology. *Folie à deux* is a rare condition but common enough for most psychiatrists to encounter one or several examples of it in their own clinical experience. It occurs more frequently in women, but the phenomenon has also been observed in men. It usually flourishes in the soil of poverty and economic distress. The poverty of the individuals involved is probably often the result of their illness rather than a causative factor. There seems to be no cultural barrier to its incidence, and the condition probably occurs in all ethnic and cultural groups.

The borderline between *folie à deux* or induced mental disorder and the collective psychoses, where large groups of people have been infected with irrational behavior, is not clearly defined. The dancing mania that swept through parts of Europe during the 16th century and the more localized sudden epidemics of hysterical behavior—for instance, laughing or

jumping—that even in the present day are frequently observed in institutions such as convents and schools and in small communities throughout the world are examples of it. Other more dangerous mental disorders have affected groups of people in the past—for example, the Salem witch trials and the lycanthropy fears and witch hunting that terrorized Europe during the Middle Ages and were responsible for the death of thousands of people who were suspected of being possessed by some demonic force that turned them into animals and witches. A third type of collective mental disorder is represented by the sudden release of irrational and unusually aggressive behavior. It is observed in lynching or looting mobs when large numbers of people, under the influence of a strong emotion and what may be thought of as the herd instinct, temporarily lose rational and moral control and indulge in violent behavior that is entirely foreign to their normal personalities.

Etiology. All these forms of induced mental disorder are of functional origin. Suggestibility has been proposed as the main operative mechanism. This may well be the case in collective psychoses, induced hysterical behavior, and mob actions. However, in cases of *folie à deux*, other mechanisms seem to be at work. The recipient in the *folie à deux* situation often has a somewhat seclusive and suspicious personality that is more easily classified in the schizoid than in the hysteroid category.

A *sine qua non* condition for the occurrence of *folie à deux* is the close physical association and the intimate emotional bond between the two affected people. The mechanism of identification probably plays a key role. The primary focus of induced psychosis is usually a paranoid or paraphrenic schizophrenic whose special adjustment to the world is characterized not only by his persecutory and grandiose delusions but also by a deeply rooted relationship with another person, who is usually in the dependent position. The recipient or passive partner in this psychotic relationship has much in common with the primarily psychotic partner because of many shared life experiences, common needs and hopes, and, most importantly, his deep emotional rapport with and concern for his partner. In order to relinquish his contact with reality to the extent of sharing the delusions of the other person, it is probably necessary for him to be very restricted in his ability to form emotional relationships with other people. He is then faced with either losing the only person to whom he has been—and perhaps ever will be—very close or joining him in his pathological world in order to avoid this loss. Because of this particular emotional involvement, the *folie à deux* psychosis has been referred to as a transference phenomenon.

Treatment and prognosis. Lasègue and Falret's therapeutic recommendation to separate the affected person from the primary focus and source of his delusions, who is usually a schizophrenic, is still the

first measure to be adopted. In a number of cases the passive partner in the psychotic relationship loses his delusions and regains his unimpaired reality testing after he has been separated for some weeks or months from the actively psychotic partner. The latter has to be treated like any other patient suffering from a functional psychosis, that is, with pharmacotherapy or electroconvulsive treatment. The passive partner may require physical treatment to speed his recovery, or he may recover spontaneously over a period of time. He almost certainly requires psychotherapy to help him work through the loss of the other person and accept the fact that the other one is—and he himself has been—mentally ill. At least one case is on record where the passive partner, after having been paranoid for 25 years, recovered within a year after the death of the active partner in the *folie à deux* relationship.

Unfortunately, the mere separation of the two persons involved in a psychosis of association does not always result in a complete recovery of the passive recipient. Layman and Cohen found only 1 case out of 140 in which separation of the two persons was followed by spontaneous recovery of the passive partner.

In a mother and daughter pair, the daughter was a well educated paranoid schizophrenic, and the mother, who had much less education and was deeply attached to her daughter, had made the delusions of her daughter her own. When the two were separated on two different wards of a mental hospital, the daughter did not recover after insulin coma therapy. The mother did lose her paranoid delusions, but she became so severely depressed that the doctors and nurses treating her began to fear for her life, and she was transferred to the same ward as her daughter. Within a week, she had gained 6 pounds and was happy and active—and she again shared her daughter's delusions. Eventually, mother and daughter were released into the community, where they lived together in the same room, worked together in the same laundry, and continued to share the same paranoid delusions, which had taken on more of a grandiose trend. The only important difference in their behavior was the fact that the two were no longer troublesome in the community and stayed away from all the public agencies they had bothered so much before in the pursuit of their delusional beliefs.

It appears that one can only hope to cure the passive partner of a *folie à deux* relationship if one can provide some compensation for the loss the patient has to accept, not only of the psychodynamic service rendered to him by his pathological projections but, more importantly, for the loss of the person around whom his whole life has centered for years. Projective mechanisms responsible for the formation of delusions can be successfully influenced by physical therapies. However, neither pharmacotherapy nor electroplexy can permanently cover the loss of a key person. Only time, personal working through, psychotherapy, social therapy, and social interaction can deal with it successfully.

Idiopathic Syndromes

Gilles de la Tourette's disease. In 1885, when he was studying under Charcot at the Salpêtrière in Paris,

Gilles de la Tourette published a description of this autonomous syndrome, which was later named after him. The syndrome is sometimes referred to as *tic convulsif* and in the German literature as *mimische Krampfneurose*.

The symptoms begin in childhood, usually in children of school age and before puberty. The patients affected with it exhibit an ever growing repertoire of motor tics that involve not only spasmodic grimacing but also violent stereotyped tics. Spasmodic movements of the upper part of the body finally involve the whole body until the ticlike actions are expressed by hopping, skipping, jumping, grinding of the teeth, and other sudden compulsive motor outbursts that, nevertheless, may involve a certain amount of coordination. What gives this syndrome its specific flavor and is pathognomic for it is the compulsive coprolalia that accompanies the muscular tics. The patients are compelled to utter swear words or obscenities; usually, they repeatedly call out four-letter words. The patient's compulsive and stereotyped coprolalia may be accompanied by compulsive coughing, spitting, blowing, or barking sounds. There may also be echolalia, consisting of the repetition of words or short phrases immediately after the patient has heard them. This strange behavior is exhibited spontaneously and unpredictably by the patient, although it may sometimes be triggered or made worse when the patient is experiencing emotional stress or fatigue.

In the differential diagnosis, chorea minor has to be considered. However, the typical verbal behavior is not present in this illness. Another disorder resembling it has been responsible for a phenomenon which has been referred to as the "jumping Frenchmen of Maine." It was first reported in 1880 and can still be observed in certain parts of eastern North America. It is characterized by compulsive jumping and kicking and by the compulsive repeating of the sounds the affected person has just heard. However, this behavior occurs only as a startle reaction to a sudden loud sound and never spontaneously, as in Gilles de la Tourette's disease. The jumping Frenchmen of Maine were probably suffering from latah, a condition discussed below.

Epidemiology. The syndrome in its typical form is not frequently observed. However, Gilles de la Tourette, in his original article, assembled nine in whom he personally observed the syndrome, although in four of them the diagnosis, according to his own criteria, appears doubtful. Eisenberg, Ascher, and Kanner reported seven cases, and a number of other authors have reported two or more cases; so this disease is probably not quite so rare as is usually assumed. Sometimes there is a family history of tics, and the affected children come mostly from families where all interpersonal relationships were strained and the parents' roles were poorly defined for the child, who was prone to feel anxious, angry, and rejected.

Etiology. Organic pathology of the central nervous system has always been suspected of playing a role in the development of the unusually gross physical symptoms these patients display. However, neurological examination and electroencephalographic (EEG) findings are usually negative, even in full blown syndromes, and autopsies of long standing cases have not revealed any consistent lesions in the brain. It must be assumed, therefore, that Gilles de la Tourette's disease is of functional origin. One may think of it as a peculiar mixture of hysterical and compulsive manifestations. The meaning of the patient's symptoms may be understood as a desperate attempt to draw attention to himself and also as the automatized rage reaction of a rejected child. At the same time the coprolalia is unmistakably anal-libidinal in nature. Strong elements of self-punishment also seem to be expressed in the syndrome.

Treatment and prognosis. Until recently no reliable, effective treatment of the condition was known. The outcome was almost always uniformly poor; the patients showed marked personality deterioration and eventually had to be institutionalized or live as recluses. None of Gilles de la Tourette's original cases developed favorably.

Eisenberg, Ascher, and Kanner had no favorable results with insulin treatment, electroplexy, sedatives, muscle relaxants, reconditioning therapy, and hypnosis, but they reported some modest success with long term supportive psychotherapy for the patient and his family.

One of the new major tranquilizers, haloperidol, a butyrophenone derivative, seems to offer the simplest, most practical, and most effective treatment at the present time. Chapel, Brown, and Jenkins have achieved good control of symptoms with doses of 1 to 6 mg. of haloperidol a day. However, there has not yet been enough time to evaluate the long term effects of such maintenance pharmacotherapy.

Autoscopic phenomena. These autonomous phenomena are, as a rule, not symptomatic of any particular mental disorder. They consist of hallucinatory experiences of the person's own body, which—often only as the face or bust but sometimes as the whole body—is perceived within the person's external visual space as though appearing in a mirror. This specter is usually colorless and transparent, but it is seen clearly, appears suddenly and without warning, and imitates the person's movements. The appearance usually lasts only a few seconds, and in most cases these phantoms—which have been referred to as "dislocated body images"—are seen at dusk. In addition to the visual, there may be hallucinatory perception in the auditory and other modalities. The person usually retains a certain detached insight into the unreality of the experience and reacts emotionally with bewilderment and often with sadness. In schizophrenics, the reaction is one of indifference.

Epidemiology. Autoscopy is a rare phenomenon.

Although there is possibly a certain relation to migraine and epilepsy, there does not appear to be a causal connection between autoscopy and psychosis. Sex, age, heredity, and intelligence do not seem to be significantly related to its occurrence. Some subjects have this experience once in a lifetime, but a few seem to be always close to it. Aristotle wrote about a man who could not go out without seeing his double coming toward him. Goethe gave a vivid description of an autoscopic experience: once while horseback riding as a young man, he saw approaching him another horseman, who turned out to be his double and who disappeared after a few moments. Other famous poets and writers—Shelley, de Maupassant, Edgar Allan Poe, for instance—probably also had autoscopic experiences.

A young woman, during an acute anxiety state, saw herself one afternoon, at a distance of about 50 feet, walk up the steps to the gallery of her house. The apparition disappeared within a few seconds, and there was no repetition of it in the following 10 years. She married and continued to suffer from occasional states of pathological tension, but otherwise she was in good mental health.

A research physicist who enjoys a considerable reputation in his special field of work and who has never needed psychiatric treatment frequently has autoscopic experiences and is rather intrigued by them.

Etiology. The cause of the autoscopic phenomenon, like the cause of other complex hallucinations, is not known. One theory holds that the phenomenon reflects an irritation of areas in the temporoparietal lobes; another holds that it represents the projection of specially elaborated memory traces. Occasionally—but certainly not regularly—the phenomenon is symptomatic of schizophrenia or depression.

Lukinowicz, whose study is the best reference on the subject, thinks that there exists a phenomenological and psychodynamic relation between autoscopy and such parahallucinatory phenomena as imaginary companions, eidetic images, hypnagogic imagery, clairvoyance, and some anatomically incomplete body image disturbances such as phantom limbs. He pointed out that many authors believe some normal subjects with well developed imagination, a visualizer type of personality structure, and narcissistic character traits may occasionally see their double under conditions of emotional stress.

Treatment and prognosis. There is rarely any need for special treatment of this condition, which, in most cases, is neither incapacitating nor progressive. In certain instances, treatment of the accompanying neurological, neurotic, or psychotic condition may be indicated.

Capgras' syndrome. The characteristic feature of this associated phenomenon is the patient's delusional conviction that certain persons in his environment are not their real selves but instead are doubles—in French, *sosies*—who, like impostors, assume the role

of the persons they impersonate and behave like them. This syndrome was first described by the French psychiatrist Capgras in 1923 and has since been discussed in a number of publications in the English psychiatric literature.

Distinctions have been made between the misidentifications of the exuberant manic, the confused amnesic, and the preconceiving delusional patient. Only the last may be diagnosed as cases of Capgras' syndrome. There is also the difference between the positive double—for instance, in the autoscopic phenomenon—and the negative double—as in Capgras' syndrome, where the existence of the double is simply assumed. Sometimes the patient points out that there are certain minute differences between the appearance of the person he considers to be an impersonator and the real person, but in other cases the double has the identical appearance of the real one.

Epidemiology. This is a rare syndrome that occurs more frequently in women than in men. In fact, for some years it was thought that it could not occur in men. Since then, several apparently genuine cases of Capgras' syndrome in men have been reported. No cases are known where the condition definitely did not occur as a manifestation of another psychosis, usually schizophrenia. It has, therefore, been suggested that it may be more appropriate to speak of Capgras' symptom rather than of a syndrome.

Etiology. A necessary condition for the occurrence of this syndrome is the impairment of reality testing that develops only as the result of a psychotic process. Capgras explained the particular nature of this illusion as the result of feelings of strangeness combined with a paranoid tendency to distrust. A disturbed sense of coenesthesia—that is, of the subjective feeling of one's own organism as an integrated unit—has been held responsible for it. Others consider it the expression of an affective disorder. The similarity of the illusion to certain phenomena during the epileptic aura and to false memories of familiarity, such as *déjà vu*, has also been pointed out. It has been explained as a disjunction between the central processes of perception, recognition, and thinking.

The illusion of *sosies* or doubles occurs almost always in the setting of a paranoid psychosis and involves only people who are important and very familiar to the patient. He identifies the appearance of these persons intellectually, but, lacking the fundamental and irreducible feeling of familiarity that is a necessary condition of all true recognition, he does not recognize them and explains their likeness to the familiar person through the delusional postulation of a double.

This uncoupling of normally fused components of perception and recognition may have a neurophysiological cause that so far remains unknown. It may, on the other hand, be determined psychodynamically. Arieti and Meth see Capgras' syndrome as an unusual form of psychotic displacement: the patient rejects the

particular person involved and attributes bad features to him, but he cannot allow himself to become conscious of this rejection because of guilt feelings and ambivalent attitudes. What he really feels about the person with whom he is confronted is displaced to the double, who is an impostor and, therefore, may be safely and righteously rejected. The splitting of a person who constitutes an important libidinal object into his good and bad parts—a basic psychodynamic mechanism—is transduced into perceptual reality by the patient in Capgras' illusion.

Treatment and prognosis. The outcome of this condition depends on the therapeutic success with the psychosis of which it is only an aspect. If it accompanies a periodic affective psychosis, it comes and goes with the phasic occurrence of the disorder. Like other psychotic manifestations, it often responds to electroconvulsive treatment and pharmacotherapy, at least temporally.

A paranoid schizophrenic woman who, 10 years before, had exhibited Capgras' syndrome and could never be convinced of the identity of her husband, who visited her regularly in the hospital, eventually lost her delusions regarding his double following electroconvulsive treatment and pharmacotherapy and was discharged into the community. However, she then felt estranged from her husband and obtained a divorce. Recently, she had to be rehospitalized. She is again mildly paranoid, with a well preserved personality, and shows no trace of Capgras' syndrome.

Clérambault's syndrome. It would be advisable not to perpetuate the existence of this questionable syndrome in the literature. If, nevertheless, it is briefly discussed here, it is because there are references in the French, Italian, Brazilian, and North American psychiatric literature to two entirely different syndromes, both named Clérambault's syndrome, although neither of them seems to deserve the status of a special psychiatric entity. A brief clarification of this confusing situation may serve a useful purpose and possibly hasten the final demise of these two-faced pseudosyndromes.

In 1959 Arieti and Meth described Clérambault's syndrome as *psychose passionelle* or erotomania and cited Balduzzi, who referred to it in the same sense. Arieti and Meth mentioned that this condition—the delusional conviction of a woman that a man who hardly knows her is passionately in love with her—is not rare and in the United States is generally classified as a paranoid condition or paranoid schizophrenia.

But in 1920 Clérambault—according to the Brazilian author Silveira—had started the systematic study of another Clérambault syndrome, on which another Brazilian author, Whitaker, later elaborated. The syndrome to which these authors referred has nothing to do with a patient's passionate infatuation but is characterized by automatism of the mental apparatus, explosive and absurd utterances, thought echoes, and the feeling of being possessed and influenced by some

dissociated force. Clérambault—according to Silveira—explained this phenomenon as a result of a disturbance of the intraneural chronaxia and the superposition of fixed irradiations in two equivalent circuits in the central nervous system. Whitaker later reported on two patients whose psychiatric symptoms were characteristic of Clérambault's possession syndrome and in whom a hypophysodiencephalic disturbance could be demonstrated.

This possession syndrome of Clérambault strongly resembles the experiences of being influenced and directed by an external force, experiences that are frequently expressed by schizophrenic patients, in whom they usually occur in a setting of altered body image, kinesthetic hallucinations, and paranoid delusions. It appears to be quite unnecessary to single out a group of symptoms that are neither rare nor particularly distinctive and that seem to occur in functional as well as in organic disorders of the central nervous system.

Today there is a general tendency in medical terminology to avoid proper names in diagnostic designations as much as possible and to eliminate the artificial singling out of symptom groups that do not clearly exist as independent entities. Therefore, it is suggested that the term "Clérambault's syndrome" no longer be applied to the two different symptom groups that have hitherto gone under this name and that these symptoms in the future be subsumed under the headings of the more general pathological conditions of which they are partial manifestations.

Cotard's syndrome (*Délire de négation*). At the time when most current psychiatric classifications crystallized, during the last 2 decades of the 19th century, the French psychiatrist Cotard described several cases suffering from a syndrome he referred to as *délire de négation*. It has never been possible to see in which way patients with this syndrome differed from those who manifest what psychiatrists usually call nihilistic delusions. Such delusions are by no means uncommon in patients suffering from endogenous depressions, and they also occur in patients with organic brain disease, such as senile psychosis and lesions of the parietal lobe.

It is true that Cotard described patients in whom such nihilistic delusions were particularly intense and all encompassing. Patients exhibiting *délire de négation* complain of having lost not only their possessions, status, and strength but also their heart, their blood, and their intestines. The world beyond them is also reduced to nothingness. Trees, houses, other people do not really exist any more. Time is no longer going on, and, as it has stopped, the patient—by a strange paradox—has become immortal. The full blown syndrome is characterized by this delusion of immortality, which may occur in combination with other megalomaniacal ideas. One woman presented by Capgras and Daumezon with the diagnosis of Cotard's syndrome called herself "Madame Zero" in order to emphasize rather dramatically her nothingness.

Epidemiology. This syndrome is frequently encountered in Western culture by psychiatrists who study their acutely psychotic patients carefully before the psychopathological manifestations have changed or disappeared under the influence of electroconvulsive treatment or pharmacotherapy. The clearly expressed syndrome has been seen most frequently in manic-depressive patients during the depressed phase, but occasionally it occurs in acute schizophrenic breakdowns and in certain brain syndromes.

Treatment and prognosis. In its pure form, the syndrome usually lasts only a few days or weeks, and it responds to any treatment that influences the basic disorder of which it is a part.

Culture-Bound Syndromes

Amok. This is a sudden, unprovoked outburst of wild rage that causes the affected person to run madly about, usually armed with a knife, and to attack and maim or kill indiscriminately all men and animals in his way before he is overpowered or killed himself. This savage homicidal attack is generally preceded by a period of preoccupation, brooding, and mild depression. After the attack, the person feels exhausted and has complete amnesia for it. The Malayan natives also refer to the attack as *mata gelap* (darkened eye).

Epidemiology. The condition is almost exclusively associated with Malayan people, where it occurs only among men, but it has also been reported occasionally in African and other cultures in the tropics.

In Malaya, amok was apparently a fairly common phenomenon a few hundred years ago. It was still frequently seen when the British took over the administration, but its incidence dropped sharply when it was ordered that all amok cases be captured alive and be brought to court. By the 1930's, amok had become a rare condition and, according to Murphy, has today virtually disappeared in Singapore and Malaya and is quite rare in Java.

Etiology. Murphy pointed out that there are three distinct historical phases, during which the nature of amok has changed considerably. In early Malay epics of the 15th century, amok attacks were understood as natural reactions to frustration, provocation, or humiliation to which the person had been exposed. It sometimes served as a mode of suicide if the person found himself faced with an intolerable situation. In that historical period amok was not considered an insane act but was an understandable reaction and accepted by social customs.

With the arrival of Western trade, civilization, and administration, the nature of amok changed. It occurred most frequently in people who were suffering from a chronic physical disease, some gastric trouble, or a painful ulcer. The affected person was often somewhat melancholic for a few days before the attack and later claimed that the devil had entered into him and that he did not remember anything. The amok attack

at that time was no longer a socially condoned reaction but was the result of an acute complete dissociation from the person's consciousness.

The third period dates from the 1920's to the present time. Amok has become a very rare disease, and attacks are now usually associated with an acute toxic condition due to malaria or another febrile condition. Amok is also seen more often in chronic delusional psychoses. In fact, at the present time amok occurs almost exclusively in patients suffering from a serious mental disorder, either a chronic psychotic or an acute confusional state due to a toxic disorder of the central nervous system.

Why this particular form of violent psychopathology has developed only among the Malayan people is not entirely clear. The easy availability of the knife as a lethal weapon has been cited as a contributory factor. It has also been theorized that a culture that imposes heavy restrictions on adolescents and adulthood but allows children free rein to express their aggression may be especially prone to psychopathological reactions of the amok type. Such local customs of child rearing are found among the Javanese, for instance. The belief in magical possession by demons and malignant spirits may be another cultural factor that has contributed to the development of the amok syndrome in the Malayan people.

Treatment and prognosis. Obviously, the only immediate treatment consists of overpowering the amok patient and obtaining complete physical control over him. The attack is usually over within a few hours. Afterward, the patient may require treatment for the toxic confusional or the chronic psychotic condition that was the underlying cause. Murphy reported that, in the old prison-like hospitals before 1918, amok was a common occurrence, whereas, in the new, better staffed hospitals where a more therapeutic atmosphere prevails, amok has all but disappeared.

Koro. This is an acute anxiety reaction characterized by the patient's desperate fear that his penis is shrinking and may disappear into his abdomen, in which case he will die. Since this is a fairly widespread belief in those cultures where the koro syndrome is observed, the patient's family or friends who rush him to the doctor are usually very disturbed about this danger. Almost invariably the affected person has secured a strong physical hold on his penis, sometimes tying a ribbon around it or clamping it into a wooden box.

Epidemiology. The koro syndrome occurs only among the people of the Malay archipelago and among the South Chinese (Cantonese), by whom this reaction is referred to as *suk-yeong*. Corresponding female cases have been described, the affected woman complaining of shrinkage of the vulval labia and the breasts. Occasional cases of a koro syndrome among people belonging to the Western culture have also been reported. Kraepelin in his textbook mentioned shrink-

age of the penis among the hypochondriacal delusions of the depressive states in manic-depressive psychosis.

The typical syndrome is rather rare. Yap recently made a comprehensive survey of the literature on Koro and reported on a series of 19 cases collected by him over the last 15 years.

Etiology. Koro is a psychogenic disorder resulting from the interaction of cultural, social, and psychodynamic factors in specially predisposed personalities. Culturally elaborated fears about nocturnal emission, masturbation, and sexual overindulgence seem to give rise to the condition. Probably all koro patients have been troubled by what they consider sexual excess and by fears about their virility. As precipitating factors in the koro attack, Yap mentions coitus, sudden exposure of the penis to cold water or cold air, and hearing about people dying from koro. He considers koro a unique example of a depersonalization syndrome affecting the integrity of the body image. In contrast to other states of depersonalization, the koro patient's insight into his own condition is usually quite impaired.

Treatment and prognosis. Yap's patients were treated with psychotherapy, tranquilizing drugs, and, in a few cases, modified insulin and electroplexy. On follow-up examination after 1 to 9 years, one third had completely recovered, and about one half had ceased to have further attacks but were still subject to anxiety, and one patient had shown no improvement at all. As with other psychiatric disorders, the prognosis is related to the premorbid personality adjustment.

Latah. This rather spectacular syndrome is also known by many other names. It has been mostly observed among the Malaysian people, and it occurs clinically in two different forms. One is the startle reaction, in which a sudden stimulus provokes the suspension of all normal activity and triggers a set of unusual and inappropriate motor and verbal manifestations, over which the affected person has no voluntary control. The other type of latah is a mimetic or echo reaction, in which a sudden stimulus compels the affected person to imitate any action or words to which he is exposed. In other words, he is exhibiting sustained and complete echopraxia, echolalia, and often automatic obedience. Although the person affected by the latah reaction cannot control or inhibit his peculiar behavior, he remains aware of the situation and may verbally protest against any unacceptable action he is forced to carry out, such as disrobing in public. Since the patient in the latah state is at the mercy of the people in his environment, he may sometimes be the butt of practical jokes.

The latah reaction may consist of a brief exhibition of startle and echo symptoms that, in addition to a startling stimulus, may also occur as a reaction to being suddenly embarrassed or tickled. In this state, the affected person may utter obscenities or ask extremely indiscreet questions. It may become a chronic

disease that, after years, leads to permanent automatic obedience and echo reactions, forcing the affected person into hiding and inducing marked personality deterioration.

Epidemiology. The disorder is found in women of all Malaysian races, especially the Javanese, but it is also observed in a smaller proportion of men in Malaysia. In the 19th century it occurred mainly in men. At that time it was quite common and could be found in all classes of society. Murphy writes that since the 1930's the condition has become rarer and affects almost solely women of middle age and of particular occupations, such as domestic servants. After World War II it became difficult to find any cases of latak in Indonesia. However, conditions similar to and often identical with latak have been reported from other cultures, among Africans, aboriginal Siberians, Laplanders, and North Americans ("the jumping Frenchmen of Maine"), for instance.

Etiology. Yap, who has written a comprehensive review of latak, considers it to be an intense fright reaction involving disorganization of the ego and obliteration of the ego boundaries. He theorized that a sudden fright may provoke inhibition of proper perceptual-motor integration and may, through loosening of the ego boundaries, render the patient powerless to resist any stimuli coming from the environment. As a result, the patient's behavior is determined by echolalia and echopraxia. Yap interpreted the coprolalia that is sometimes observed as a symbolic defensive act.

Murphy discussed the similarities between latak reaction and posthypnotic behavior: there is usually no personality disturbance outside of the attacks, intelligent people are more frequently affected than mentally defective ones, and it may be difficult to get a person out of the state if he is neurotic or hysterical. Murphy also compared the latak reaction and its symptomatic outbursts of agitated behavior and obscenity in otherwise respectable and efficient servants to the erotic and agitated behavior often seen in spinsters undergoing general anesthesia for an operation and to the blasphemies of religious men sometimes uttered under those circumstances.

Although Murphy considers latak a psychogenic disorder, he is reluctant to call it a neurosis. He thinks that the traditional belief of the Malayan people in possession states and their children's games of producing trance states, during which the children behave as though they were animals, and the frankness and absence of disguise for sexual imagery, which is characteristic of Malayan mythology, are cultural factors that may contribute significantly to the specificity of the latak reaction among the Malayan people.

Treatment and prognosis. As with other periodic psychogenic disorders, treatment consists of psychotherapy and pharmacotherapeutic tranquilization. It is probable that behavior therapy would be particularly effective in the latak reaction, although there is

no known record of such treatment having been applied. In those cases where the latak reaction is associated with a chronic mental disorder, pharmacotherapy and electroplexy are indicated.

Piblokto. Occurring among the Eskimos, and sometimes referred to as "arctic hysteria," this condition is characterized by attacks lasting from 1 to 2 hours, during which the patient, who is usually a woman, begins to scream and to tear off and destroy her clothing. While imitating the cry of some animal or bird, she may then throw herself on the snow or run wildly about on the ice, although the temperature may be well below zero. After the attack, the person appears quite normal and usually has amnesia for it. The Eskimos are reluctant to touch any afflicted person during the attack because they think it has something to do with evil spirits.

Piblokto is almost certainly a hysterical state of dissociation. It has become much less frequent than it used to be among the Eskimos.

Wihtigo. Wihtigo psychosis is a psychiatric illness confined to the Cree, Ojibway, and Salteaux Indians of North America. They believe that they may be transformed into a wihtigo, a giant monster that eats human flesh. During times of starvation, a man may develop the delusion that he has been transformed into a wihtigo, and he may actually feel and express a craving for human flesh. Because of the belief in witchcraft and in the possibility of such a transformation, symptoms concerning the alimentary tract—like loss of appetite and nausea from trivial causes—may sometimes cause the patient to become greatly excited for fear of being transformed into a wihtigo. Yap considers this illness a good illustration of the effects of mythology and cultural environment on psychiatric manifestations and thinks that nosologically the disorder may be, like other demoniacal possession states, essentially hysterical in nature.

This particular disorder has probably become extremely rare by now, if it still exists at all.

Voodoo. The possession states associated with the mythology, cultural tradition, and specific rituals of the voodoo belief have been popular subjects for discussion among anthropologists, psychiatrists, writers, and people in general. The voodoo cult, which is practiced in African societies and among the colored West Indians, is particularly widespread in Haiti. A survey of the incidence of psychiatric disorders in that country reveals an increased incidence of hysterical and epileptic disorders. In many cases it has been difficult to determine whether the convulsive manifestations so frequently seen among the Haitian population are due to epilepsy or to hysteria. At a typical voodoo ceremony, dozens of people, after 2 or 3 hours of dancing to the wild rhythm of the drums and under the incantations of the voodoo priest (houngan), fall into hysterical trance states, during which they exhibit convulsions, excitement, the *arc en cercle*, and short twilight states. An outsider briefly has the im-

pression of being projected backward in history and attending one of Charcot's clinical demonstrations at the Salpêtrière.

Aside from these short ritual-induced hysterical states, the psychiatric significance of voodoo lies in the widespread belief of the people of these cultures in the possibility of being possessed by evil spirits. Because of this, chronic, hysterical, and psychosomatic states may be induced, and appropriate treatment for such conditions and for major psychoses due to other causes may be delayed.

The question of voodoo deaths—that is, of the fatal consequences of the patient's belief that he is a victim of black magic and an evil spell cast on him—has still not been definitively clarified from the scientific point of view. Cannon, after having made a thorough search, convinced himself that such deaths had occurred in South America, Africa, Australia, New Zealand, Haiti, and some Pacific islands. He hypothesized that such deaths are the result of a state of shock produced by a sustained level of excess adrenalin in the organism. But Richter, on the basis of experimental observations in rats, suggested that those deaths—if they occur—may be associated with signs of vagal rather than sympathetic overstimulation. He showed that the survival rate under stress was dramatically reduced in wild rats that had been put in a situation that induced a state of hopeless resignation in them. As they succumbed, the ECG recorded distinct slowing of the heart rate; their respirations also slowed, and the body temperature fell. Cholinergic drugs hastened the death of the animals. Finally, Barber doubts the evidence for either theory of sympathetic or parasympathetic voodoo deaths and pointed out that many such magic deaths were due to poison, organic illness, or the victim's refusal of food and water.

Atypical Psychoses

The more closely one studies the psychopathology of an individual psychotic patient, the more frequently one discovers that his condition does not fit easily into one of the existing diagnostic categories. Some subdivisions of schizophrenia have not yet been incorporated into the official classification by the American Psychiatric Association but are, nevertheless, in current psychiatric use on the North American continent, such as pseudoneurotic, process, and reactive schizophrenia.

Another modification encountered in psychiatric textbooks and quite frequently in psychiatric practice is a nosological hybrid with German name *Pfropfschizophrenie*. Translated literally, it means "grafted schizophrenia," and it refers simply to schizophrenia occurring in a mentally retarded patient. The combination of primary intellectual defect and the effects of a psychotic process (schizophrenia) may result in manifestations that sometimes present diagnostic difficulties. They are more likely to occur in young individuals, where one is not certain whether the observed

mental deterioration is entirely the result of an early and fulminant schizophrenic process or is partly due to a preexisting mental deficiency. A careful history of the patient's early development and school achievements—establishing or eliminating primary mental retardation—is usually the best instrument for differential diagnosis in these conditions.

Those atypical psychoses that are particularly difficult to reconcile with the accepted diagnostic classifications have become the subject matter of special nosological research. In recent years a new classification for the atypical psychoses has been proposed by the German psychiatrist Leonhard, who has devoted much of his life to the study of these conditions. His ideas have also been discussed by psychiatrists outside Germany and have met with an interested response in Britain.

Leonhard distinguished atypical cycloid psychoses and atypical schizophrenias. He considers these classes of atypical psychoses as independent nosological entities that have their own genetic characteristics and are not merely idiopathic variations or mixtures of the two groups of typical psychoses, manic-depressive and schizophrenic.

Leonhard justified the separation of his atypical psychoses from the nuclear group by noting the much greater range of variation in the symptomatology of the atypical psychoses. He found further confirmation of his independent groups in the fact that his atypical psychoses have a different transmission—that is, a much higher rate of genetic transmission—than the typical schizophrenias. In his material of 826 typical schizophrenias, the incidence of mental disease in the siblings was 5.3 per cent. Among 203 atypical schizophrenias, the corresponding percentage was 13.3. Similarly, he could demonstrate a higher incidence of suicides in the family histories of atypical schizophrenias when compared with typical—or, as he refers to them, systematic—schizophrenias. The prognosis is, in general, much poorer for the atypical schizophrenias than for the cycloid psychoses, and among the atypical schizophrenics the prognosis is most guarded for the schizophasic patients, who often remain chronically ill or may recover with a permanent personality defect.

Atypical cycloid psychoses. The cycloid psychoses, which are characterized by phasic recurrences, Leonhard subdivided into three forms: motility psychoses, confusional psychoses, and anxiety-blissfulness psychoses. In the third form of these cycloid psychoses a bipolarity is expressed in its hyphenated name. The first one is clinically divided into hyperkinetic and akinetic motility psychoses, and the second into excited and inhibited confusional psychoses.

Leonhard stated that, within the group of atypical cycloid psychoses, periodic recurrences are most frequent in the motility psychoses; they are less frequent in the anxiety-blissfulness psychoses and are still

rarer in the confusional psychoses. Complete recovery of the patient is the rule in all these conditions.

Motility psychoses. In the hyperkinetic form, the motility psychosis—a term originally proposed by Wernicke—may resemble a manic or catatonic excitement. A hyperkinetic motility psychosis may be distinguished from the manic state by the presence of many abrupt gestures and expressive movements that seem to be the result of autonomous mechanisms and are apparently not responses to environmental stimuli or expressions of the patient's mood. A hyperkinetic motility psychosis may be distinguished from catatonic excitement by the absence of stereotyped and bizarre movements.

The akinetic form of Leonhard's motility psychosis, as judged from his descriptions, seems to be identical with the typical picture of a catatonic stupor. He separated these states from typical schizophrenia mainly on the basis of their rapid and favorable course, which does not lead to any personality deterioration.

Confusional psychoses. The excited confusional psychosis must be distinguished from some confused manic states. The difference can be found mainly in the greater lability of the patient's emotional state, which may be characterized by prevailing anxiety rather than euphoria. These patients are not so distractible as the manic, they often misidentify persons in their environment, and the incoherence of their speech seems to be independent of a flight of ideas.

The inhibited confusional psychosis shares with the catatonic stupor and the akinetic motility psychosis the symptoms of mutism and greatly decreased motor behavior. It differs from these states by the preservation of better self-care and greater spontaneity and by the absence of negativism.

Anxiety-blissfulness psychoses. The anxiety phase of the anxiety-blissfulness psychosis may very much resemble the picture of what is generally known as agitated depression, but it may also be characterized by so much anxious inhibition that the patient can hardly move. Periodic states of overwhelming anxiety and paranoid ideas of reference are characteristic of this condition, but self-accusations, hypochondriacal preoccupations, and other depressive symptoms as well as hallucinations may accompany it.

The blissfulness phase manifests itself most frequently in expansive behavior and grandiose ideas, which are concerned less with self-aggrandizement than with the mission of making others happy and of saving the world. In women, the dominant emotion is usually one of passive ecstasy, often the result of phantastic religious delusions that to most of us would appear to be almost pathognomonic of schizophrenia.

Atypical schizophrenias. Leonhard said that the atypical schizophrenias, which carry a poorer prognosis than the atypical cycloid psychoses, may be considered their malignant relatives. In his system he distinguished three different atypical schizophrenias:

affect-laden paraphrenia, periodic catatonia, and schizophasia.

Affect-laden paraphrenia. Patients suffering from affect-laden paraphrenia express manifold delusions, which may be well systematized. They receive their characteristic color through the strong and sustained affect that pervades them. This affect is pathological, although it may be an appropriate reaction to the content of the delusions, and it may be expressed as irritability, anxiety, or ecstasy. A certain likeness of symptoms may make the differentiation from an anxiety-blissfulness psychosis sometimes difficult, particularly at the beginning of the psychosis.

Periodic catatonia. This differs from typical schizophrenic catatonia by the periodicity of its excited or stuporous phases. It may sometimes resemble an akinetic or hyperkinetic motility psychosis, but it usually presents distinctive symptoms of stereotypy, bizarreness, grimacing, and a peculiar mixture of akinetic and hyperkinetic manifestations at the same time.

Schizophasia. This is characterized by a profound thought disturbance that results in a disorder of concept formation and abstract thinking and expresses itself in marked incoherence of speech. Such patients may at times resemble excited confusional psychotics and at other times resemble excited catatonics.

Suggested Cross References

The diversity of manifestations of psychiatric disorders that are seen in different ethnic settings illustrates the importance of social and cultural influences on behavior. Discussions of the social, cultural, and familial determinants of psychological functioning may be found in Chapter 4, on the sociocultural basic sciences.

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32.2 POSTPARTUM DISORDERS

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The omission of postpartum psychosis from the official nomenclature reflects the current view that it is not a discrete nosological entity. The concept of a postpartum syndrome or reaction, however, retains a place in current psychiatric thought because the variety of conditions subsumed under the heading are linked by certain practical and theoretical considerations. Parenthood is an event of universal importance, rich in psychological ramifications; and reactions to it tend to form patterns exhibiting psychological unity.

The postpartum syndrome may be defined as any psychiatric disorder in which childbirth is one of the interacting causal agents, a necessary but not a sufficient cause. It includes behavior classifiable as schizophrenia, depression, psychoneurosis, organic (toxic) psychosis, and a transient situational disorder regarded as within normal limits—the postpartum blues.

History

The traditional view, that the postpartum reaction is an illness of women caused by parturition, prevailed for hundreds of years and is still the common opinion of the laity and indeed of many physicians. Zilboorg, in reviewing the history of the syndrome, pointed out that Hippocrates, Celsus, and Galen all observed postpartum psychoses. Hippocrates believed that bleeding from the nipple of a woman recently delivered meant that the milk was being suppressed, an ominous sign of a possible mental disorder. This concept, in various forms, lasted into the 19th century. Esquirol discussed at length the idea that milk not secreted by the breast was directed to the brain, where it affected nerve fibers, thus causing the psychosis; he thought this possible but unlikely.

In the middle 19th century Marcé in France and in 1889 James Lloyd in the United States asserted that puerperal psychosis was not a separate clinical entity but a collection of diseases. The psychoanalytic studies of Zilboorg in the late 1920's helped to undermine the belief in a primarily organic etiology.

Epidemiology

Postpartum reactions are common but psychoses are not. The incidence of postpartum psychosis is between 1 and 2 per 1,000 deliveries. A recent survey of the literature by Thomas and Gordon revealed that the distribution of diagnoses has changed over the years. In 1911, 50 per cent were labeled manic-depressive, 14 per cent schizophrenic, 32 per cent toxic, and 4 per cent psychoneurotic. In 1958, 15 per cent were called manic-depressive, 65 per cent schizophrenic, less than 1 per cent toxic, and 20 per cent psychoneurotic. In comparing postpartum hospitalized subjects to hospitalized women who did not have postpartum disorders, Fondueur and his colleagues found that there was no significant difference in the distribution of diagnoses.

The data reviewed by Thomas and Gordon indicated that 54 per cent of cases occur in primiparas, and 46 per cent in multiparas. They reported no correlation between postpartum disorders and heredity, religion, or the sex of the child and found the data inadequate to reach any conclusions about the influence of the use of anesthesia in delivery, the birth of a dead child or one with congenital anomalies, the birth of an illegitimate child, or an abortion.

Etiology

Although the prevailing opinion in American psychiatry favors a psychological etiology, in which childbirth is a precipitating event, the organic view also has some adherents. For example, Paffenbarger et al. suggested that a cause is active during pregnancy that exerts its full effect only with the loss of a hormone-producing organ, the placenta, which he feels indicates some basically physical etiology.

This question of organic versus psychological does not appear to be important. A multicausal viewpoint seems more fruitful. Stress—biological, social, and psychological—leads to ego activities that constitute the pathology, and thus the manifest disorder depends on the wide variety of forces that influence ego function. Childbirth, with its attendant tension, pain, and physiological changes, clearly constitutes a physical stress. Childbirth is also a major psychological stress, since it represents psychosocial success, the acme of feminine psychosexual achievement, and a milestone in the developmental history of the male.

A woman's psychic function may be adequate for childbearing in usual environmental circumstances but an extremely difficult labor and delivery or painfully adverse economic or social circumstances that make

the new baby a realistic burden may tip the balance toward a postpartum reaction. On the other hand, some women are psychologically so unsuited to motherhood that the most favorable physical and environmental conditions cannot save them from a postpartum psychosis. Though discussed separately, these are interlocking concepts. For example, the effect of an economic stress depends in part on how it becomes a psychic stress and how it interacts with other stresses; and a psychic stress can become a physical one, which in turn has further economic and psychic effects.

The psychodynamics of postpartum schizophrenia, depression, and psychoneurosis are not essentially different from those found in these conditions without childbirth. However, special attention must be given to the role of childbirth and parenthood in the psychic economy. Deutsch and Benedek each discussed the many factors that lead to emotional maturity in women. Lack of emotional maturity is generally a condition of postpartum reactions, but certain dynamic constellations stand out. Conflicts relating to unconscious hostility toward the baby and toward the patient's mother are central to these dynamic patterns.

Deutsch and Bosselman described a masculine-aggressive type, who has never accepted the feminine role. Some such women are overtly homosexual and never become pregnant or, if they do, get abortions. Others are compelled to try to deny the problem by having children. Some of this group find pregnancy pleasant because of an increased sense of power and prestige, which is in part the result of the unconscious equation, baby = penis. However, they may break down when delivery makes them feel painfully feminine. With the regression that occurs, old conflicts emerge involving hostility toward her own mother, and the baby is hated as a sign of her despised feminine role.

Rejection of the baby can result also from the patient's wish to be a baby herself, dependent on her own mother. Jealousy of her child relates to the patient's own childhood wish to enjoy her mother's exclusive attention and her hatred of sibling rivals. Identification with the baby leads her to fear the same angry, greedy attitude from it that she herself feels toward her mother. As a result, she rejects the child actually or symbolically. A protective motive, the desire to save the baby from her hostility, may also play a part in the turning away. The hostility leads to guilt, and the usual ego mechanisms result in the behavioral disturbances.

Another major type of dynamic pattern that may lead a woman to reject her baby involves unresolved oedipal forces. The child is the concrete symbol of her success in achieving the childhood fantasy of displacing mother, winning father's love, and having a baby by him. This leads to anxiety and the urge to be rid of the incriminating evidence. Guilt appears and results in pathological behavior.

In men too, postpartum reactions occur. Zilboorg

feels that these are related to the need to deny successful identification with the father. For men whose resolution of the oedipal conflicts has been shaky, achieving fatherhood can arouse very painful anxiety and set into motion the type of pathological process determined by the individual history and environmental circumstances. Some of the more common reactions are depression and paranoid behavior involving denial of paternity. In a recent paper Wainwright presented 10 cases in which fatherhood led to psychiatric hospitalization.

The form of the disordered behavior does not depend only on the unconscious dynamics but also on the form of the ego's response. For example, a woman may believe that her baby has not been born and may repetitiously go through the motions of labor pains and delivery. Another woman may ignore the child and be unable to do anything except weep. A third may suffer from constant preoccupation with the idea that her baby has cancer and is doomed, although she knows that this is not true. The unconscious conflict about the wish to be rid of the baby may be the same in all, but the first is a catatonic schizophrenia, the second suffers depression, and the third has an obsessional neurosis.

Clinical Description

The clinical picture is essentially that of the underlying disorder. Some features are significant, however, in the light of the postpartum pattern. A stormy pregnancy does not always presage puerperal trouble, nor does a calm and uneventful one always mean a nonpathological delivery period. It depends, of course, on the unconscious significance of the surface behavior. The labile pregnancy may reflect an inner struggle that will be happily resolved by the birth; and a calm and happy time may result from extensive use of the defense of denial, a precarious device.

The onset is typically during the puerperium. In schizophrenia it often appears to be sudden, and the patient commonly goes from the maternity ward directly to the psychiatric unit. In the depressions, the onset is frequently more insidious, and a period of increasing disability takes place before the worried relatives bring the woman to the psychiatrist.

The symptoms center around the patient's relationship to the baby and to the maternal role, both in direct and in disguised forms. Some typical delusions and obsessions involve the idea that the baby is dead or defective. The patient may deny the entire event by means of ideas of being single and virginal, or she may have ideas of persecution, influence, or perverse sexuality. Hallucinations can contain similar material and often involve voices telling the woman to kill the baby. The behavior toward the baby usually exhibits extremes of avoidance or anxious oversolicitude. Attempts at infanticide and suicide are infrequent but do occur. Depressive symptoms can be of neurotic or psychotic degree. Obsessive-compulsive neurotic behavior is common and can readily progress to psychotic states.

Prognosis and Management

All the techniques of modern psychiatry are available for treatment, and a careful evaluation is needed to select the approach most appropriate to the particular case. A few points are special to the postpartum state. On the basis of their study of a large number of cases, Brew and Seidenberg stated that there is no evidence of any benefit from hormone treatment. The indications for electroconvulsive therapy are the same as for psychosis without childbirth, but they suggest it not be started until 4 weeks after delivery, to avoid such accidents as the dislodging of an embolus from an unrecognized thrombophlebitis. Phenothiazine medication is often effective when the clinical picture suggests schizophrenia.

The acute postpartum reaction can often be successfully treated by immediate brief psychotherapy which aims at symptomatic relief. Later, if indicated and feasible, long term psychoanalytic therapy can be carried out in order to modify the patient's underlying personality disorder. The guiding principle of the immediate therapy is to support the ego by recognizing and temporarily accepting the nature of the forces causing the pathological ego activities. Where the dynamic pattern involves predominantly dependency, Bosselman suggested that the patient be helped to minimize the functions of motherhood and encouraged to accept outside help to permit recovery, after which she can gradually assume more of the care of the child. The masculine-aggressive type should be advised to pursue activities outside the home; later, modifications can be sought to reach the best possible adjustment for mother and child. A family approach is often important to the success of this type of treatment.

Prevention is desirable but difficult. Lorand points out that the best prevention would be to treat the personality disorders before pregnancy occurs. No data are available about effectiveness of preventive measures during pregnancy. One would expect that it would be beneficial for obstetricians to recognize the psychological factors that have been discussed and to initiate some therapeutic intervention if they see danger signs in the form of undue anxiety, family dissension, obvious immaturity, or threatening social or economic factors.

Published data on the outcome of postpartum disorders indicate that the prognosis is about the same as for the same conditions not involving childbirth (Fondeur et al.), although some maintain that the prognosis for postpartum schizophrenia is better than for schizophrenia without childbirth in a comparable population (Madden et al.). In the case of postpartum depression, the large majority recover within a few months. However, the risk of another psychosis in conjunction with a future pregnancy is high, figures on recurrence rate ranging from 15 to 35 per cent. Bosselman advises doctors to be cautious about recommending further pregnancies to such women, unless important precipitating circumstances were in-

volved that will not occur again or unless therapy has brought about some improvement in the personality functioning of the patient.

Normal women also experience postpartum blues, and Markham's study of the psychological tests of normal women after childbirth and of women with postpartum disorders corroborates the clinical impression that similar unconscious dynamic forces are present. The difference is in the ego, which, in emotionally mature women, makes use of the parturition experience to resolve old conflicts and to strengthen their feminine position.

Suggested Cross References

For further discussion of the psychodynamics of childbirth, see Klein's section on the psychosomatic aspects of obstetrical and gynecological disorders (Section 30.8).

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32.3 NEURASTHENIA AND HYPOCHONDRIASIS

GERARD CHRZANOWSKI, M.D.

Introduction

Definition. Neurasthenia and hypochondriasis currently represent generic, descriptive terms, rather than nosological entities. Neurasthenia implies a state of

chronic fatigue and debility. The term "hypochondriasis" denotes the presence of physical symptoms which have no basis in demonstrable organic changes. Today it is generally recognized that any part of the body may be the object of hypochondriasis; however, the term is derived from the subcostal abdominal region which was formerly held to be the anatomical seat of the disorder. In modern psychiatry, both phenomena are believed to be psychogenic in origin; both give rise to maladjustments in interpersonal relationships and a general impoverishment of personality. On the one hand, in a sense, the patient's intense preoccupation with bodily symptoms precludes awareness of underlying unconscious conflicts. On the other hand, this preoccupation deflects his energies from other activities; instead, these energies are channeled into a rigid, narrow zone of somatic "over-concern." As a consequence of this displacement, a barrier is erected which restricts the patient's contact with the environment. Concomitantly, the patient's awareness of his inhibitions in living gives rise to neurotic feelings of inferiority and self-doubt which further restrict his object relationships and contact with the environment. In some patients, an increasing tendency toward isolation and withdrawal finally reaches such proportions that these symptoms, in themselves, are considered indicative of severe psychopathology.

History. Today it is generally agreed that the terms "neurasthenia" and "hypochondriasis" are awkward and confusing, and of limited value in the nosological classification of psychiatric disorders. At the same time, however, these concepts are of considerable historical importance.

Renaissance formulations concerning the etiology of mental illness did not distinguish between physical science and metaphysical speculation. The subsequent rejection of this orientation was precipitated by the emergence of a wave of humanitarian, rationalistic and mechanistic concepts of mental disorders, and the refutation of metaphysical considerations. Thus, in his *Elementa Medicina*, published in England in the 18th century, John Brown described the nervous system in terms of 18th century mechanistic concepts and postulated that "irritability" of the nervous system could cause mental illness. Following this theory, neurasthenia came into existence as a diagnostic syndrome which referred to a weakness or exhaustion of the nervous system. As such, neurasthenia was regarded as the forerunner of all the more severe nervous disorders, e.g., hysteria, epilepsy, locomotor ataxia, general paralysis, etc.

The term "neurasthenia," to denote nervous exhaustion, was subsequently introduced into American psychiatry by George Miller Beard in 1869. Beard maintained that the nerves might "run down" as a result of overexertion or overwork. Thus, according to Beard's theory, the nerve cells operated in much the same way as a battery: when their supply of stored nutriment was depleted, they lost their natural "charge." As an

outgrowth of this concept, S. Weir Mitchell developed his rest treatment which prescribed complete rest to cure "anemia of the brain."

The influence of George Miller Beard's hypothetical model is evident in Freud's early formulations concerning the etiology of neurosis. Freud believed that Beard's concept of neurasthenia was too inclusive and proposed, instead, the broader classification of "actual neuroses," which would encompass three separate syndromes, namely, neurasthenia, anxiety neurosis, and hypochondriasis. (Hypochondriasis resulted when an anxiety neurosis was superimposed on neurasthenia.) At the same time, however, like Beard, he attributed these phenomena to physicochemical forces, rather than psychological factors. Thus, in Freud's first theory of anxiety, he distinguished between the etiological factors which produced anxiety in specific clinical entities: while the psychoneuroses were psychogenic in origin, actual neuroses had a physical basis. More specifically, in the actual neuroses, abnormal sexual practices prevented the adequate somatic discharge of chemical substances, or "toxins." Concomitantly, there was an interference with the adequate discharge of the psychic component of sexual tension, which gave rise, in turn, to anxiety. In contrast, in the psychoneuroses, the abnormal sexual functioning which produced anxiety was due to psychic factors, specifically, to repression.

Subsequently, Freud recognized the psychological nature of anxiety and neurosis. As pointed out elsewhere in this volume, however, throughout his lifetime he continued to believe that psychical and physical processes were closely interrelated and that physical processes preceded psychological manifestations. Accordingly, Freud's later theory of anxiety did not rule out the possibility that there was a direct somatic relationship between sexual conflicts and anxiety in certain neurotic conditions or, more accurately, that these conditions resulted from the toxic effect of dammed up sexual energy.

He also maintained that there was a potential link between actual and psychoneurosis, that the symptoms of an actual neurosis might precipitate psychoneurotic symptoms in many instances. And, in this connection, he postulated a possible relationship between neurasthenia and conversion hysteria, and between hypochondriasis and paranoia. For example, initially, the pain which accompanies a neurophysiological symptom, such as a headache, is "real"; that is, it is somatic in origin and due to sexual "toxins." This actual physiological disturbance may then become a future source of focal irritation which might serve as the basis for psychoneurotic symptom formation. Freud further postulated that hypochondriasis represents a withdrawal of interest or libido from objects in the outside world; instead, the libido formerly connected with the ideas of objects now intensifies all ideas concerning body organs. In para-

noia, too, an organ becomes the representative of an external object, as a result of narcissistic regression. Thus, Freud hypothesized that hypochondria is the somatic basis of paranoia, just as the anxiety neurosis, that is, a continual readiness to "explode," is the somatic basis of hysteria.

Freud's theoretical foundation for the relationship between the conditions mentioned above is to be found in his concept of narcissism. He distinguished between ego libido and object libido. The former is a withdrawal of interest from object relations and runs counter to the capacity of gaining genuine satisfaction. Freud stated in "On Narcissism," "the relation of hypochondria to paraphrenia is similar to that of the other actual neuroses to hysteria and the obsessional neurosis: which is as much as to say that it is dependent on the ego-libido . . . and that hypochondriacal anxiety, emanating from the ego-libido, is the counterpart to neurotic anxiety."

Finally, a historical review of neurasthenia and hypochondriasis must include the formulations of Pierre Janet. Janet subdivided neurotic disorders into two groups—hysterical and psychasthenic. Within this framework, neurasthenia was described as a prolonged state of fatigue, without somatic basis. Instead, Janet postulated that neurasthenia was due to a psychic depression in which there is a general depletion of mental energy.

Current Diagnostic Classification

By definition, clinical diagnosis facilitates the prediction of course, duration, and outcome of a particular disorder. Diagnosis is also a prerequisite for the determination of the incidence and prevalence of psychopathology, and it constitutes an essential tool in determining preventive measures. Neither neurasthenia nor hypochondriasis can fulfill these criteria. For one, in many respects, they are overlapping phenomena. Secondly, they rarely appear as isolated neuroses. Rather, they usually represent complicating factors in some other psychopathological condition; in fact, neurasthenic and hypochondriacal manifestations are almost ubiquitous in all types of psychiatric practice. Finally, to further confuse the nosological picture, neither of these clinical syndromes has been described definitively.

It is not surprising, then, that the nosological classifications of neurasthenia and hypochondriasis are not included in the standard nomenclature of the American Psychiatric Association. However, the diagnostic category, "psychophysiologic nervous system reaction" includes psychophysiological asthenic reactions in which general fatigue is the predominant complaint, although there may also be associated visceral complaints. This term includes many of the conditions which were formerly described as "neurasthenia." According to the *Diagnostic and Statistical Manual* of the American Psychiatric Association, "In some instances, an asthenic reaction may

represent a conversion reaction; if so, it will be so classified, with asthenia as a manifestation. In other instances, it may be a manifestation of anxiety reaction, and should be recorded as such." Finally, the British *Classification of Mental Disorders* still lists neurasthenia under "exhaustion states," which is a subgroup under the major category, "neurosis and psychoneurosis."

Epidemiology. The difficulties inherent in an attempt to investigate the epidemiology of clinical entities as poorly defined as hypochondriasis and neurasthenia are self-evident. A major obstacle arises from the fact, mentioned above, that these conditions typically occur in association with other neurotic, psychotic, and organic syndromes. Indeed, few studies have been undertaken in this area. However, some of the findings which emerged from the study by Hollingshead and Redlich of the relationship between social class and mental illness are relevant in this connection. Specifically, these authors reported that heightened concern with bodily symptoms was most pronounced in those patients who were socially and economically deprived. Again, Anna Freud found that hypochondriasis occurred only rarely in children, unless they were motherless and had been institutionalized. On the other hand, precursors of neurasthenia and hypochondriasis, in the form of "growing pains," fatigue, and sleep disturbances, are fairly common in children.

Etiology

A brief summary of the historical evolution of current etiological concepts may be useful at this point. As mentioned earlier, Beard postulated that fatigue and overwork might give rise to mental disorders. Freud agreed with Beard in principle; this is, he too believed that mental phenomena had a physiological basis. However, Freud was less convinced of the etiological importance of overwork. Rather, Freud believed that neurasthenia could be explained as a disturbance in sexual functioning, specifically, the inadequate discharge of sexual energy. Thus, he wrote that neurasthenia "arises whenever a less adequate relief takes the place of the adequate one, thus, when masturbation or spontaneous emission replaces normal intercourse." Freud thought that every neurosis has a sexual etiology. However, he postulated a major difference between the actual neuroses and the psychoneuroses. The former group of disorders has its origin in the here and now, while the psychoneurotic conditions relate back to traumatic experiences in infancy. Finally, Freud also contended that the actual neuroses (i.e., neurasthenia, hypochondriasis, and anxiety neurosis) frequently functioned as a focus for neurotic symptom formation.

Bleuler, too, rejected Beard's hypothesis that exhaustion of the nervous system caused neurasthenia. On the contrary, he believed that work was beneficial, and he noted that individuals who work hard seldom

fall victim to neurasthenia. Bleuler also noted that neurasthenia was frequently a precursor of schizophrenia.

Current etiological concepts. Brenner summed up the situation in his *Elementary Textbook of Psychoanalysis* as follows: "...the category of the actual neuroses has ceased to be a significant part of psychoanalytic nosology." The same author, in collaboration with Arlow, expressed renewed interest in hypochondriasis, which is the third of the actual neuroses. According to Brenner and Arlow: "...hypochondriacal impulses are not properly explainable as the result of libidinal regression and displacement... they are more satisfactorily explained in terms of the conceptual framework of the structural theory, with its emphasis on anxiety, conflict and defense." Otherwise, current psychoanalytic literature has largely ignored the actual neuroses, in spite of the great interest in ego psychology with its emphasis on reality factors. For the most part, references to neurasthenia and hypochondriasis in the current literature do not extend beyond the description of these conditions. Concomitantly, when they are included, discussions of etiology are usually limited to a brief allusion to heredity, constitution, autointoxication, and prolonged emotional disturbances as major etiological factors. There has also been a growing dissatisfaction with outmoded terminology in recent years. Noyes, for one, has taken issue with the concept that neurasthenia represents an exhaustion of the nervous system. Rather, he believes that, invariably, neurasthenia is due to personal maladjustment. On another level, Masserman has described neurasthenia as an exhaustive-regressive state, due to unconscious, cumulative, internal tensions.

Harry Stack Sullivan's concern with the etiology of neurasthenia and hypochondriasis reflected his interest in the reformulation of psychiatric syndromes in interpersonal terms. To begin with, he contended that the diagnosis should pertain to an ongoing process which would be considered indicative of the way in which personal situations have become integrated in more or less durable patterns. The integration has its roots in significant interpersonal constellations of the past as well as of the present. Furthermore, personal encounters in the immediate future are an integral part of the situation, for past and present events tend to determine future experiences. Viewed from this perspective, Sullivan could find no virtue in the diagnosis of neurasthenia, as a one-dimensional, somatic concept which made no reference to maladjustments in patterns of living. He postulated, instead, that certain factors, such as deficiency states, malnutrition, and chronic intoxication, might produce neurasthenic symptoms which were purely physiological in origin. On the other hand, psychiatric or interpersonal phenomena might produce symptoms, such as fatigue, apathy, and somnolent detachment, which resembled neurasthenia to some degree. Apathy and somnolent

detachment were conceived of as protective operations against a lowering of self-esteem. More specifically, by taking refuge in sudden, overwhelming sleepiness, the individual withdraws from a tension-producing situation and is no longer vulnerable to feelings of inadequacy, worthlessness, or hostility. In apathy, all the individual's responses become less intense as a reaction to severe frustration.

Sullivan viewed hypochondriasis as a particular kind of security operation. The self-esteem of the hypochondriac has been organized in such a fashion that bodily phenomena are given a great deal of highly pessimistic attention. For the hypochondriac, an intense, morbid preoccupation with his body serves as a distraction from a stressful interpersonal situation. And, concurrently, the recognition of anxiety is minimized or avoided. The hypochondriacal person has difficulty in achieving any genuine satisfaction, because he is constantly haunted by the shadow of impending doom. Hypochondriasis is further characterized by an implicit symbolism which is body-centered and reflects a regression of cognition. It is this regression of the cognitive operations which links the hypochondriacal thought processes to certain schizophrenic thought processes. Sullivan formulated his ideas on the subject as follows: "It is as if the hypochondriacal patient had abandoned the field of interpersonal relations as a source of security, excepting in one particular. He has to communicate data as to his symptoms; the illness, so to speak, becomes the presenting aspect of his personality."

It was also Sullivan's opinion that, in all likelihood, paranoid, algolagnic, hypochondriacal, depressive, and obsessional states were different manifestations of the same maladjustive processes. He observed that in many patients there was a blending of these conditions and an alternation between one state and another.

Another etiological basis for neurasthenic and hypochondriacal preoccupations may be the existence of unexpressed anger which leads to concealed resentment. This concept has been stressed in particular by Rado, who believes that hypochondriasis serves to obscure the feelings of repressed rage and hurt pride.

Finally, symbolic feelings of rejection and worthlessness may be communicated in characteristic patterns of nonverbal and verbal communication. For example, Weinstein pointed out that the statement "I am tired" results from a complex interpersonal transaction which expresses a particular relationship to the environment. Similarly, a hypochondriacal preoccupation may be understood as a symbolic expression of feeling disliked, not approved of, and isolated from other people.

Clinical Description

Neurasthenia is characterized by a wide variety of symptoms. Usually, there are prolonged feelings of weakness and fatigue, many aches and pains, as well

as strange physical sensations. Insomnia and irritability occur often, together with feelings of chronic distress which are associated with a specific organ system of the body.

In his clinical description of neurasthenic manifestations, Freud also stressed the occurrence of headache, spinal irritation, and dyspepsia, with flatulence and constipation. Adolf Meyer felt that the term "neurasthenia" should be used only in the presence of great exhaustion and irritability. He considered the determining factor in arriving at the diagnosis to be the patient's mental attitude regarding the speed with which he recovered from feeling tired. Other symptoms which he ascribed to neurasthenia were feelings of pressure in the head, palpitations, gastric disorders, the presence of phosphate and oxalic acid in the urine, and sexual disturbances.

Some hypochondriacal patients experience vague general discomfort; however, others center their attention upon a particular organ. While any part of the body may be affected, gastrointestinal symptomatology is especially frequent. Adolf Meyer observed that hypochondriasis usually occurred in combination with other forms of nervousness. It was his opinion that the preoccupation with feelings of ill health encouraged excessive self-concern. Thus, the hypochondriac centered all his attention and interest on the potential malfunctioning of his body. Such a person might become deeply concerned over trifles and seek reassurance from quack literature. The patient's fears tend to assume a central position in his thought processes.

Management

At one time or another, almost the entire armamentarium of psychotherapeutic tools has been utilized in the treatment of neurasthenic and hypochondriacal manifestations. The results achieved with psychological reassurance, the administration of placebos, and hypnosis have been generally unsatisfactory. The effectiveness of psychoactive drugs has also been limited. In some cases, psychotherapy has uncovered an underlying depression or a latent schizophrenic process. For reasons noted earlier in this section, the hypochondriacal preoccupation may assume the character of a fixed paranoid delusion, which usually has a poor prognosis. When there is evidence of suicidal tendencies and the patient's abnormal preoccupation with somatic symptoms persists to the degree that the possibility that he may break off all communication appears increasingly imminent, hospitalization should be considered.

As a general rule, careful psychiatric evaluation is a prerequisite for the patient with a long history of the neurasthenic or hypochondriacal symptoms. On the basis of this initial assessment, the psychiatrist can determine whether the patient's symptoms are, in fact, amenable to therapy and, if so, what type of treatment is likely to produce the best results. It is understood, of course, that patients are not always

sufficiently motivated to change, although their symptoms are very distressing. In some patients, group therapy, family therapy, or even brief psychotherapy may help considerably. But other patients, who are not particularly verbal, may require quite a different approach, e.g., physical exercises, body reorientation programs, and various educational programs. In some instances, where an unhappy marriage, a difficult job situation, or family conflicts play a major role in symptomatology, a drastic change in the patient's external circumstances may produce significant improvement. Unfortunately, however, patients are not always in a position to modify their life situations.

Whatever treatment procedure is employed in dealing with neurasthenic and hypochondriacal conditions, the therapist's most difficult task will be to widen the patient's limited field of communication, so that his interpersonal relationships may acquire new depth and meaning. When therapy is successful, patients frequently become alert to areas of vulnerability and hypersensitivity in their relationships with others and in their own intrapsychic functioning.

In summary, neurasthenia and hypochondriasis are the legacy of a psychiatry whose approach to mental disorders often neglected what might be described as the "human frame of reference." In fact, both these conditions can best be understood as distorted modes of relating to the environment, i.e., where there is marked disturbance or an absence of meaningful interpersonal communication. Thus, hypochondriasis and neurasthenia may be regarded as symbolic expressions of self-experiences of worthlessness and rejection. The individual reacts to these experiences by attempting to attenuate all interpersonal contact by intense preoccupation with his own body. As a result of his focal interest, the individual becomes increasingly isolated from other people, and, in time, his somatic preoccupation also fosters a remodeling of all significant patterns of communication with the environment.

Suggested Cross References

See Section 31.1, on the concept of psychogenicity in medicine, for a comparison of hypochondriasis and psychosomatic disorders. For a discussion of the current psychoanalytic view of the actual neuroses, see Chapter 6, on classical psychoanalysis.

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slight lowering of mood are also present. It should be noted that this diagnosis is *not* included in the *Diagnostic and Statistical Manual* of the American Psychiatric Association.

Epidemiology

This type of depression seems to be universal. Watts reported that it represents approximately 24 per cent of all new psychiatric cases seen by the general practitioner of medicine. There is a paucity of this type of depression in public mental hospitals, since the majority of cases are not of sufficient severity to require hospitalization. Similarly, it is difficult to estimate the percentage of cases treated in general hospitals. The incidence is much higher in females than in males—two to four times higher in the younger age groups but tending to be of more equal sexual distribution in the older age group.

Etiology

The cause of this kind of depression has not yet been clarified and is no closer to being discovered than are the causes of other types of depressive reactions.

Psychobiological theory. A reasonable psychobiological theory is that the depression originates as a result of some disorder of the diencephalic centers that control mood, sleep, weight, metabolism, and level of consciousness. From animal studies, it has been demonstrated that disturbance in the diencephalic and surrounding areas can produce the biological concomitants seen in depression. Some authorities postulate a combination of biochemical and environmental factors as precipitating the dysfunction.

Psychodynamic theories. The theories developed by Abraham, Freud, Fromm, Rado, Bibring, and others indicate that the premorbid personality, the precipitating factor, and the evolution of the depression are paramount in the development of depression. The premorbid personality is developed early in life, when the infant is confronted with certain frustrations that create conflict, resulting in ambivalence. Later in life, other persons become symbolic of this original conflict. The precipitating factor of depression is the loss of a loved one or threat of loss by illness or rejection. There is also identification of self with the lost love object, which is handled by introjection. Depression then occurs as a form of punishment to both self and the symbolically internalized lost love object. It should be noted however, that the syndrome of nonpsychotic cyclic depression described here does not occur in reaction to a loss or to rejection.

Clinical Description

The onset of this type of depressive illness varies from an acute attack of several weeks' duration to a slow, insidious onset extending over several years. A change in disposition generally precedes other symptoms, and this change is not noticed by the patient.

32.4 NONPSYCHOTIC CYCLICAL DEPRESSION

HAMILTON FORD, M.D.

Nonpsychotic cyclic depression is a particular psychiatric complex to which a number of descriptive terms—endogenous, simple, autogenous, Kraepelinian-type, atypical, periodical, and mild depression—have been variously applied. As these terms indicate, this form of depressive reaction is not of psychotic proportions; it is neither reactive nor hereditary in nature, and it shows very little psychomotor retardation. This condition represents a *specific episode of depression* taking place at some point or points in the life cycle, and it develops in a personality structure characterized by stability and socioeconomic accomplishments. Much of the depressive anxiety may be somatized, although such characteristics as loss of biological drive, loss of interest, a variable insomnia, indecisiveness, fear of not awakening, strong feelings of inner unrest, and a

Usually there also develop other prodromal symptoms of slight mood disturbance, periods of inefficiency at work, some difficulty with sleeping, loss of appetite, and physical symptoms without organic cause.

As the illness progresses, it becomes characterized by loss of drive and confidence, increasing feelings of guilt, indecisiveness, worry over trivialities, feelings of inadequacy, aversion to responsibilities, rumination about insignificant matters, generalized loss of interest, decreased ability to concentrate, loss of sexual drive, and an increasingly depressed mood. The characteristic sleep disturbance is classically terminal, although there may be an associated initial disturbance. The symptoms usually follow a diurnal variation in that they are worse in the morning, but, as the depression progresses, they tend to remain constant.

In the overt illness, physical symptoms are common and result from somatization of depressive anxiety. These symptoms may involve any or all body systems, but those pertaining to the gastrointestinal tract are by far the most prevalent.

Differential Diagnosis

The differential diagnosis of nonpsychotic cyclic depression includes anxiety reaction, depressive reaction, involutional psychotic reaction, manic-depressive reaction (depressed type), psychotic depressive reaction, schizophrenic reaction (schizoaffective type), and early cases of chronic brain disorders. Differential diagnosis is not difficult to establish with a careful longitudinal history, mental status examination, psychological testing when indicated, adequate physical examination, and appropriate laboratory studies.

Prognosis

The prognosis of nonpsychotic cyclic depression is excellent with adequate treatment. There is always the possibility of recurrence, but, if the previous depression or depressions have responded rapidly to treatment, the outlook for recovery in each episode is good.

Early diagnosis and treatment, with currently available modalities, usually reduce the length of the illness. Marked somatization or obsessive traits seem to prolong the illness.

Management

Treatment consists of supportive and symptomatic therapy or specific therapy, depending on the degree of depression. Mild depression usually responds to supportive and symptomatic therapy; more severe depression may require specific treatment. It is most important to establish a positive diagnosis early in the course of the illness so that somatic symptoms are not reinforced.

Supportive and symptomatic treatment. This type of therapy should consist of attention to diet, sleep, reduction of responsibility, and curtailment of social engagements. Antidepressant medications, when indi-

cated, should be tailored to suit the symptoms. Reassurance and supportive psychotherapy tend to dispel fears and uncertainties and may also give some relief from other symptoms. Mild depressions thus treated show about 70 per cent good improvement, requiring no further treatment. Those cases that do not respond in a reasonable length of time should receive specific treatment.

Specific treatment. This consists of electroshock therapy with or without antidepressant medication. Hospitalization is indicated, at least initially, for electroshock treatment. Approximately 90 to 95 per cent of cases recover within a 2-month period on this treatment program. In treatment failures, a maintenance electroshock program for as long as 6 to 12 months may be required to obtain a full remission of the illness. The effect of electroshock treatment on one episode has no bearing on the development of further episodes of depression. There is some indication that the combination of appropriate chemotherapy and electroshock treatment may reduce the total number of shock treatments needed to interrupt the illness. Recent studies with continuous low voltage, direct current stimulation to the frontal areas of the brain show promise as a definitive therapy.

There is evidence that psychotherapy of an uncovering nature is not indicated because it can aggravate guilt feelings, enhance tension, and deepen the depression. Self-injury is not common in this type of depression, but revelatory psychotherapy carries the risk of suicide because of the psychodynamics involved.

Suggested Cross References

For a comparison of nonpsychotic cyclic depression with other depressive states, see Ford's section on involutional psychotic reaction (Section 17.3), Huston's section on psychotic depressive reaction (Section 17.2), Cohen's section on manic-depressive reaction (Section 17.1), and Mendelson's section on neurotic depressive reaction (Section 24.2).

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THE PSYCHIATRIC SYNDROMES

Chapter 33

Psychiatric Emergencies

33.1 SUICIDE

HERBERT HENDIN, M.D.

Suicide has occurred since the beginning of recorded history, with attitudes toward it varying from the condemnation of the early Hebrews to the tolerance of the ancient Greeks and Romans. Both the motives for suicide and its frequency have also varied from culture to culture. Even among primitive cultures, there are those with much higher suicide rates than our own and others where suicide is virtually unknown.

Epidemiology

In the United States, suicide is the 10th major cause of death, with 20,000 suicides recorded each year. It is estimated that each year there are about 10 times that number of attempted suicides. These figures do not fully reflect the magnitude of the problem. Some suicides are concealed. Other probable suicides are not recorded as such because of insufficient proof that a suicide rather than an accident was the cause of death. Since suicide (*sui* = self, *cide* = murder) is defined as the intentional taking of one's own life, the figures do not reflect unconsciously motivated fatal accidents or the many varieties of self-destructive behavior that are psychologically related to suicide.

The average yearly United States suicide rate of 10.5 per 100,000 places this country in the middle of any international scale. Ireland, Chile, and New Zealand, for example, consistently have suicide rates below 6 per 100,000; Japan, Denmark, Sweden, Austria, West Germany, and Hungary have suicide rates averaging 20 per 100,000.

The suicide rate for men in the United States averages 16 to 17 per 100,000 with the female rate about 4 to 5 per 100,000. A ratio of between 2 and 4 to 1 of male to female suicides is present throughout the industrialized world. This is in contrast to the ratio of attempted suicides, which are twice as frequent among women.

The tendency for suicide to increase in frequency

with advancing years is present in all Western countries. For children under 15, the suicide rate is negligible; for men over 65, the United States rate is over 50 per 100,000. The male suicide rate in this country rises steadily with age till 85; the rate for women reaches a peak between 55 and 65 and declines thereafter.

Suicide has a lower frequency among the married, especially those with children, than among the single, widowed, or divorced. Suicide rates for the single population in corresponding age groups average twice those of the married; suicide rates for the widowed and divorced are four to five times higher than those for the married population.

In the United States, the highest suicide rates are seen at the bottom of the socioeconomic scale. Unskilled laborers and agricultural workers have suicide rates significantly higher than the national average; professional groups and highly skilled workers have suicide rates below this average. This is a somewhat different picture from that found in Europe, where the top as well as the bottom of the socioeconomic ladder has the highest suicide rates, with professional groups, such as physicians, often ranking quite high.

The United States also differs from Europe in the ratio of urban to rural rates. In Europe, urban areas have strikingly higher suicide rates than rural areas. This pattern also prevailed in the United States until 30 years ago, but differences between urban and rural areas have now become negligible in this country.

Predominantly Catholic countries—such as Italy, Spain, and Ireland—have lower suicide rates than countries with a predominantly Protestant population. There are, however, some important exceptions. Norway and the Netherlands are Protestant countries with very low suicide rates, and Catholic Austria has one of the world's highest suicide rates. Within the individual European countries, higher suicide rates are present among Protestants than among Catholics. The Jewish rate in Europe has fluctuated greatly throughout this century, although it is generally lower than that for Protestants. In the United States, Protestants show significantly higher suicide rates than Jews and Catholics.

Within the United States, cultural and subcultural influences on the problem of suicide are easily discernible. Suicide rates among the foreignborn in the United States are higher than those of the nativeborn. The rates tend to be comparable with those of the country of origin, so that high rates are seen for those of German or Swedish origin and low rates for those born in Italy or Ireland. The Negro suicide rate in the United States is low, averaging one third that for whites. In urban centers, however, the Negro rate is much closer to that of the white population.

In this country, over one half of the male suicides and one fourth of the female suicides are carried out through the use of firearms. Poisoning by gas, solids, and liquids accounts for most of the female suicides—over one third of the total figure. Among men, poisoning contributes less than one fifth of the total. Hanging and strangulation account for one fifth of both male and female suicide.

The methods employed by suicides vary from place to place depending on availability. Jumping from high buildings is insignificant for the United States as a whole, but accounts for 15 per cent of the suicides in New York City. In Denmark, where private possession of firearms is illegal, suicide by firearms is virtually nonexistent, but the percentage of hanging rises to contribute 35 per cent of the total Danish figure.

Transient suicidal ideation may be seen in most people, but in our culture, actual suicide attempts usually reflect some underlying emotional disturbance. Attempts to correlate suicide with a variety of clinical syndromes ranging from alcoholism to homosexuality are often misleading, since an emotionally disturbed group is likely to have a higher incidence of other signs of emotional disturbance than the population as a whole. Although occasional families with histories of multiple suicides are encountered, Kallmann's genetic studies of suicide in twins have ruled out the possibility of a special genetic factor predisposing a person to commit suicide.

Sociological and Psychological Approaches

Durkheim. The first major contribution to the study of the problem of suicide was made at the end of the last century by the French sociologist Emile Durkheim. Many of his basic concepts are still actively in use, although sociologists have refined and extended his original contribution.

Durkheim utilized the European suicide figures to focus attention on some of the characteristic statistical patterns noted above. Suicide was more common in cities than in rural districts; there was more suicide among the single and the divorced than among the married and more among the married who were childless than in parents; it was seen more frequently in men than in women, more frequently among the wealthy than the poor, and more frequently among Protestants than Catholics.

In an attempt to explain these statistical facts,

Durkheim divided suicides into three social categories—egoistic, altruistic, and anomic. Egoistic suicide comprised individuals who were assumed not to have been strongly integrated into any social group, regardless of whether that group was a family, a religion, or a community. Family integration or the lack of it could be used to explain why the unmarried were more vulnerable to suicide than the married and why couples with children were the best protected group of all. Rural communities had more social integration than urban areas and thus less suicide. Protestantism was a less cohesive religion than Catholicism, and Protestants thus had a higher suicide rate than Catholics.

Altruistic suicide described the group whose proneness to suicide stemmed from exactly the opposite factor, that is, their excessive integration into a group, with suicide being the outgrowth of this integration. Durkheim had in mind the kind of suicide that in special situations could be expected of certain classes in Japanese society and the kind of integration into a military group that could at times require an individual to sacrifice his life.

Anomic suicide occurs when there is a disturbance in the balance of the individual's integration with society that leaves him without his customary norms of behavior. Anomie could explain the greater incidence of suicide among the divorced as compared with the married and the greater vulnerability of those who had undergone drastic changes in their economic situation. As a corollary of anomie, greater vulnerability to suicide was seen to exist among those in the society who had wealth or status and thus had more that they could potentially lose. It is among the wealthy who have had money and lost it, and not among the poorer classes, that one sees an increase in suicide during periods of economic depression. Sociologists could explain the low Negro suicide rate in the United States as due to the Negro's lower status and consequently lesser vulnerability to anomic suicide.

Increases in anomic and egoistic suicide were felt by Durkheim to be responsible for the rising suicide rates of Europe. The rise originated in a "pathological state just now accompanying the march of civilization without being its necessary condition." With industrial and scientific development, neither the family, the state, nor the church were the forces for social integration they had once been, and nothing had been found to replace them.

In essence, Durkheim's contribution was the introduction of the social dimension into the problem of suicide. He showed that suicide—like crime, neurosis, and alcoholism—is a factor that measures social pressure and tension. The extremely high rate seen in West Berlin in the postwar period is perhaps the most dramatic manifestation of this principle.

Durkheim's social categories were used to explain the variations in the rate of suicide from country to country. The Catholic countries had low suicide rates in line with Durkheim's observations on the influence

of Catholicism. Low rates were seen in impoverished countries like Spain and Ireland, although here a combination of being both poor and Catholic may have been at work. Such wide application of Durkheim's work was bound to highlight some of its weaknesses. No satisfactory explanation was given by Durkheim or his followers for Austria, a Catholic country with one of the world's highest suicide rates. No adequate explanation for the Scandinavian phenomenon of the strikingly high Danish and Swedish suicide rates as compared with the low rate in Norway could be found in Durkheim's categories.

Durkheim was neither oriented toward nor interested in the psychology of the individual suicide. This attitude was but an extension of his general feeling that "social facts must be studied as things, as realities external to the individual" and that, therefore, the psychology of the individual had little relevance for sociology. Since we are still busy resolving the problem of effectively integrating psychological and sociological data, it would not be fair to criticize Durkheim too severely for not tackling this problem. In the light of current knowledge, it is easy to see how the omission of the individual dimension limited the contribution that Durkheim could make in his own field of interest. The ways in which different social and cultural institutions are integrated by the individual and in which they affect his development, personality, and character are important to psychology, and, since the individual is the ultimate measure of the impact of social pressures, ignoring him makes the sociologist's study of social pressures a matter of guesswork.

Freud. The first important psychological insight into suicide came from Freud. Freud did not deal directly with the problem of suicide and described only one patient who actually made a suicide attempt. What he did see, however, and in good number, were depressed patients. In his 1917 paper "Mourning and Melancholia," Freud stated that the self-hatred seen in depression originated in anger toward a love object, anger that the individual turned back on himself. He regarded suicide as the ultimate form of this phenomenon and doubted that there would be a suicide without the earlier repressed desire to kill someone else. This concept of suicide as a kind of inverted murder was extremely important, although, unfortunately, it became overworked by some in an effort to explain all suicides.

Freud's observations on depression were made long before he came to the conclusion that anger or aggression could be nonerotic in origin. At the time of the writing of "Mourning and Melancholia," Freud believed that all aggression had to have a sexual origin. Hence his paper is filled with a complex discussion of what amounts to retroflected anger. Ten years later, Freud expressed surprise at his having overlooked "the universality of nonerotic aggression." Since he never rewrote his earlier report, the extraneous libidinal explanations for the existence of anger remained unaltered. However, this fact should not lead one to overlook the basic psychological truth contained in

his paper—namely, that anger can become self-directed, can lead to depression, and can be a motivating force in suicide.

Freud's preference for instinctual explanations led him to see aggression as the manifestation of a death instinct. The death instinct violated too many basic observations of biologists and psychologists for it ever to be accepted by them or by more than a small minority of psychoanalysts. Instinct psychology soon lost much of its influence in the field of psychology, although it has held on longer in psychoanalysis. By 1922, John Dewey had already given his analysis of the misconceptions that arose from taking a phenomenon and elevating it to a cause by attributing it to an instinct. Zilboorg probably spoke for a majority of psychoanalysts when he wrote in 1937 that "to say the death instinct gains the upper hand over the life instinct is merely an elaborate way of saying that man does die or kill himself."

While Durkheim minimized the individual dimension, Freud showed a similar disregard for the social dimension. Instincts know no societal boundaries, and Freud's instinctual frame of reference did not lead him to a concern with the psychological impact of the social institutions of particular cultures nor with such psychosocial questions as why suicide was very high in one country and very low in another. Nor would his instinctual frame of reference have enabled him to resolve such questions adequately, even if they had arisen. The marked variation in the suicide rates from country to country had helped Durkheim realize that social facts were a function of social institutions, which in turn were a function of a particular society or culture. Biologically speaking, the differences between Englishmen and Germans or Norwegians and Swedes are not very important, and Freud assumed he was dealing with psychological evolution, much as Darwin had dealt with biological evolution. Being understandably under the influence of the evolutionary anthropology of his day, Freud saw the psychological life of primitive man as "a well preserved early stage of our own development." This approach made study of the culture as a unit unnecessary, and Freud had little interest in the comparative anthropology that developed during his lifetime.

More important was his influence. As late as 1936, Zilboorg was certain that investigation would show primitive man to have a much higher suicide rate than modern man. Investigation showed, rather, that primitive cultures also had marked variations in suicide rates and that there were cultures where it was unknown. In any case, separate study of each culture, its people, and its psychosocial institutions is required for any deeper understanding of the frequency with which suicide is used in a society as an expression of personal dissatisfaction and unhappiness.

Psychodynamics

A study of the psychodynamics of suicide is a prerequisite for any understanding of suicide as a psycho-

social phenomenon. In such a study, one is usually working with patients who have made suicide attempts and survived. The question as to whether these patients are comparable in terms of personality and motivation to those who actually died has a bearing on any evaluation of the psychodynamics of suicide.

Some years ago it proved helpful to rate or evaluate suicidal patients on a scale of one to three with regard to their suicidal intent—1: the patient with minimal intent; 2: moderate intent; 3: maximal suicidal intent. The following three cases illustrate types of patients in the maximal intent group.

A girl jumped under a subway train and survived, although two cars passed over her. Her survival was possible because on this particular subway there was sufficient room between the wheels and under the train. However, these details were not known by the girl at that time.

A second patient entered into a suicide pact with his homosexual partner. They made their attempt in a hotel room on a Saturday night so that they would not be discovered by the chambermaid until Monday morning. Both took 50 barbiturates of 0.1-gm. strength. When found and admitted to the hospital on Monday, they were comatose and remained so for several days. The initial opinion of the hospital staff was that neither would survive. As it turned out, one died and the other lived. The one who lived was placed in the group of maximal intent patients.

A third patient tried to shoot himself in the heart. The bullet grazed his heart, pierced his lung, and came to rest 2 cm. from his spinal cord. His survival was, according to his surgeons, little short of miraculous.

It seems reasonable to include such cases in the maximal intent group and to assume that, in working with them, one encounters a situation as close as is necessary to that resulting in actual suicide. When suicidal patients are divided into intent groups, the group with maximal intent has an age and sex distribution statistically comparable to that of actual suicide. It is quite different from the total group of all attempted suicides.

Studies of actual suicides reveal that 60 per cent of them have histories of previous attempts. However, studies in which attempted suicides who survive are followed establish that 10 per cent of them eventually kill themselves. Thus, it appears likely that the attempted suicide group is a large and heterogeneous group that in a sense contains the eventual suicide group. These studies highlight both the research value and the clinical necessity of the careful evaluation of suicidal intent.

A great deal about suicide can also be learned from the study of patients in the lower intent groups. When, for example, suicide is an act of self-punishment, for one patient only death will be sufficient atonement; for another, the self-damage done in a suicide attempt may suffice. The study of both types, however, throws light on the psychology of self-punishment and its relation to suicide. Investigation of the maximal intent group also indicates that most suicidal patients have mixed feelings about the wish to die. The attempts made in Europe by Stengel and others to regard attempted suicide as a completely separate entity from

actual suicide have been based on failure to comprehend the psychodynamics of suicide.

Since the methodological details and particular circumstances of a suicide attempt usually provide the first important clue to the psychodynamics of a particular patient, they must be carefully established. With the suicide attempt often representing a kind of psychological drama, the very way in which it is made is apt to be revealing. One woman jumped from a window with a picture of her son in her brassiere and a message on the back of the picture saying, "Timmy knows I love him." Years before, at the time of her divorce, this woman had given away her young son to his paternal grandparents, who actually raised him. Although she still saw him up to the time of the attempt, she was tortured by her difficulties in love relationships and especially by her inability to love her son. The picture and its message amounted to an attempt to deny the true state of affairs. Yet they furnished the first insight into her desire to end her life.

The communication of suicidal intent is often an integral part of the method employed. Such communication can be coercive, can be a plea for help, and, most dramatically, can involve a gamble with death in which another person is empowered to decide whether the potential suicide will live or die.

The choice of method used in a suicide attempt may reveal a good deal about the organization and integration of the personality involved. Disorganized or multiple suicidal methods or those carried out in a chaotic manner and lasting several days are usually chosen by disorganized, schizoid patients.

As has been indicated, modern concepts of the psychodynamics of suicide began with Freud's idea that suicide stemmed from anger toward a love object, anger that had become self-directed, and thus suicide was a kind of inverted homicide. It should also be recalled that Freud's theory was the outgrowth of his work with depression.

Our views of depression have been revised over the years. The significance of both dependency and expiation in depression was stressed by Sandor Rado. The idea that retroflected anger and self-punishment can have atonement or expiation as goals—with the depressed individual hoping to win back love and affection—does not appear in "Mourning and Melancholia" and was primarily Rado's contribution. Just as retroflected anger can at times be the motivating force in suicidal patients, so can suicide be an act of expiation.

Something of the relationship between suicide and depression can best be understood by the need for atonement that can underlie both. It has long been observed that depressed individuals may attempt suicide just as they appear to be recovering from their depression. It is equally true that a suicide attempt can cause a depression of long standing to disappear. One form of atonement appears to substitute for another. Of equal relevance, many suicidal patients use a preoccupation with suicide as a way of fighting off intolerable depression. So, paradoxically, at times depression seems to

ward off suicide, and at other times suicide serves to ward off depression.

Despite the help that the knowledge of the psychology of depression gives to the understanding of suicide, it is by no means the whole picture. A great number of suicidal patients do not manifest the clinical features or classic psychodynamics associated with depression. Especially important is the fact that many depressed patients are not suicidal. This observation alone serves to demonstrate that the psychodynamic aspects of depression are not sufficient to explain suicide. In other words, the study of depressed patients cannot be used as a substitute for the direct examination of suicidal patients. In such investigations, many suicidal patients appear to view their death as an internalized murder, while the suicide attempts of others are explained as acts of expiation. In addition, there is a broad range of different attitudes toward death and other meanings of the act of suicide.

Freud wrote in 1915 that the "unconscious does not believe in its own death." Some 20 years later, Zilboorg elaborated on this statement to stress the importance of unconscious fantasies of immortality, particularly for suicidal patients. It may seem surprising that not until recently has there been more systematic investigation of the attitudes and fantasies of suicidal patients toward death, dying, and afterlife. This can be attributed partly to the anxiety and inhibition of psychiatrists in relation to suicidal patients. A reflection of this attitude can be seen among the residents of psychiatric wards who ask a patient after 10 minutes' acquaintance if he has had homosexual experiences or what he does with regard to masturbation. However, they probably fail to ask a suicidal patient about his attitudes toward death, about the presumed events after death, about his thoughts after he turned on the gas, and about possible dreams during his state of unconsciousness. These four questions can elicit valuable material bearing on the understanding of suicidal patients and their motivation. The answers to them make clear that what a suicidal patient wishes to escape from in life tells us only part of his story. His attitudes toward death, dying, and afterlife must be known in order to understand fully his motivations for suicide.

The following cases illustrate some of the psychodynamic constellations with regard to death and suicide that have been observed in suicidal patients.

Death as retaliatory abandonment. An 18-year-old homosexual college boy who had been failing in school was seen after he took 60 barbiturates in a serious suicide attempt, which he barely survived. He had a simple but revealing dream in connection with his suicide attempt. He was working for the United Nations, where he had an office comprising the entire first floor of the U.N. building. He was interviewing one of his friends, who was applying for a position. After reviewing his qualifications, he told his friend that he did not qualify for the job.

During his waking associations to the dream, he revealed his preoccupation with his friend, on whom he had had a crush, although he had never mentioned his sexual interest in the boy to him. Apparently the friend became alarmed at the in-

tensity of the patient's feelings and was determined to break away from the relationship. Several months prior to the suicide attempt, he had stopped seeing the patient.

What does the patient accomplish in the dream and by his suicide attempt? He gains an illusory control over the situation in which he was rejected. In the dream, if there has to be a rejection, he is going to do it; by committing suicide, he is the one who leaves and rejects. The concept of death as an act of leaving—that is, as abandonment—is known to derive from childhood. Children's reactions to death frequently imply either that a violent act was inflicted on the dead person or that he left voluntarily. Children who lose or are separated from their mothers react as though the mothers had chosen to leave them. The continuation of this psychological equation is seen in adult patients with extreme fears of dying, which are traceable to the most primitive abandonment fears of childhood.

That the patient also experienced a *feeling of omnipotent mastery through death* is strongly suggested by the important U.N. position and large office in his dream. Suicide attempts and the possibility of suicide seem to give a person an illusory feeling of mastery over a situation through the control over life and death. Suicide can be a source of relief to patients excessively preoccupied with the fear of death through the feeling of control they then have over the when and how of dying.

Another patient, a chemistry major in college, had struggled through school with a cyanide capsule in his desk, consoling himself with the thought that, if he could not manage his work, he could always take the cyanide. On graduation, he threw it out and never made a suicide attempt. On the other hand, a female patient who eventually did make a serious suicide attempt had previously kept a toy pistol in her drawer and had comforted herself through an unhappy love affair with the fantasy that if things got too bad, she could always kill herself.

Death as retroflected murder. A 44-year-old woman made a suicide attempt with sleeping pills about a year after the breakup of her marriage. Her husband had been unfaithful during the 20 years of their marriage; she had alternately doubted these affairs or had reassured herself by saying that they were unimportant to him. However, his last affair lasted almost 2 years. Finally, she precipitated a crisis by barging in on him in the other woman's apartment. He was furious and openly moved in with this woman. About 6 months later, the patient had a rather unsatisfactory love affair with a younger man. Immediately following her suicide attempt, she stated that both her children and her husband would be better off without her. The children, a boy of 19 and a girl of 15, she said, needed a new home.

In an attempt 10 days earlier, she had gone out to a lake with the intention of drowning herself but changed her mind. She came home and took 15 sleeping pills instead, waking up by herself a day and a half later. The next time she took twice that dose. While under the influence of the first pills, she had the following dream. She saw a cap belonging to her husband's father floating on the sea and realized that he had drowned. Her husband's father had been a sea captain and closely resembled her husband, being extremely domineering, critical, and difficult to get along with. At first she saw the dream in terms of her own martyred role, but eventually she related it to her desire to strike back at her husband. She spoke vindictively of the problem the children would cause him after her death. It soon became evident that her suicide attempt

stemmed from her anger at her husband and was an indirect attempt at revenge. She was ineffective in handling both her anger and her self-assertion, and she could not even fight for her children. Her situation was like the classic one described by Freud, in which suicide represents an inverted homicide.

In many of the younger, severely disturbed, and seriously suicidal patients, suicide represents a turning in of murderous rage that is far from repressed. These individuals are potentially or actually violent, and suicide can be the outcome of a severe struggle with the overt desire to murder.

Death as a reunion. One patient made three suicide attempts over a period of 20 to 25 years. When seen for the first time, following her third suicide attempt, she was 47 years old. Each attempt had been more serious than the one before, and she was particularly fortunate to survive the last one, in which she used gas. An unhappy love affair was time-related to all three attempts. Following the third attempt, she received treatment for 2 months, during which her last love affair continued unsuccessfully. The patient then became acutely suicidal and required admission to the hospital. That night she had the following dream. "I was in Baltimore in an apartment where I lived 25 years ago. There were a lot of people around who told me to put on a beautiful wedding dress hanging on the wall, but I would not put it on."

Her associations were to the Baltimore apartment where her first romantic liaison had lasted for 2 years until one night her lover told her he was going to marry another girl. She thereupon made a suicide attempt, and everything in the dream was the same as it had been at the time of her first attempt. In the wedding ceremonies preceding her two unhappy marriages she had failed to wear a wedding dress, although she had always wanted to. She felt she had lost the really great love of her life with the end of this first relationship. What impressed her most in the dream was that the wedding dress "looked more like a shroud than like a wedding dress." Apparently, union with her first lover was to be achieved only through her death. Moreover, the patient recalled that she had had this dream recurrently before each suicide attempt. She was refusing to put on the dress while struggling, in reality, against suicide. Death was the unpleasant price she had to pay for the gratification of her desire for love and affection.

In other patients with similar but more masochistic psychodynamics, the act of dying itself can be conceived of as pleasurably incorporated into the reunion fantasy. Most frequently the emphasis is not placed on the dying but on the gratification to follow, the mood in such reunion dreams being quite pleasant. In the overwhelming majority, the gratification is of an extremely dependent variety, either directly with parental figures, or with wives, husbands, or siblings substituting as parents.

Although such fantasies are usually unconscious and have to be elicited from dreams, they can also be conscious. One patient was seen following a suicide attempt that eventually proved to be fatal. He had been preoccupied for the entire year after his wife's death with fantasies about her and with mental pictures of being reunited with her in death.

Death as rebirth. A young, intelligent woman in her twenties, well educated and successful in her work, jumped under a train and lost a leg. Her suicide attempt was precipitated by one of the unhappy and complicated love relationships with which her life had been filled. Several years earlier she had

been intensely involved with a married Negro. A few years before that affair, she had been in love with a Communist under investigation by the F.B.I.; he was at that time trying to use his relationship with her to get into the United States.

When she was 13 years old, her father deserted the family, and she never saw or heard from him again. She was fascinated by death and dying all through adolescence and could recall in detail the death scenes in novels.

The following dream concerning her suicide attempt made her wish to die more understandable. She was in a long, narrow tunnel and could see a light at the end of it. She walked toward the light, and there she saw a man and a woman standing over a manger. In her associations to the dream, the tunnel suggested to her the subway from which she jumped and the way in which the train came out of the tunnel and into the lighted platform area. Moving from the darkness of the tunnel into light brought to her mind the process of birth. The man and woman she saw as her father and mother. The child in the manger was both the Christ child and herself. One can see how much she accomplished in her death fantasy. She is reborn, is a boy, is reunited with her father, and, finally, is omnipotent. For a patient with such fantasies the thought of dying has a very strong appeal.

Death as self-punishment. A lawyer in his thirties made a moderately serious suicide attempt, which he blamed on his lack of success in a legal career. His dreams were of the most elemental kind. In one instance they revealed him running to catch a boat and just missing it. In his associations, missing the boat symbolized the low opinion he had of his entire career. His legal ambitions were excessive, and he found it impossible to compromise with his grandiose success fantasies. The aggressiveness that stemmed from this grandiosity interfered with his actual performance, a constellation frequently observed in male patients with extremely high and rigid standards for themselves. What is seen as failure causes an enormous degree of self-hatred, and suicide amounts to a self-inflicted punishment for having failed.

Many male patients in this group demonstrated evidence of a paranoid personality structure before they became depressed or suicidal. The following case is a typical example.

A 55-year-old stock broker was depressed to the extent that he had been unable to work for several years prior to his suicide attempt and subsequent psychiatric examination. Previously he had a career spanning 30 years, although he had changed positions every 2 or 3 years. Each time he claimed to have been the victim of mistreatment, personal favoritism, or corruption. Eventually, a combination of these factors and his daughter's breakdown proved too much for his paranoid defenses, resulting in the manifestation of his latent depression of long standing. He began to blame himself and his unworthiness for the failure in his work and bemoaned his misfortune with his daughter. Under psychotherapy, he became paranoid toward the therapist; significantly, at the same time, his depression lifted considerably, so that within a few months he could resume his work. With his paranoid defenses reactivated, his depressive symptomatology lessened, and he became able to function.

This type of suicidal self-punishment reaction over failure at work has not been observed in women. A suicidal self-punishment reaction that can be seen in women was illustrated by the previously mentioned patient who was unable to love her child. When a woman's inability to love her child is accompanied by the expectation that she should feel what she is not feeling, strong self-hatred with the need for self-punishment can be the result.

A variation of the view of suicide as self-punishment that occurs in patients of either sex may be illustrated in the following case.

A 30-year-old man from a relatively stable rural family as the sixth of eight children felt superfluous from early childhood. All the other siblings were married and apparently leading responsible lives, and he considered himself the black sheep of the family. From the age of 18, he was a moderately severe alcoholic. His "impossible" marriage also resulted in feelings of being superfluous and quickly ended in divorce. His main occupation had been that of a seaman, but his explosive temper and frequent fights aboard ship led to unemployment and depressed feelings. He reported the following dream, which he had immediately prior to an impulsive suicide attempt—jumping in front of a moving car. "An atom bomb was falling.... I was in hell and about to be burned. My brother was above, saying that I should be burned." The patient believed that he would end up in hell if he did not lead "a more Christian life." Eight months earlier, he had begun to attend church in order to force himself to live differently, but without success. His extremely religious mother was opposed to drinking, smoking, or any amusement for its own sake. Although he had never been close to her, he had taken over her religious beliefs, despite his inability to live up to them. The brother in the dream was the family member closest to the patient; nevertheless, their relationship had been characterized by fights and reconciliations until the time of his brother's death 3 years earlier.

During the previous 8 years, the patient had made several impulsive suicide attempts, including one where he jumped in front of a moving jeep and was severely injured. Suicide was for him an act of atonement, and death was a fair punishment for his explosiveness, his anger toward his siblings and the world, and his asocial life.

Among the most disturbed suicidal patients of both sexes seen in mental hospitals, feelings of being worthless predominate, and self-punishment is a prominent feature. The original motivation may be centered around failure, guilt over aggression, or attempted expiation; however, the self-punishment may be dissociated from these goals and thus become almost an end in itself. Such patients tend to be preoccupied with delusional feelings of guilt, sin, and unworthiness.

The patient who sees himself as already dead. One man jumped in front of a train and lost an arm and a leg almost to the hip. Some months later, he related a dream in which he was shopping for a coffin. The coffin maker told him that his coffin was only half-finished. In view of the fact that he had lost two limbs in his suicide attempt, the dream seemed to project a current picture of himself. His associations to the dream indicated that, in his opinion, only his physical death was half-completed. Emotionally, however, he felt that he had died years before making any suicide attempt.

One very withdrawn suicidal girl of 18 had a recurrent nightmare in which she saw dry ice coming closer and closer to her. It threatened to envelop her until she woke up in panic. She was tormented by her inability to feel anything for anyone. Not only did she feel dead, but her physical appearance and motility suggested a kind of walking death. The dry ice image was a self-image—a self that was seen as permanently frozen, dangerous to others, and self-destructive.

Patients of this kind are representative of an entire group preoccupied with the feeling of being already dead, generally not in a delusional sense but in the sense of being emotionally dead. Strong feelings of de-

tachment, repressed aggression, and dampened affectivity are perceived by many patients as the equivalent of emotional dying or death. Clinically, these patients may appear apathetic rather than depressed, and their suicide attempts rarely change this mood. Despite overt apathy, such deadness is experienced by suicidal patients as extremely tortuous, so that they see suicide either as a release from suffering or as merely carrying out an event that has already happened.

An attempt has been made in this section to demonstrate some of the psychodynamic patterns seen in suicidal patients in connection with different fantasies and attitudes toward death. Seven such patterns have been outlined and illustrated: death as abandonment, death as omnipotent mastery, death as rebirth, death as self-punishment or atonement, death as retroflected murder, death as a reunion, and death as a phenomenon that has, in an emotional sense, already taken place.

The death fantasy of the suicidal individual is helpful not only in revealing his motivation for suicide but also in shedding at least some light on his entire attitude toward life as well as death. The individual who expects his suicide and death to continue a punishment he deserves is quite different from the individual who hopes for the gratification of dependent desires in a protected reunion with a maternal figure. They reveal quite different character structures and not merely different suicidal psychodynamics. Death fantasies thus come to serve as a natural aid in distinguishing the various motivational psychodynamics seen in suicide.

Attitudes toward suicide, death, and afterlife also differ from culture to culture. Understanding such differences becomes an integral part of understanding suicide in its psychosocial context.

Psychosocial Approach

The necessity of a psychosocial approach to the problem of suicide is best illustrated by examination of the Scandinavian suicide phenomenon, namely, the high suicide rates in Sweden and Denmark and the strikingly low rate in Norway. Much of the attention that the high Danish and Swedish suicide rates have received is a consequence of the social welfare measures applied in the two countries. Both inside and outside Sweden and Denmark, opponents of economic planning and social welfare measures have attempted to explain the suicide rate as a consequence of character defects produced by these measures. But the Danish suicide rate has been higher than those of most other European countries for the last hundred years. The Swedish suicide rate has climbed since the turn of the century, and a better case could be made for relating this rise to Sweden's late but fast developing industrial capitalism than can be made for relating it to the relatively recent social welfare measures. Moreover, Norway has equally advanced social welfare measures and a suicide rate of 7.5 per 100,000, which

is only a little over one third that of Sweden and Denmark.

Inasmuch as Sweden has been successful in dealing with most of the economic problems that plague the rest of the world, it has been felt that her people have no right to a high suicide rate. However, it has long been known that countries with much poverty have low suicide rates. Yet one can hardly suggest planned poverty as a cure for suicide. Problems of survival can suppress psychological conflicts. This is probably one reason war has the effect of lowering suicide rates. Only as countries begin to solve the problems of survival are they in a position to become aware of the psychosocial tensions and conflicts within the culture.

Suicide is but one barometer of social tension; crime, alcoholism and neurosis are equally valid barometers, and one such index cannot be consulted without reference to all the others. For example, although the suicide rates for Sweden and Denmark are twice that of the United States, the homicide rate in the United States is 10 times that of the Scandinavian countries.

Of most interest from the standpoint of understanding suicide, however, is the fact that the suicidal patient is quite different in each of the three Scandinavian countries, and these differences reflect vastly different cultural attitudes and psychosocial pressures. That these pressures are exerted on everyone in the culture is confirmed by the study of nonsuicidal patients and nonpatients as well.

A performance type of suicide is prevalent in Sweden; among the men, success or failure has a life or death meaning. They have rigid performance expectations, with great self-hatred for failure. The dreams of the male suicidal patient are of frustrated ambitions and barely missed opportunities.

This performance suicide is set in a matrix of characteristic Swedish affectivity problems. For example, the Swedish tendency is to handle anger through withdrawal and detachment, and there is an apt Swedish idiom, *tiga ihjäl*, meaning to kill somebody through silence. The adult male often tries to deal with personal emotional difficulties by an intense concentration on success at work, and his work often develops a driven, pleasureless quality.

As an apparent consequence of detachment, repressed anger, and dampened affectivity, the feeling of being already dead emotionally is pervasive among the Swedish suicidal patients. Life may be seen as a living death, and even afterlife fantasies express little hope of a change in this situation. Similar feelings of emotional lifelessness are widespread among Swedish nonsuicidal patients and nonpatients as well. Swedish literature reflects this preoccupation with life as a living death: Lagerkvist, Sjöberg, Halström, Dagerman, and a host of other Swedish authors have produced perhaps the world's most prolific and sensitive literature on death.

Both the performance concern and the affectivity problems have their origins in childhood. The Swedish

child, particularly the boy, is taught not to show too much feeling. Emphasis is placed on the child's ability to be reasonable and unemotional, even in disturbing situations. Children are not allowed as much direct expression of anger toward parents or siblings as American children are. To be *tyst och lugn*—that is, quiet and calm—is something of a Swedish ideal, and the child learns early to treat strong emotion with detachment.

Equally important in its effect on affectivity and performance is the early mother-child separation that takes place in Sweden. The Swedish mother, in contrast to the Danish mother, wants an independent child as soon as possible and is pleased with evidence of his self-sufficiency. This is true whether she works or not. As expressed by one Swedish child psychiatrist, the mothers just don't seem to enjoy their children very much; they don't get the same pleasure from their children, whether caring for them or playing with them, as do Danish and American mothers. This early separation has serious consequences for the child's emotional development and is the source of much repressed anger. Furthermore, from the child's earliest age, Swedish parents are more interested in how he compares with other children than are Danish parents. Thus, he learns to use his performance both to bolster his self-esteem and to appear more lovable to his parents.

In Denmark performance suicide is conspicuously infrequent. Frustration of dependency needs through separation, loss, or abandonment is the situation most often responsible for precipitating suicide attempts. This dependency loss type of suicide reflects a particular and unique Danish dependency constellation. The Danish child is cuddled, fondled, and encouraged to remain dependent to a far later age than are children in Sweden or in the United States. Danish mothers are likely to boast of how well their children look, how well they eat, and how much they weigh. They are far less likely to boast of those activities or qualities in the child that may in any way separate him from the mother: how early the child can walk or talk or do things for himself.

In addition, the child's aggression tends to be curbed even more than in Sweden. It is in a sense the price he pays for his dependence. Danish children often seem like angels to Americans, and American children may seem like monsters to the Danes. Nor is it usual for aggression on the part of Danish children to be checked directly. Arousing the child's guilt ("Look how much you have hurt Mama") is the vastly predominant form of discipline in Denmark. The Danes grow up as masters of the ability to arouse guilt in others, and Danish suicidal patients make use of this ability to a marked degree.

Of course, this curbing of aggression heightens the dependency of the Dane. Dependency and passivity are usually related, and Danish adult patients show degrees of dependency and passivity that are seldom

observed in patients in Sweden or in the United States, even among those labeled as passive.

Dependent fantasies and dreams of a pleasant reunion in death are much more characteristic of Danish than of Swedish suicidal patients. It is interesting that the Andersen fairy tales reflect this theme over and over. The Little Match Girl, while freezing to death in the cold, lights her matches and sees the image of her grandmother, the only person who ever loved her, with whom she is reunited after her death. The Steadfast Tin Soldier can be united with his ballerina doll only in the fire that destroys them. It should be pointed out that this is by no means the universal theme of all fairy tales. Consider only that in the Andersen tales, competition and superhuman performance are not depicted as important; neither giants nor dragons have to be killed by the hero in order for him to be successful.

The Swedish tales, by contrast, are often adaptations of German tales; the emphasis on performance is primary, and the winning of the heroine at the end may be incidental. If the heroine is not won, the reaction is not one of abandonment or loss but one of poor performance, for which the individual gives himself, so to speak, a low mark in love. In the Danish tales, the individual is lonely and abandoned without love and is particularly sensitive to its loss.

While the reasons for the low Norwegian suicide rate cannot be dealt with here, it is worth noting that despite its low rate, rural Norway serves as an excellent laboratory for the study of one type of suicide. This may best be described as a moral type, based on a combination of aggressive antisocial behavior and strong guilt feelings, with the entire pattern cast in a puritanical setting. The seaman, mentioned earlier, who felt he deserved to be burned in hell for not leading a more Christian life was a Norwegian who typified this pattern.

All three suicidal patterns are encountered in the United States; but as this is a nation of subcultures, the multiplicity and mixture of patterns here make the task of identifying them extremely difficult. Sweden, Denmark, and Norway—small in population and related, but distinctive in culture—give the opportunity to observe their patterns in a pure form and under their original formative conditions. Limiting the variables simplifies identification of the same phenomena in the United States. In other words, the Scandinavian countries supply a vast clinical laboratory for studying the psychodynamics of suicide.

Other countries offer similar possibilities. Japan has long attracted attention because of the dramatic, ceremonial quality of such forms of institutionalized suicide as *hara-kiri*. Institutionalized suicide is negligible in modern Japan, yet the Japanese suicide rate remains among the highest in the world. To what extent is the present rate in Japan influenced by past tradition? To what extent by the breakdown of tradition under the influence of rapid Westernization? When the answers

to these questions become available, they will add much to our knowledge of suicide.

Subcultures within the United States also require specific study. For example, urban suicide among Negro men of 20 to 35 years of age is almost twice as high as that for urban white males in the same age group. At older age levels, the white rate is significantly higher than that for Negroes. This suggests some differences in motivation for white and Negro suicide, and work currently in progress indicates that such is the case.

Prevention

Although most social institutions have advantages, there is also a price to be paid for them. It seems probable, for example, that the early mother-child separation in Sweden and the related emphasis on the child's level of performance stimulate achievement but handicap emotionality. However, an awareness of disadvantages does not imply an immediate recommendation for change. It is easier to learn the effect of established institutions than to foresee the consequences that change may bring. Psychosocial studies can illuminate the relationship between a nation's institutions and the character of its people. Properly used in cross-cultural research, they may help us make more intelligent evaluations of social alternatives.

Currently, community efforts to prevent suicide have focused on special organizations or centers where the potential suicide can seek help. The center usually has a telephone number that can be called day or night. An attempt is made to persuade the caller to come in for evaluation. This may be followed by some form of counseling, or occasionally the patient may be seen on a more sustained basis, usually by a caseworker. More often, evaluation is followed by referral to another agency, where the individual may receive similar aid. Some of these centers have facilities for evaluating and referring a small number of patients who have been hospitalized following suicide attempts.

So far, such centers have not had any effect in reducing the suicide rates of the communities utilizing them. There seems to be good reason for this. The people calling such centers do not constitute the crux of the suicide problem. Only a small minority have made suicide attempts. Although the majority are acutely troubled, suicidal ideas are often only a minor part of their picture. Certainly every possible psychiatric hospital should have outpatient facilities permitting such individuals to receive immediate attention. The prevention centers, although they attempt this activity, give the illusion of doing something more significant and specific for the over-all problem of suicide. Probably their most important function has been to dramatize for the community the problem of suicide.

If the goal is the reduction of the number of suicides, a more probable area of hope lies elsewhere. Since, as mentioned earlier, 60 per cent of the actual suicides have histories of prior attempts, concentration on selecting for treatment the serious risks among the sui-

cide attempts is necessary. Unfortunately, as matters now stand, the majority of these eventual suicides, after brief hospitalization, are sent back into the community without any provision for subsequent treatment. If, hypothetically, a program for treating all the most serious risks among the attempted suicides were established throughout the country, it might mean treating 5,000 to 10,000 new cases a year—a large number, but far more workable and far more meaningful than the literally millions of diverse calls that would be made were the current suicide prevention organizations projected on a national scale.

In discussing the treatment of the individual suicidal patient, one should keep in mind the fact that such patients run the gamut of psychiatric entities from nonpsychotics to advanced schizophrenics. Their ultimate prognosis is, of course, related to their underlying personality structure. It is, however, often possible to diminish the likelihood of suicide, even where this structure cannot be altered.

There are no reliable signs or symptoms for distinguishing the depressed patient who is imminently suicidal from one who is not. The psychiatrist's ability to evaluate all but the most obvious situations is dependent on the contact he can establish with the patient. Of the different types of patients discussed here, probably the most difficult to contact are those who see themselves as emotionally already dead. They are characterized more by apathy than by depression, and they are cut off from contact with their own emotions, as well as the emotions of others. This group contrasts sharply with the patients in whom a more truly depressive aspect is predominant, who often want help and who can be rather readily involved in therapy.

A knowledge of the psychodynamics of suicide is, of course, central to any therapy. It is hard to conceive of any successful psychotherapy for the suicidal patient that does not deal with his suicidal dreams, wishes, and fantasies. When the patient or therapist avoids discussing such material, the situation is far more dangerous.

The treatment of suicidal patients involves a certain amount of necessary risk. Psychiatrists have often avoided such patients out of a reluctance to assume the responsibility. Although a certain number of suicides, in and out of hospitals, occur despite treatment, the therapeutic results among the suicidal patients who want help or are at least open to the possibility of receiving it are encouraging enough to justify more effort in this direction.

Suggested Cross References

For further discussion regarding the dynamics of depression, see Chapter 17 on affective reactions, which contains sections describing the various psychotic depressive reactions, and Mendelson's section on neurotic depressive reactions (Section 24.2). Sociological and cultural determinants of behavior are further discussed in Sections 4.2 and 4.1, respectively. The following

section on psychiatric emergencies contains additional discussion of suicide.

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33.2 OTHER PSYCHIATRIC EMERGENCIES

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Psychiatry and the behavioral sciences have much to contribute regarding management of individual crises. The ability to deal with crises depends, in part, on the fact that the problems brought to a professional are usually those occurring in his own socio-economic group—upper middle class—and principally involve persons of his own culture. Since much of the psychiatrist's knowledge of human behavior centers around the Western middle class culture, more research is needed in methods of handling crises in backward and uneducated cultures.

Group crises constitute another area where there is a need for more information. Some knowledge has been gathered about coping with group crises in the United States, but it is unwise to apply our standards of behavior and morality to the aggressions of other cultural groups and nations.

However, no attempt is made in this discussion to present the subtle dynamics of crisis situations;

rather, this section presents descriptive information about recognition of *individual* crises and methods of management that have proved effective in particular cases for particular investigators. In addition, this section deals with methods of meeting psychiatric crises based on ego decompensation and with causes and emergency management pertaining to patients with long term mental illness and to basically normal individuals.

Crisis is manifested in many ways, most often via anger accompanied by varying degrees of aggressive behavior, severe anxiety accompanied by weeping, running, temporary states of confusion, and suicide attempts. Emergencies occur when an individual is faced with a situation beyond his particular adaptive capacity at a particular time. A person with considerable ego strength can cope with more stressful situations than someone with little ego reserve. Furthermore, a situation that is stressful for one person may not be so for another.

Many psychiatric emergencies are caused by anger, which represents a patient's response to affronts to his dignity or infringements on his rights. A large number of incidents occurring in mental hospitals are precipitated by rudeness from employees or by a conscientious employee's attempt to enforce irrational and insulting regulations. For example, patients are often required to surrender their personal belongings, including wedding rings and dental plates, when they are admitted and subsequently are refused use of a telephone or free access to visitors. Such treatment is offensive to all patients, and some become sufficiently angry to start fights or destroy furnishings. Anger of ward personnel toward co-workers and administrative demands or over a personal matter can be responsible for the arbitrary treatment of patients—behavior that patients may answer with disturbances of their own.

All people, including psychiatric patients, lose control of their behavior more easily when they are fatigued. Thus, while panicky escape efforts, angry outbursts, and bouts of weeping may be the manifestations of ego decompensation, the required treatment in such cases is rest and food, not psychotherapy. Also, alcohol ingestion may precipitate violent behavior in persons whose poor control stems from a character disorder or mental illness. In general, any situation or condition that is stressful may precipitate an emergency state in patients or in normal persons who are already bearing the maximum anxiety that they can effectively handle.

In any emergency situation it is necessary to determine, insofar as possible, what the patient is accomplishing or attempting to accomplish by his behavior. A patient who is disturbed or confused often responds positively to a question that pertains to his feelings and situation. A query such as, "Why are you so angry?" may elicit a sensible reply; conversely, a demand such as, "Now, now, control yourself,"

often compounds the difficulty. Most patients recognize a sincere desire to understand their viewpoints, and even very disturbed patients may become cooperative enough to discuss their plights.

The impulse to do something and the pleas of family or ward personnel for help often foster precipitous action, such as manual restraints, parenteral sedatives, or isolation. For one patient, manual restraints may represent security and protection from his own acts; for another, these restraints may represent a sexual or murderous assault. Similarly, sedation may mean relief, or it may seem to be an attempt to kill. With the patient who is in a turmoil state or who has just attempted suicide, prescribing treatment before some understanding has been achieved is indeed dangerous.

The cardinal principle is to find out what is going on—preferably from the patient. If the patient is too uncooperative, it becomes necessary to ascertain the cause of his troubles from informants or to deduce them from the circumstances that precipitated the emergency.

Acute Nonpsychotic Syndromes

Anxiety and panic (including fugues). For all human beings there is a limit to the tolerance of anxiety; when it is reached, some may react in a primitive fashion via attempts to escape. Classic examples are individuals who start panics in theatres at the smell of smoke or the cry of "Fire" and people who precipitate confused retreats in battle by panic and flight to the rear. Not so dramatic but far more common are the cases of students who respond to dormitory life or to the stress of examinations by entering an anxiety state with confused, disoriented, and psychotic type of behavior. In Army training camps, boot camps, and similar institutions, such persons appear to be schizophrenic because of the degree of decompensation and temporary regression. Similar responses are seen following natural disasters such as hurricanes, explosions, and earthquakes.

In certain individuals, a chronic stress situation may produce a severe anxiety reaction, characterized by dissociative phenomena and fugue states, in which the patient may wander off in a confused and disoriented manner. The majority of such patients respond to such supportive treatment as talking, rest, sedation, and, where indicated, food and fluids.

Some persons in early phases of anxiety or panic states appear to be having acute schizophrenic attacks; indeed, this actually may be the case. They become anxious and panicky with the first acute decompensation but later settle into one of the more classic types of acute schizophrenic disorders. However, some patients who have had an acute reaction subsequently become entirely compensated, showing no further evidences of decompensation or intolerable anxiety until a future combination of stresses again proves too demanding for their egos. On the other

hand, a few persons, particularly those who have been in some external disaster—such as an explosion, fire, prolonged combat, or other dangerous situation—may develop a traumatic neurosis in the strict sense of the word if they are so predisposed.

Homosexual panic. This reaction occurs in latent homosexuals who are exposed to barracks or dormitory life for the first time and whose already overburdened egos render them incapable of coping with the situation. The stimulation of gang showers and the horseplay common in all-male residential arrangements may constitute threats that the latent wishes will become conscious. Fear of the imminent breakthrough may result in the individual's becoming confused, sometimes to the point of hallucinating, and making agitated attempts to escape. In an acute phase, it is impossible to determine with any degree of assurance whether ameliorating the stress situation and bolstering the ego through reassuring human contact, sedation, and rest will cause the phase to subside. Nonetheless, persons undergoing homosexual panic should be removed from the stressful situation, cared for—if possible, by personnel of the opposite sex—and, after much reassurance and talking, given sedatives. Oral sedatives are preferable, since the patients sometimes interpret "needle work" as some type of homosexual assault. Similarly, while talking to such a patient, one should be wary of touching him prior to gaining his confidence. The attempt to grab and hold such an agitated patient can often result in a violent outburst because of his feeling that he is being assaulted.

Postconvulsive confusion. After seizures, many patients develop periods of confusion and may become quite combative or excited. Following a seizure, an individual who is unconscious but resting quietly and breathing freely should be turned over on his side, with his face in a slightly downward position, and should be left alone. Care should be exercised to prevent his falling from the bed; if attendants are not available to watch the patient, he should be placed on a mattress on the floor. Because attempts to restrain the patient in the bed with wrist bands usually result in disturbance and thrashing about, the floor is more effective. If such patients become excited and want to run, they must be restrained. Usually, if they are restrained and reassured they can be quieted rather quickly. If not, medication, such as pentobarbital (Pentothal sodium), is indicated to help them through the confused state.

Occasionally, an *epileptic furor* produces a prolonged period of excitement that requires more heroic measures; but again, anticonvulsant medications and quick-acting sedatives are the treatments of choice until these states subside. Sometimes electric shock therapy produces an almost miraculous cure for an epileptic furor, but it is no small task to hold a patient still long enough to apply the electrodes, administer the Pentothal and whatever relaxant is being

used, and administer treatment without damage to the patient. With the wide spectrum of quick-acting sedatives available, including Pentothal and intramuscular chlorpromazine, it is doubtful that use of shock is justified. In theory, one of the barbitals compounds is preferable to chlorpromazine; the barbitals tend to be anticonvulsant, but the chlorpromazines may aggravate the convulsive state. In practice, however, this distinction does not seem to be important. The major emphasis in the treatment of postconvulsive disorders is on protecting the patient and his surroundings until the condition subsides.

Aggressive behavior—individual and group. These emergencies, in which behavior is irrational and dangerous, may start with something as simple as a family squabble and grow into an outbreak of mob violence or community anger at some real or imagined insult to an individual or group. Talking at an unhurried pace is the best way to manage emergencies of this sort. If the person attempting to deal with the situation does not allow himself to become threatened or excited, his inquiring into the cause of the anger and offering the promise of opportunities for discussion—but not guarantees of an irrational solution—can often quiet such a situation. Two examples of such cases follow.

A schizophrenic patient became very aggressive, armed himself with a pair of shears and a table leg, stood in the rear of a small private room, and invited onslaught by any and all. Rather than complying—as by rushing him, protected by a mattress—the staff sent someone in alone and unarmed, instructed to keep carefully out of range, to talk to him about why he was so angry. The fact that the patient was psychotic was ignored for the moment. The cause of the patient's attitude was quite a simple one; he had been denied the right to use the telephone to call his father, who had promised to send him money for cigarettes and had failed to do so. It was agreed that, if he disarmed himself and behaved in a way indicating his competence to use the phone, he could do so. The physician talked with him briefly in a manner that reassured the patient, and the agreement was carried out.

A large squadron of police, armed with machine guns and other weapons, surrounded a building in which several mentally defective, delinquent boys were rioting. The boys were allowed to carry on the riot within the institution for a reasonable period of time until they had become somewhat fatigued and bored. The apparent leader was called to the window and was asked what the boys hoped to accomplish by this behavior. He stated that they wanted a hearing. They were promised that, if they came out peacefully, they would be locked up in a maximum security unit and would have an appearance in court the following day for their destruction of state property. They were specifically told that at the hearing they could say anything they wished. Probably because of the implied punishment, the group believed the promise, and the riot was over in a matter of 5 or 10 minutes. The promise was carried out.

Acute Brain Syndromes

Alcohol intoxication. Perhaps the most common cause of psychiatric emergencies is alcohol intoxication—the disturbed drunk. Some people do not know how to drink, and after a few or many drinks they become obnoxious, aggressive, or panicky. Some want

to drive automobiles, which is indeed an emergency. The use of sedatives for such patients must be approached with caution, for there is danger that the alcohol not yet absorbed may produce a lethal mixture if combined with a heavy dose of intravenous or oral sedation in the form of barbitol or one of the tranquilizing drugs. However, if some type of intervention seems necessary, it is probably best to use some form of tranquilizer.

With such a patient it is very important that he be nursed and kept lying on his side. It is not uncommon for patients who have been drinking excessively to enter a semicomatose state, vomit, aspirate emesis, and die. Allowing the patient to stay alert and walk around, if he is not too destructive, is desirable. If the patient is allowed to talk and if he can be reassured and cajoled, his extreme behavior often subsides. At times, the disturbance is such that it is necessary to place the patient in some type of seclusion or send him to jail. The latter procedure should be avoided if possible, since nursing care in jails is often not good, and there is the danger that he will pass out on his back and aspirate emesis.

Drug intoxication. Some psychotomimetic drugs—such as lysergic acid diethylamide (LSD), mescaline, and marihuana—may produce acute delirious episodes in which individuals become disturbed, overactive, and aggressive. Strangely enough, these drugs are less apt to produce emergency states than alcohol, but, if they are ingested by a group and a member of the group becomes aggressive, it is quite possible that others will follow suit and that some type of emergency will develop. Perhaps a greater danger is that patients in a toxic delirious state may wander off and injure themselves in a traffic accident or in a fall from a window or down a stairwell. The management of these cases consists of the intramuscular administration of phenothiazine and the provision of a special nurse or companion to keep them out of difficulty until the toxic effect subsides. Fortunately, toxic effects of these drugs are usually short-lived, except in those patients who became psychotic after ingestion of one of these compounds.

Overdoses of barbitals or bromides seldom produce acute excitement states, but they may produce poisoning. The treatment is to send the person to an emergency room where gastric lavage and some type of dialyzer or artificial kidney are available and where artificial respiration can be maintained until the toxic substances have been removed from the blood by dialysis.

Delirious episodes. One of the more common psychiatric emergencies occurs in those patients suffering from some type of somatic or postoperative toxic state. These states are usually manifested initially by the patient's becoming apprehensive, muttering incoherently, picking at the sheets, or appearing generally anxious and restless. Nurses should be alerted to these symptoms, and the medical staff

should be prepared to take emergency measures. The best possible treatment is to keep such patients in a brightly lighted room, to remove the toxic substance as quickly as possible, and to assure adequate hydration while avoiding water poisoning. The use of dehydrating solutions may be indicated if the toxic state is due to conditions which tend to cause fluid retention. Shadows, noises, or unexplained actions on the part of the nursing or medical staff may produce panic in these patients. Some, in attempting to run from their apparent assailants, may jump or fall from a window or down a stairwell and be seriously injured. The best treatment is a bright room, a sensible nurse who can reassure the patient, and direct dealing with the patient. He should be told that he is imagining things because of a delirium and that he will recover. Medication is to be avoided if possible. If the patient becomes unmanageable, parenteral injection of one of the more potent tranquilizers (chlorpromazine or an equivalent drug) may be used.

Suicide

The prevention of suicide, especially when the patient makes threats or minor attempts at suicide, presents one of the most common psychiatric emergencies and, in terms of clinical judgment, one of the most difficult. Physicians, social workers, health nurses, clergymen, and others dealing with family problems and helping people to cope with behavior must at some time make decisions about the seriousness of suicide threats. Everyone is familiar with cases of the hysterical housewife or inadequate husband who manages spouse and family by sighs and such statements as, "I'll be better off dead; I'll just kill myself," which the family eventually learns to disregard. Also familiar is the individual who becomes depressed, quietly puts his affairs in order, and, without prior discussion, successfully commits suicide.

Individuals soon learn that suicide threats are potent anxiety producers and they use them to manipulate others. The husband who has strayed may be brought back to the "straight and narrow" by a wife who makes an abortive suicide attempt. The adolescents in an open ward hospital who feel that their turmoil and discomfort are not receiving sufficient attention can quickly gain a great deal of notice by breaking a window and slashing their wrists with the fragments. The problem lies in deciding how seriously one should take the threats.

As a general rule, such threats should be taken seriously during the initial contacts with the person who makes them. Whether it is a manipulative gesture or the announcement of a genuine attempt to commit suicide, the threat is a signal or indication that the person is asking for assistance. Shneidman and Farberow have dubbed it "the cry for help." From the most manipulative to the most fatally sincere, every suicidal individual needs someone to give him attention and to talk with him. If the person telephones,

he should be permitted to ventilate and encouraged to tell how he feels and what kind of help he would like; when contact has been made, an appointment should be arranged. In no instance should the person be cut off, nor should he be asked to promise not to commit suicide. The approach should be one of "Let's talk it over" and "Let's put it off until we talk about it." After the physician knows he is being taken seriously, he can point out that the opportunity for suicide always exists and that it is desirable to discuss the situation before this step, from which there is no return, is taken. In most instances an individual can be persuaded to come to the physician's office or emergency room or can be persuaded to allow the physician to send someone around to escort him to the hospital.

Another type of suicidal patient is the person who is known to be depressed or suicidal and who, after calling his physician and being unable—for any of a variety of reasons—to reach him, commits suicide because he feels rejected. The physician who is carrying patients who are suicidal must make special arrangements with them—and, more importantly, with himself and his secretary—so that these patients can reach him by telephone at all times or so that they clearly understand that there are particular times at which he cannot be reached. Such patients should be allowed to call the physician at home. If he is to be away on a trip, they should know where he is and what means of travel is being used. Such patients usually understand that there may be times when they will be unable to reach him. Patients like to feel that the physician is dependable, reachable, and concerned about their problems and that he understands that they are, at times, under more pressure than they can bear and, therefore, need to be in touch.

Too much reliance should not be placed on the procedure of hospitalization. The hospital offers as many or more opportunities for suicide than do public streets. If the patient is placed in the hospital for a suicide attempt, he must be under continual observation; otherwise, the staff is placing too much reliance for prevention of suicide on the patient's belief that the act of hospitalization will protect him from himself.

It is often not possible to judge whether a suicide threat is genuine or manipulative, and one cannot be sure as to how significant the difference between such threats is. All threats are manipulative in the sense that the patient is seeking attention and at the moment believes he needs it. Whether he will actually make a serious or successful attempt probably depends on how angry he is with others; how rejected and lonely he feels; and how hopeless, unworthy, and desolate he feels.

Certain clues are helpful but not infallible. Persons who have tended to act impulsively in the past and have perhaps been diagnosed as having character disorders may well commit suicide in an impul-

sive manner. Patients who are drinking heavily or using drugs indiscreetly may also commit suicide either intentionally or accidentally by overdose of drugs during periods of confusion. Persons lacking support or a fabric of supporting friends, job, and place in the community are also vulnerable. Persons who have recently suffered reversals in their personal lives, health, or social and business dealings—that is, those who have sustained tremendous blows to their self-esteem—are great risks. In general, however, the only safe rule is to take every suicide threat seriously until there has been established sufficient contact with the patient to permit an understanding of what is going on and until he can be convinced of the physician's concern with and appreciation of what he is undergoing.

Chronic Brain Syndromes

Patients with chronic organic brain syndrome of whatever cause share a set of symptoms that may produce a psychiatric emergency. Most patients with organic disease of the brain are irritable and have a tendency toward explosive outbursts of rage or temper tantrums. Irritability or an outburst of rage is only one part of the general emotional incontinence, which is more commonly manifested by weeping for little or no obvious cause. Temper outbursts of patients with chronic organic brain syndrome are usually provoked by some environmental event that they interpret as an affront to their dignity or that reminds them of their growing age and decrepitude. For example, one rather elderly gentleman with beginning senile dementia required hospitalization because he became violently angry with his wife and chased her with a hatchet because of her admonitions about his rather unkempt appearance. While in the hospital for observation, he became equally angry with first the nurse and later the physician who inquired as to whether or not his bowels had moved. He later said he regarded such inquiry as an affront to his good sense and stated that he might be crazy, but he had sense enough to know when his bowels needed to move.

The unpredictability of these outbursts, precipitated by trivial external pressures, makes these patients dangerous if they are prone to violence, and they should not be allowed to possess guns or other weapons.

The emergency is treated by controlling the patient's behavior until the violent outburst subsides. Good nursing care, the presence of a reassuring physician, not making an issue of what the patient is angry about, and encouraging him to explain why he is angry often result in decompression of his ire and a return to a more reasonable attitude, often in a few minutes. During the period of anger, such a patient is dangerous if armed, and, if possible, a confrontation should be avoided until he has recovered control of

his emotions. Some organic patients also become paranoid and vindictive.

A second type of emergency in chronic brain syndrome is the suicide attempt. Patients with chronic organic disease may become depressed, lonely, and suicidal. The problems here are not different from those of suicide in general except that the suicidal attempt may be impulsive after an aggressive act on the part of the patient or after some other event that reminds him of his ego losses. The most common cause of suicide in the chronic organic state is the result of loneliness, loss of self-esteem, and feelings of worthlessness, neglect, and of life being without meaning.

A third type of psychiatric emergency seen in chronic organic brain syndromes is that caused by the patient who wanders away from home or hospital and becomes lost. In mild climates and in good weather this is not a major crisis, as the confused and wandering person is often assisted by the police or by some other person who helps him reestablish contact with his family. In cold weather or in sparsely populated areas, where the person can suffer from exposure, the wandering patient can become an emergency. The solution to this problem is prevention. If a person is known to become confused and restless, he should be watched. If his home and family lack resources to care for him, he should be placed in a boarding or nursing home that has adequate facilities.

Homicidal and Assaultive Behavior

Violence in terms of gangs, riots, and national aggression continues to plague the world, but individual homicidal behavior by psychiatric patients seems to be decreasing, due to wider use of tranquilizers and increased understanding of how to handle their interpersonal problems. As stated earlier, most violent behavior by mental patients is the result of anger, which is common to all mankind, rather than the result of mental illness as such.

One now rarely sees major assaultive behavior or homicide due to paranoid delusions or catatonic excitements, principally because techniques for the management of such patients have been learned. These techniques include listening to their delusions, helping them back to reality, and bolstering their impulse control with tranquilizers. Patients with paranoid delusions—particularly when temporarily confused by alcohol ingestion, unusual fatigue, or external stress—may feel threatened and thus take retaliatory action. The well organized paranoid who feels that some other person is plotting against him in order to deprive him of an invention or to cheat him of an inheritance is more apt to take legal measures than direct violent action. Usually, only when such a person recognizes that legal outlets are not available to him will he resort to violence. In most cases, however, discussion with a trusted person results in subsiding of the symptoms. Trust is not established by agreeing with the patient's delusions. In most cases, it should be pointed out to the patient that what he says sounds paranoid.

Nevertheless, he should be listened to, and an attempt should be made to help him understand what the particular delusional system does for him.

It may be necessary, during the acute emergency state, to hospitalize the patient, but care must be taken not to make the hospitalization too coercive or too restraining, lest this precipitate the homosexual features of a panic. Usually, when a patient is in a psychotic turmoil and is very apprehensive and fearful, his physician or an experienced nurse who understands fearful patients but is not rendered anxious by such manifestations of violence can bring calm to the situation. Asking the patient, "What are you afraid of?" or "What are you angry about?" or, if it seems more appropriate, remarking, "You are very angry," or "You are afraid," or "I wonder if you would like to tell me about it?" can be the wedge for the patient's relinquishing action in favor of talking. One must be wary of grabbing a patient or laying hands on him until it is certain that the patient *wants* to be controlled to protect himself from his impulses.

Serious aggressions that could result in homicide are of two main types. The first occurs when a person feels aggrieved without hope of redress and quietly and skillfully plots a murder based on paranoid delusions or grievances. Once this type of patient conceives the idea of homicide, he becomes fixed on it and needs careful supervision until a combination of drug therapy and conversation helps point out the futility of homicide and the self-destructive aspects inherent in such plans. A different quality of violent behavior that may result in homicide or serious injury is seen in panic reactions motivated by fear and rage over immediate circumstances. The majority of these probably contain some degree of homosexual panic and the feeling that people are closing in to kill or mutilate the individual. The patient strikes out wildly and may shoot if he is armed. For example, in an attempt to escape from imagined persecutors, one patient commandeered a truck and killed an officer and a passerby in his wild operation of the vehicle. He was attempting to escape from what he thought was a group closing in on him for purposes of mutilation of his genitals. Although the first impulse is to rush in, grab, and restrain the person—and on exceptionally rare occasions this may be the only practical plan—usually a calm discussion by a person who is not made anxious by the violence results in the patient's quieting down and establishing a measure of self-control. Having determined the nature of the problem and having persuaded the patient to take medicine to make him more comfortable, the therapist can then carry out the management of the patient according to the basic difficulty.

Schizophrenic Turmoil

It is difficult to discuss emergency reaction without lengthy exploration of the management of schizophrenia. Some schizophrenics develop a panic reaction,

usually with strong homosexual coloring, elaborated by their paranoid projections. The general principles described earlier for the management of panic and rage apply here.

Catatonic excitement presents a slightly more difficult problem. Patients who have, by their catatonia, controlled their homicidal rage—the desire to demolish, incorporate, and destroy persons who fail to love them or give them the care and attention they want—sometimes lose control and have violent outbursts of aggressive behavior. Patients of this sort may, on occasion, be amenable to discussion with their therapists. Usually, if such a patient is in a good relationship with the therapist, violent outbursts do not occur. Outbursts are most likely to happen when no trusting relationship has been established or when the therapist has recently been lost. In some instances it is necessary to use physical restraint. Patients in this state often appreciate having someone grab and hold them and administer quieting medication, such as phenothiazine; they very often *want* to be controlled and to have assistance in managing their homicidal impulses. Confidence in the understanding of the physician and the ward personnel and in their desires and abilities to help is of great comfort to these patients. A case where such a gesture toward control proved sufficient follows.

A patient who was being cared for on an out-patient basis called and said he felt he was losing control and needed to be hospitalized. The hospital was notified to admit him, to allow him to stay as long as he felt necessary, and not to attempt to keep him. The patient reported to the hospital; after about 4 hours, he called the ward doctor and told him he thought he was ready to go. Following a three-way conference with the therapist, the patient was allowed to leave. About a month later, a similar call from the patient resulted in a second hospitalization; this time 18 hours passed before the patient felt he had regained control and requested discharge. In each instance, the patient was able to control himself following discharge, and, although there was some manipulation of the tranquilizing drug, there was no significant increase in dosage. In effect, the demonstration that there was a noncoercive resource readily available gave the patient sufficient support to renew his confidence in his ability to control himself and made hospitalization over a prolonged period of time unnecessary.

Paranoid schizophrenics sometimes become quite upset. However, the type of turmoil or emergency situation they manifest is often a homosexual panic. The difference between homosexual panic in a college boy and panic actions in a paranoid schizophrenic is not great. In dealing with the schizophrenic, one must be careful to use simple, concrete expressions and to avoid figures of speech or allusions that may be subject to multiple interpretations. Otherwise, the principles presented earlier also apply here.

The general principle of handling paranoid patients is to be trustworthy and honest with them. The following incident illustrates this.

A distressed young man burst into the office of a psychiatrist, sat down, and stated that he needed to talk. He immediately embarked on a long and typically paranoid tirade about the police, the neighbor's children, and fears of homosexuality.

After 35 minutes, he stopped and calmly asked, "Now what do you think of this?" The psychiatrist's response was, "I think you are suffering from paranoid schizophrenia and should be in the hands of a good psychiatrist." The young man's anxiety, anger, and tension subsided, and he revealed that he was already seeing a psychiatrist but didn't trust his diagnosis, so he had sought outside consultation from another psychiatrist.

Any attempts to placate the young man and ease his delusional system would have made him more suspicious and distrustful. But the psychiatrist's statement, which apparently rang true, gave him confidence in his own psychiatrist and emphasized to him his need for treatment.

Sometimes irrational patients are not so irrational as some of the methods employed in handling them. Only respect for patients as human beings with thoughts, wishes, and sense of personal destiny—even though temporarily distorted by mental illness—can produce proper attitudes for dealing with them, both in and out of emergency situations.

Manic-Depressive Emergencies

Manic excitement. There was a time when overactive and manic patients constituted one of the major headaches for hospital administrators. Today, with proper management, these attacks are short-lived and cause little disturbance. If emergencies do occur, they usually involve a manic patient's being arrested for operating an automobile too rapidly, for piling up debts, or for getting into disgraceful situations with members of the opposite sex. Most manics are agreeable, although they can become irritable and combative, and their episodes are usually of short duration. If patients refuse to enter hospitals voluntarily, they should be admitted on temporary papers and treated with appropriate tranquilizers. It has been the experience of many investigators that, if these patients are secluded from other disturbed manics, are placed in a general ward population, and are given special nursing attention and adequate tranquilization, their overactive and socially obnoxious behavior can be controlled within 3 or 4 days, sometimes less. Manic patients, in general, tolerate larger doses of sedatives than do patients of other types, and the stronger tranquilizers available are the medications of choice. If the patient does not cooperate in taking oral medication, it should be given via parenteral injection.

Depressive emergencies. Suicides are the most common emergencies among depressive patients. Sometimes patients are seen in whom malnutrition, attempts at self-mutilation, or acute exhaustion from excessive agitation represents an emergency. Drastic intervention is indicated at such times; properly administered electroconvulsive treatment is still the safest and most effective way to handle this type of emergency state.

Emergencies with Adolescents and Children

The most common emergencies with children are accidents and poisonings. Pediatric services and poi-

soning centers know that some children undergo such experiences repeatedly. In these cases the psychological development of the child and the home situation bear investigation. This can be initiated gently by the pediatrician. If the real pathology is found to be within the child or his family, the case is best referred to a child psychiatry clinic. The point here is that psychological or psychiatric aspects of the most common childhood emergencies should not be neglected.

The temper tantrums of small children constitute crises, the disastrous effects of which can be averted by proper handling. A child has not yet learned to experience anger, distress, or sense of loss appropriate, from an adult point of view, to the nature or degree of the insult or loss. Children, especially those under the age of 7, tend to become as angry over minor insults or deprivations as over major ones—an all or none reaction. In managing situations, the parents should realize that the child may be as upset because he was not allowed to accompany an older brother to a Boy Scout meeting as he would be over the permanent loss of the older brother. Children should not be punished or unduly reprimanded because they seem extremely angry or aggrieved at what seems to the parents a trivial situation. Correct parental attitudes are expressed in such statements as, "I know you are very angry and upset about this, but there is nothing you can do about it, and your brother will return later," or "When you are old enough to go to Scout meetings, you can go by yourself, and he will be too old," or some other statement that points out the reality of the situation to the child but does not punish him for being so angry.

Emergency situations with adolescents are far more common than with children or at least may take forms that are more appropriate for psychiatric attention or intervention. Sometimes adolescent regression takes the form of emotional outbursts, so that they show some of the all or none response more appropriate to smaller children. Adolescents experience many tensions as they begin to establish their own identities, establish their own inner controls, develop a moral sense independent from that of their parents, and question and challenge parental authority. They experience a great deal of anxiety, sometimes referred to as the "adolescent crisis." At this time, one can expect violent outbursts of sobbing; rage; even acting out, such as injudicious operation of cars; suicidal gestures by the more unstable; violent sexual acting out; and serious delinquency, crime and experimentation with drugs, for example. Psychiatry introduces the possibility of another crisis: the adolescent runs the risk of being ignored or treated like a delinquent on the one hand or of being diagnosed as a schizophrenic on the other because, during periods of great anxiety and turmoil, he may indeed be psychotic for a few minutes or days.

Such adolescent turmoil reactions usually respond

rather dramatically to the establishment of a relationship with someone who understands the individual and regards him as a person with rights, privileges, and a certain amount of good sense. Physicians usually enter such situations during a family riot scene, in which people are weeping, yelling, and recriminating. A few minutes of this reveals the general flavor of the family relationship; the session is sometimes as formalized as a family conference and usually suffices for the first interview. Immediately afterward, the adolescent should have an individual interview with the physician, social worker, or nurse, depending on who is taking the major responsibility at the time. Again, words that are supposed to comfort, such as, "Now, now, everything is going to be all right, but control yourself," or "This kind of behavior will get you no place," can only increase the adolescent's feeling that he is being misunderstood and outraged. Instead, statements or questions that convey the therapist's wish to understand, such as, "Do you want to tell me what's going on?" or "What is it you're so upset about?" or "You seem very angry, could you tell me what happened?" will produce a flood of information.

Adolescents tend to appreciate a person who seems to understand, and they form attachments and begin to confide in such an individual much more readily than adult patients do. One should remember, however, that adolescents are very wary and suspicious of adults. One must be particularly careful to avoid being "in cahoots" with the parents. This is especially difficult when the adolescent is the child of a colleague or another physician or a person of prominence in the community. Psychiatrists may feel that they should try to placate the parents or carry out their wishes—that is, control the adolescent and make him behave—rather than attempt to understand the patient's point of view and assume the role of his ally or colleague. At times, such cases may seem to place the physician in opposition to the parents; this is a problem for the social worker.

Joint family interviews and family therapy often produce similar difficulties; a great deal of conscious thought and attention to avoiding partisanship with the parents and actually, when any doubt arises, siding with the child is of maximum importance in such situations. Acute emergencies with adolescents usually subside very quickly, often within a few hours, though they sometimes require a little longer. The more onerous problem then arises of working out the child's developing feelings of identity and enabling him to develop sufficient ego strength to cope with the world about him.

Suggested Cross References

In this section, psychiatric emergencies that occur in association with a wide variety of psychiatric disorders were discussed. For more detailed information regarding the specific disorders, see the discussions

of gross stress reaction (Chapter 28), traumatic war neurosis (Section 28.2), alcoholism (Section 27.3), addictions (Chapter 27), suicide (Section 33.1), delirium (Section 18.3), acute and chronic brain syndromes (Section 18.2), paranoid reactions (Chapter 16), schizophrenia (Chapter 15), and manic-depressive reaction (Section 17.1). A further discussion of psychiatric treatment may be found in Area G.

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PSYCHIATRIC TREATMENT

The primary aim of psychiatric treatment is to alter pathological behavior. Although the dynamics of human behavior are not completely understood, it is clear that all behavior, whether normal or pathological, is the result of highly complex interactions involving biological, psychological, and environmental factors. Thus, the physiology of the individual's brain, his developmental history, store of cognitive information, interpersonal relations, sensory input, and affective experience, as well as the characteristics of the environment with which he interacts, are included among the variables which will determine his ultimate personality and behavior.

The manipulation of these various determinants can result in significant changes in behavior. However, some of these behavioral determinants are manipulated more easily than others. For example, relatively little can be done to alter certain types of permanent central nervous system damage, or the pathological elements in a patient's critically important early developmental history, or some of the realistic limitations of his environment. On the other hand, other equally crucial behavioral determinants can be changed. Among these are distortions in the patient's perceptions and in his relationships with others, the chemical state of his brain, and certain irritating factors in the environment which tax his adaptive resources.

The psychiatric treatment techniques described in this Area intervene at various levels of human functioning to manipulate one or more of the accessible behavioral determinants. These methods may be classified accordingly as psychological, organic, or environmental.

Psychological treatment. The psychological treatment methods in current use include the various forms of psychoanalysis and psychotherapy, the behavior therapy techniques, and group and family therapy.

All of these methods share one common feature: they all attempt to modify pathological behavior by intervening on a psychological level.

The goals of psychological treatment range from relief of a specific symptom, such as bed wetting, to attempts at effecting fundamental changes in a patient's basic character structure and pattern of adaptation to important areas of living, such as work, sex, and interaction with other people.

Theoretical assumptions and techniques of treatment also vary considerably. Thus behavior therapy employs conditioning and extinction techniques which are derived from learning theory in order to relieve psychological symptoms. Other forms of psychotherapy and psychoanalysis rely heavily on the interactions between the doctor and patient to achieve the desired changes in behavior. This therapeutic transaction may involve the exchange of information as well as a highly emotional component. The emphasis in psychotherapy will depend on the diagnosis and the problems of the individual patient. Thus the primary goal of treatment may be to provide a corrective emotional experience with the assumption that this will facilitate the development of more adequate adaptive responses. In other cases, treatment techniques will focus on fostering the patient's insight into the nature and source of fears, wishes, conflicts, and perceptual distortions, which may lie outside conscious awareness, but which are assumed to underlie his pathological behavior.

In contrast to the emphasis on the one-to-one doctor-patient relationship which is the hallmark of the individual psychotherapies, group therapy methods make use of the operation of multiple interactions among the members of the group as well as between individual patients and the therapist. This procedure provides unique opportunities for the clarification and subse-

quent change of pathological interpersonal transactions, which are believed to contribute to many types of psychiatric disturbances.

The various forms of psychotherapy which are described in the sections that comprise Chapter 34, below, are useful in a wide range of psychiatric disorders. However, not all behavioral disorders can be treated effectively by the exclusive use of psychological therapy. Other treatment modalities are often used to supplement psychological treatment, and in some cases these constitute the major aspect of the treatment.

Organic treatment. Organic therapy may be defined as an attempt to modify or correct pathological behavior by physical or chemical means. The relationship between the physical state of the brain and behavior is highly complex and imperfectly understood. It is clear, however, that the various parameters of normal, as well as deviant behavior, such as perception, consciousness, affect, and the cognitive functions, may be profoundly affected by certain physical changes in the central nervous system.

Organic treatment of the psychiatric disorders is largely empirical. The underlying mechanisms by means of which a chemical or physical change in the brain produces an improvement of abnormal behavior has not as yet been completely delineated. Nevertheless, some of the organic therapy techniques have proved highly effective and may constitute the treatment of choice for certain psychopathological conditions. As such, they form an important part of the treatment armamentarium of the psychiatrist, and of practitioners in other medical specialties as well.

Description of treatment techniques, indications, rationale, and results of the organic therapies which are currently in common use are discussed in Chapter 35, below. Among these are the psychoactive drugs, the convulsive therapies, insulin coma treatment, and psychosurgery.

Milieu therapy. As mentioned earlier, environmental factors may exert a significant influence on psychological functioning. It follows, then, that the manipulation of the environment, which has been termed milieu therapy, may result in significant behavioral changes.

This theoretical orientation has produced specially structured hospital wards and schools, sheltered workshops, and day and night hospitals. Within these settings, milieu therapy refers to the effects on the patient of the hospital environment, the behavior and attitudes of the medical and paramedical staff, the group interaction among patients, and interactions between patients and staff. The concept of milieu therapy has also resulted in the organization of partial hospitalization procedures, whereby the patient is en-

couraged to participate in the community in a limited, graduated, and transitional manner and, concurrently, to derive the therapeutic benefits of day- or night-time hospitalization. Finally, milieu therapy also includes the therapeutic use of occupational and recreational facilities.

To a great extent, milieu therapy might be considered sociological in orientation. It is concerned primarily with the role of staff and patient and the structure of a ward community which is designed to facilitate the patient's recovery. The physical characteristics of the hospital, e.g., its geographical location, architecture, and the decor of the ward, may also contribute to the therapeutic milieu, and these variables are also considered to lie within the province of milieu therapy. Alterations in the environment, or social change, may also have therapeutic consequences, because social institutions are important behavioral determinants. This subject is discussed in the section on community psychiatry.

It should be emphasized that milieu therapy represents just one phase of the total psychiatric treatment program, which usually includes psychotherapy and/or some form of organic therapy as well. However, the application of the principles of the use of the environment as a therapeutic modality have greatly increased the range of effectiveness of psychiatric treatment.

Integrated treatment approach. Each of the therapeutic orientations, as well as each of the various techniques included under each rubric, is technically complex. For didactic purposes, the area on psychiatric treatment has been divided into four chapters. The first three deal with the psychological, organic, and milieu therapies, respectively. For the sake of comprehension a rather detailed discussion has been provided of technique, rationale, indications, and results of each form of therapy. The fourth chapter deals with evaluation of the effects of psychiatric treatment.

However, in everyday clinical practice there is no clear delineation between different treatment modalities. Patients with various diagnoses are treated with a combination of therapeutic techniques. The well trained psychiatrist is flexible in his approach and is skilled in the application and understanding of the indications for a wide range of treatment methods.

For amplification of the principle of an integrated and flexible approach toward psychiatric treatment, and for some appropriate clinical examples, the reader is referred to those sections in this volume which deal with specific clinical entities, such as schizophrenia, in which the treatment of choice involves the combined use of several of the therapeutic modalities.

Chapter 34

Psychotherapies

INDIVIDUAL PSYCHOTHERAPY

34.1 PSYCHOANALYSIS AND PSYCHOANALYTIC PSYCHOTHERAPY

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Introduction

The problems which bring people to psychiatrists for treatment are of two kinds: (1) those which seem to have their origin largely in the remote past of the patient's life, and (2) those which seem to arise largely from current stresses, both internal and external.

This simple contrast seems to be a statement of fact. But clinical study indicates that more complex configurations occur. For example, current external stresses may occur in combination with older problems, at times in a complementary series. Clinical observation also indicates that still another dimension should be added to the simple contrast: some patients, who have old but still active and unsolved problems, may arrange their lives unconsciously in such a way that they appear to be the victims of current external life situations. In such cases, an attitude of benevolent skepticism often makes it possible for the therapist to discern the outlines of the ancient past in the stereotyped repetitions in the current life difficulties and to see that the patient is playing a larger part than he recognizes in helping to bring about his misfortune.

Basic premises of psychoanalysis. The simple

division of emotional disorders into the two broad categories given above, incomplete as it is, provides a convenient starting point for a discussion of the facts and theory, the techniques of treatment, and the indications and contraindications of psychoanalysis and its near relative, psychoanalytic psychotherapy. This discussion might begin with the statement that, when a patient's problem stems mainly from the *past*, with relatively little contribution from the present, *psychoanalysis* might well be the treatment of choice.

During classical psychoanalysis, regressive patterns often appear in the patient's feelings and fantasies toward the psychoanalyst. These patterns, which are extensive but controlled, characterize the analytic situation and the analytic process. They provide the necessary ingress into the past, especially in the forms in which the past still survives in the psychobiological depths of each patient. Herein lies the value of psychoanalysis as the treatment of choice when the problem is considered to stem mainly from the past. However, the evocation of such regressive patterns is neither necessary nor desirable if the problems are predominantly current ones; psychoanalytic psychotherapy, in which there is considerably less emphasis on the study of archaic patterns of responses to the treatment situation, may then be the treatment of choice.

Theoretical model. Psychoanalytic theory is discussed in detail elsewhere in this volume. Briefly, *psychic events* (which are regarded as synonymous with "psychobiological phenomena," and "intrapsychic and interpersonal patterns") are conceptualized in terms of propositions which refer to their several dimensions. These propositions may be summarized as follows.

Genetic. Essentially, this is the historical dimension. The term refers to the complex interplay between the

inborn maturational phases and the environment of childhood, which includes inanimate, interpersonal, and cultural forces (and fantasies about them). Environmental forces may be strong or weak; they may be optimal or traumatic; or they may have still other impacts on the patient's psychological functioning.

Dynamic. The term "dynamic" refers to qualitative forces (jealousy, homosexual feelings, love, and rage).

Economic. This refers to the quantitative aspects of these forces, i.e., whether they are greater or lesser, increasing or diminishing.

Structural. Structural propositions are concerned with the schematized area of structure and function in which the specific forces operate. "Ego," "superego," and "id" are structural terms.

Topographical. This designates the relation of a psychic event to consciousness, that is, whether it is conscious, preconscious, or unconscious.

Biological and adaptational. These propositions take cognizance of man's state, at each period of his life, as a biological organism in constant interaction with his cultural, interpersonal, and physical environment.

Basic premises of psychoanalytic psychotherapy. Further discussion of this area requires a preliminary definition of psychoanalytic psychotherapy. Psychoanalytic psychotherapy utilizes the theoretical framework provided by psychoanalysis, as delineated above, with its genetic, dynamic, economic, structural, topographical, biological, and adaptational propositions. However, the therapeutic goals of psychoanalytic psychotherapy are different and less extensive. Moreover, in addition to interpretation, psychoanalytic psychotherapy uses various other techniques which are not, strictly speaking, part of the analytic model. Finally, while the interpretive techniques of psychoanalytic psychotherapy are similar in theoretical orientation to those of psychoanalysis, they focus on different dimensions of the patient's psychic events.

Divergence and convergence in treatment techniques. Of the psychoanalytic propositions mentioned above, the genetic is probably the most characteristic of psychoanalysis. The interplay between the genetic proposition and all of the other propositions provides one highly important orienting principle for the psychoanalyst in his endeavors to understand the complexities of the clinical data set before him; and the treatment techniques which he utilizes are designed to facilitate the study of maturational and developmental vicissitudes, i.e., genetic problems.

On the other hand, current interpersonal and intrapsychic dynamics are likely to receive the greatest emphasis in psychoanalytic psychotherapy, and there is less concern with the task of making detailed genetic reconstructions of the patient's past life. But many clinical conditions cannot be approached in such a simple, schematized fashion; both past and

present contribute etiological factors of importance. In some such instances, psychoanalysis might be attempted, but only with some technical modifications; and it might become difficult to decide whether the treatment is actually psychoanalysis or psychoanalytic psychotherapy.

Further, the contrast between the focus on the historic and the focus on the current loses its sharp outline in the treatment of the individual patient. Almost invariably, even the most present-oriented therapy must include some work with the patient's historical past and his psychological depths. Similarly, the most past- and depth-oriented therapy, of which "classical" or "orthodox" psychoanalysis is the model, must deal at times with the current extra-analytic life situation of the patient. And even psychoanalytic work with a specific patient (in its technical aspects which govern the actual treatment, as contrasted with a theoretic orientation of the analyst) generally deals explicitly with the past only after it can be demonstrated to the patient to be a current, living force in his relationship with the analyst and, to a lesser extent, in his relationship with others.

In this section, psychoanalysis and psychoanalytic psychotherapy will be considered separately; concurrently, further consideration will be given to the similarities and contrasts between them. Since theory and technique have been worked out in much greater detail for psychoanalysis than for psychoanalytic psychotherapy, psychoanalysis will be discussed first. That discussion will then be used as a foundation for a discussion of psychoanalytic psychotherapy.

Psychoanalysis: Historical Considerations

Use of hypnosis in treatment of hysteria. Psychoanalysis began with the treatment of neurotic patients by physicians engaged in general practice. Fraulein Anna O., a hysterical young woman who suffered from a multitude of visual and motor disturbances as well as disturbances of consciousness, was treated in 1881 by the Viennese internist, Josef Breuer. Breuer made the astonishing discovery that his patient's symptoms were effectively removed when she gave them verbal expression under hypnosis, a process which Anna O. described (in English) as the "talking cure" when she referred to it seriously, and as "chimney-sweeping" when she referred to it jokingly. In 1882, when his friend Breuer told him about his treatment of Anna O., Sigmund Freud was just completing his medical training. He was greatly impressed by Breuer's account, and 3 years later, in Paris, he described the case to the French neurologist, Charcot. Perhaps because he failed to capture Charcot's interest, Freud did not pursue the matter further at that time.

Subsequently, however, when he established a general medical practice in Vienna, he found that there were many hysterics among his patients. At first, he treated them by the various methods then in vogue, such as electrotherapy, hydrotherapy, and

rest cures. He was dissatisfied with his results, however, and, remembering Breuer's treatment of Anna O., he began to use hypnosis as a means of gaining access to his patients' otherwise unrememberable "reminiscences." Thus, the use of hypnosis for psychic catharsis was the *anlage* of psychoanalysis as a tool for the investigation of psychic processes of which the patient was not aware.

Repression and the need for discharge. Freud and Breuer continued to work together on the problems of hysteria and reported their findings in *Studies on Hysteria*, which was published in 1895. Reasoning from their clinical observations, Breuer and Freud explained hysteria as the result of traumatic experiences, usually sexual in nature, associated with a large quantity of affect which could not be dissipated in the usual ways, that is, either by "conscious reflexes" or by a gradual "wearing away." Instead, the affect was dammed up and barred from consciousness, only to return in a disguised form in the symptoms. And they summarized their observations in the formula, "*Hysterics suffer mainly from reminiscences.*" They assumed that for some reason or other, the memory itself was unacceptable to the patient's "ego"—a term used then much as "self" is used today—or that the traumatic experiences had taken place when the patient was in a dissociated state, which they called "hypnoid." For these reasons, the experience was suppressed and consequently in need of discharge through abreaction.

The need for discharge of dammed up affect was attributed to the "principle of constancy," which postulated that something in the nervous system, which they referred to in their writings as the "sum of excitation," is increased as a consequence of physical stimulation and that there exists a tendency to diminish that "something" to maintain the well-being of the organism. One of the primary functions of the psychic apparatus, they felt, was to keep the quantity of excitation as low as possible, or at least to keep it constant. Freud and Breuer thought of the excitation as a physical entity, a physiological stimulus which suffused the neurone and which required eventual discharge much in the manner of the reflex arc. They regarded it as somewhat analogous to an electrical charge, and the quantum of excitation, or energy, was called "cathexis."

Mind-body problem. Interestingly, Freud was strongly influenced by the Central European natural science tradition which centered around Helmholtz, and his initial interest in the field of medicine lay far from psychology. Rather, his training was in biology, which, at the time, included little of psychobiology. In fact, it was a field he abandoned only for practical considerations, on the advice of his professor of physiology, Ernst Brücke. In medicine, at first, he was interested primarily in the study of neurology, histology, pharmacology, and medicine; and he had written several monographs on those subjects by the time he was 29, including an essay on cocaine which ap-

peared in 1884. It was Freud's work in this area, in fact, that led to the study of the ophthalmologic use of cocaine.

Consequently, by the time *Studies on Hysteria* was published, Freud was confronted by a serious dilemma. The scientific disciplines of his day, medical and other, were unable to explain the puzzling phenomena of hysteria with which he was confronted in his medical practice. Freud, trained in the science of his day, continued to maintain that all psychological phenomena should be describable in anatomical and physiological terms. Yet he found that his clinical histories read more like stories, artistic productions which seemed to have little in common with scientific reports. Confronted by this discrepancy, Freud tried again and again to deal with body-mind problems. (The story of his early attempt at a solution of the problem is set forth in Ernst Kris's admirable introduction to *The Origins of Psychoanalysis*, a collection of letters and other materials which Freud sent to his friend Wilhelm Fliess, a prominent Berlin otolaryngologist.)

Breuer felt that the scientific data which were then available were not adequate to support Freud's physiological hypotheses, and he advised him to give up the attempt to reduce psychological events to physiological ones. In fact, Breuer was becoming somewhat resistant to the emerging discoveries of the importance of the role of sexuality in the causation of the neuroses, and he withdrew from his collaboration with Freud shortly thereafter. However, Freud persisted in his efforts to work out an acceptable theory of psychological events based on the concept that the psychic apparatus was a system of neurones and that all events in the neurone could be considered ultimately as quantitative changes. In 1895 Freud elaborated on this approach in a document entitled "A Project for a Scientific Psychology." Although he worked on the "Project" intensively over a 2-year period, Freud was dissatisfied with his final formulations. As a result, this truly amazing document was not published until 1954.

Evolution of psychoanalytic theory. In the 4 years immediately after his work on the "Project," Freud embarked on his first real psychoanalysis—that of himself. In addition, during these years he made major discoveries about *transference*, the importance of *infantile sexuality*, the *Oedipus complex*, and the traumatic potential of *fantasy*, as contrasted with actual external events. The Fliess correspondence contains the story of those discoveries. As his psychological understanding deepened, Freud began to realize that Breuer had been right about the inadequacy for his purposes of the science of the times, and he saw that a new set of working hypotheses was required. By 1899 he had reworked the basic principles of the "Project"; and he had created a genuine psychodynamics which, for the first time, seemed to have an independent validity, pending fuller under-

standing of the somatic aspects of the clinical phenomena.

The new psychological theories received their first full exposition in Chapter VII of Freud's *The Interpretation of Dreams*, which was completed and published late in 1899. Without question, the new hypotheses were much more useful than those Freud had formulated previously in dealing with the materials at hand—his patients' neuroses, dreams, in brief, the psychopathology of everyday life. Nevertheless, Freud himself never lost sight of their provisional nature. Thus, in his final publication, *An Outline of Psychoanalysis*, Freud wrote: "We know two kinds of things about what we call our psyche (or mental life): firstly, its bodily organ and scene of action, the brain (or nervous system) and, on the other hand, our acts of consciousness, which are immediate data and cannot be further explained by any sort of description. Everything that lies between is unknown to us, and the data do not include any direct relation between these two terminal points of our knowledge." Elsewhere in the *Outline*, he wrote: "The future may teach us to exercise a direct influence, by means of particular chemical substances, on the amounts of energy and their distribution in the mental apparatus. It may be that there are other still undreamt-of possibilities of therapy. But for the moment we have nothing better at our disposal than the technique of psycho-analysis. . . ."

Early psychoanalytic techniques. This brief historical survey of the early days of psychoanalysis provides an orientation for an understanding of the early therapeutic techniques and aims of the process. Psychoanalysis began with hypnosis; its goals were remembering and abreaction of unresolved traumatic situations; and its therapeutic effectiveness depended on suggestion. But patients seemed to fight the process; they were reluctant to give themselves up to the cure; resistances made their appearance. Furthermore, patients tended to embroil the physician in their neurotic conflicts. Transference phenomena were recognized as problems to be dealt with in clinical work.

As early as 1895, Freud had begun to give up the practice of placing his patients in hypnotic trance and instead was simply urging them to tell him all they could about themselves. This urging subsequently gave way to the present day technique of free association. More specifically, Freud instructed his patients to say whatever came into their minds, important or unimportant, related or unrelated, with a minimum of editing by the patient or direction by the physician.

The techniques of hypnosis, urging, and free association share in common the goal of bringing into consciousness something which is unconscious, something which is kept in the unconscious because it is unacceptable to the conscious self. The goal of treatment, as Freud wrote in the *Introductory Lectures*, was "making conscious what is unconscious, lifting

repressions, filling gaps in the memory—all these amount to the same thing." Hopefully, the patient, spurred on by his wish to get well and his wish to please his physician, would gain the courage to look at thoughts and feelings which he had had to keep outside his awareness previously. With the expansion of self-awareness, and at the expense of the repressed material in his unconscious, cure could be achieved.

Determinants of psychic functioning

Topographical model. The first model of a psychic apparatus which might be called truly psychoanalytic was the topographical model described in *The Interpretation of Dreams*. In that model, Freud assigned a role of limited importance to the function of consciousness, which had heretofore been regarded as the sum total of mental life by scientist and layman alike. The conscious was conceptualized as a sensory organ which scans the surface of the preconscious, directing attention (the technical term is "attention cathexis") first here, then there. The preconscious includes the thoughts and feelings which are easily available to consciousness through the process of "hypercathexis," i.e., the addition of small amounts of energy from the conscious to their own quanta of energy. Descriptively, the preconscious has the quality of unconsciousness; but Freud discerned an additional system of unconscious thoughts and feelings which are not as readily available to consciousness as are the contents of the preconscious and which, in fact, cannot be made conscious at all without overcoming strong resistances. He called that system the unconscious. It was the physician's ability to bring material in the unconscious to light which was crucial for the curative process.

The picture of psychic structure and of psychodynamic functioning presented at that time is too schematic and simple; nevertheless, it expressed major findings in a schema which is still highly valued. The whole apparatus, composed of the conscious, the preconscious, and the unconscious, was seen as operating with a force which merits the label of psychic energy, which, though not directly measurable, can be roughly quantified as increasing or decreasing.

Regulation of psychic energy. This psychic energy is regulated in two ways: the primary process holds sway in the unconscious; the secondary process is characteristic of the preconscious. In the unconscious, cathexis is freely mobile and displaceable. Leading to intensification of certain elements and reduction in the intensity of others; it is constantly pressing for discharge; and it operates without regard for time, space, or logic. By contrast, the energy of the preconscious is regulated more by temporal, spatial, and logical considerations. It is less imperious; and it gives rise to the modes of thinking which are most readily available to the waking, reasoning, and reflecting adult. Genetically, the primary process is

equivalent to the thought processes of the infant. Although it is gradually overlaid by the secondary process as the preconscious develops, the primary process persists as the mode of operation of the unconscious. It is the unconscious, with its mobile psychic energy, its nonverbal forms of thought formation, and its disregard for the external world, which gives to dreams, parapraxes, and symptoms alike their special and partly unrealistic qualities.

Thus, primary emphasis was placed on the unconscious drives and, in addition, on the moral judgments the patient might make about his impulses. The ensuing conflict with the unconscious drives was a central concept. One of the outcomes of this conflict was *repression*, which was regarded as pathological. The process of cure coincided with its removal.

Freud's evidence indicated strongly that psychic events are not random happenings, but have a discoverable cause, or perhaps several causes at the same time. Not only did Freud demonstrate the validity of this proposition in the treatment of neurotic patients, he also showed it to be equally true for the events of everyday life—dreams, humor, slips of the tongue and other parapraxes, even falling in love.

In short, psychoanalysis, then and later, has made essential contributions to the comprehensive understanding of human structure and function. Psychoanalytic findings have illuminated many of those areas of human life which formerly seemed murky and unclear. Even more important, in combination with the biological and the social sciences, psychoanalysis has begun to provide a reliable understanding of man, both in his internal and his external environments.

Outline of the history of psychoanalysis

First phase. The history of psychoanalysis may, for heuristic purposes, be divided into three phases. The first of these began with the publication of *The Interpretation of Dreams*, discussed briefly in the preceding paragraphs. (In addition, there was a pre-psychoanalytic period, formative in nature, which was discussed earlier in this section, during which *Studies on Hysteria* was published.) With *The Interpretation of Dreams* psychoanalysis proper may be said to have begun, for this work introduced the topographic model of the mind and the concept of a "depth psychology." This initial phase came to a close with Freud's publication of *The Ego and the Id* in 1923.

During this time, psychoanalysis, as *therapy*, was concerned with the removal of amnesias through the method of free association. Little attention was directed, at least at first, to those factors which we would now include under the rubric of ego psychology. As his clinical experience increased, however, Freud inevitably was forced to pay more attention to factors other than unconscious drives and the resulting con-

flicts. Thus, Freud's observations led him to postulate that, for various reasons, some patients are too narcissistic to be suitable subjects for psychoanalysis. They were unable to develop the workable transference toward the physician which is the hallmark of psychoanalytic treatment. Generally speaking, the narcissistic neuroses from which they suffer are the psychoses, in contrast to the transference neuroses, which include conversion hysteria, anxiety hysteria (the hysterical phobias), and the obsessive-compulsive neuroses.

The term "transference neurosis" has two meanings in psychoanalytic literature. It has a diagnostic and taxonomic meaning, in that it refers to various neuroses whose symptoms are formed somewhat along the lines of the process of dream formation. In the second sense, the term designates the principal event of a therapeutic psychoanalysis: the new neurosis directed toward the analyst, the unfolding and the resolution of which becomes the main analytic task. The transference neuroses in the first, or diagnostic sense, are also characterized by the tendency of patients of that group to form transference neuroses (this time, in the second sense) toward their analysts. (Both meanings of this term are discussed more fully below.)

However, melancholia seemed in some ways to be an exception. In his study of this syndrome Freud's attention focused once again on the matrix in which unconscious impulses were expressed, a matrix which was proving to be more complex than the prior division of the psychic apparatus into a conscious, preconscious, and unconscious. Repressing forces themselves, for instance, were found to be a part of the unconscious. A further revision in theory was called for, and the new hypotheses about the structure of the psychic apparatus were announced in *The Ego and the Id*.

Second phase: New structural hypothesis. With the emergence of the new structural approach, the technique of psychoanalysis took on new precision and focus. The ego was seen as a group of functions more or less accessible to consciousness. The most important function of the ego, perhaps, was to *mediate* between the demands of the id, the superego, and the environment. Anxiety was no longer to be regarded as a transmutation product of dammed up libido, as in the earlier ("toxicologic") theory. It could now be viewed as the ego's reaction to the threatened breakthrough of forbidden impulses. The previous duality of the drives, self-preservative and species-preservative, was found to provide, in part, a false dichotomy; and self-preservation was now regarded as an important ego function instead of an "instinct."

However, another dualistic concept, that of the *libido* and the *death instinct*, appeared at this time. The concept of a death instinct has not found general acceptance. But the aggressive drive, at first regarded as a derivative of the death instinct, has become a cornerstone of current psychoanalytic thought. Today,

aggression is thought of as coordinate with sex, undergoing comparable developmental sequences. Like sex, it may exist either in infantile, repressed forms, or in mature, integrated, constructive modes.

The effect of the new structural hypothesis on treatment was to open up a more extensive consideration of the total personality, not just those elements of the unconscious which were repressed. Almost immediately, the way was cleared for the study of character neuroses, in addition to symptom neuroses. In 1928 Wilhelm Reich showed that a person's "characterological armor" could be the object of analytic study; in fact, frequently, it must be analyzed as a preliminary to the uncovering of the traumata which are operative in neurosis. However, Freud had foreshadowed Reich's work in his paper, "Some Character Types Met with in Psycho-Analytic Work," which was published in 1916. Here he dealt with those patients who are wrecked by success, those who become criminals from a sense of guilt, and those who had experienced traumata for which they could not be held responsible (such as congenital deformities) and who consequently insisted that the world exempt them from the demands usually made on others (the "exceptions"). This is a good example of the way in which clinical observation preceded theory formation in Freud's work.

Third phase: Ego psychology. The third and present period, the period of ego psychology, began in 1936 with the publication of Anna Freud's *The Ego and the Mechanisms of Defense*. This was followed in 1939 by Heinz Hartmann's *Ego Psychology and the Problem of Adaptation*, in which the idea of conflict-free, constitutionally determined, adaptive ego mechanisms was proposed. More recently, Kohut and Seitz have suggested the mapping of the ego into an "area of progressive neutralization" which would include (in addition to Hartmann's conflict-free sphere) the residues of all benign nontraumatic learning, and an "area of transference," in which a barrier walls off more or less intensely repressed content from the neutralizing effects of the ego.

In fact, the contemporary psychoanalyst who thinks in terms of the therapeutic alliance works with patterns and traits which are part of the area of progressive neutralization, using them as a lever for the loosening up of the repression which contributes to the formation of symptoms and pathological character traits. However, the distinction made by Kohut and Seitz is *economic* as well as *structural*; that is, modes of energy regulation based on the dichotomy of primary and secondary thought processes provide the criteria for this newer mapping of the ego. The goal of therapy now may be formulated to a greater degree in terms of "neutralizing" the infantile, unconscious material, which may be either in the deeper layers of the ego or in the id. Abreaction alone, without neutralization and the resultant integration of previously repressed mental contents into the total

personality, is not therapeutic in the fullest sense of the word, although it may provide some temporary relief.

The more recent hypotheses about the structure of the psychic apparatus have clarified thinking about the treatment of syndromes previously considered inaccessible to analysis, particularly the psychoses. Further, an emphasis on the development of the ego and an understanding of its mechanisms and its relations to environmental figures have enormously facilitated the treatment of children by psychoanalysis. The psychoanalytic treatment of certain varieties of developmental lag, of delinquency, and of other problems which were not considered to be amenable to psychoanalysis previously is now attempted with increasing frequency. In theory and in clinical work, the structural hypotheses have not supplanted the older topographical considerations; rather they complement them.

Psychoanalysis: As Therapy

General considerations. The beautifully summarized, highly condensed clinical reports which appear in the psychoanalytic literature are likely to give a distorted picture of the analytic process as it goes along day by day, month by month, year by year. Descriptions of the work of years, when reduced to a few pages, give an impression of the clairvoyance of the analyst and of easy, dramatic insights. In reality, the process of clinical psychoanalysis is, for the most part, slow and tedious. The analyst, observing the principle of maintaining an optimal level of anxiety in his patient and the principle of optimal dosages of interpretation, tends to regard a sudden abreactive breakthrough as unfortunate and potentially traumatic. (Freud called it "an outright mishap.")

Therapeutic orientation. The historical sketch of psychoanalysis given above emphasized the necessity of undoing repression and of recovering lost memories. However, analytic work actually involves much more. The chief requirement is *the gradual integration of the previously repressed material into the total structure of the personality*. For, if the work proceeds too rapidly, there is the danger that the patient will experience analysis as a new trauma.

The work of analysis, then, is much concerned with preparing the patient to deal with the material which has been uncovered, to provide a kind of progressive desensitization to noxious psychic material, dealing at first with remote derivatives of crucial traumatic conflicts, and later with the conflicts in their more primary forms. At times, this preparation takes the form of instruction, which focuses, in particular, on training the patient to be sensitive to his inner promptings, that is, in the method of introspection which is the principal tool of psychoanalysis. At other times, work proceeds on uncovering hidden resistances to the analytic process, and at still other times, the work involves dealing with the noxious

psychic materials directly. Patient and analyst seldom follow a straight path to insight. Instead, the process of analysis is more like putting together, a few at a time, the pieces of an immense and enormously complicated jigsaw puzzle.

Approximate duration of treatment. One of the prerequisites for competence in the practice of analysis, as Kohut and Seitz have pointed out, is the capacity to tolerate ambiguity, to resist false and premature closure on psychological matters, to proceed on the assumption that there is always likely to be still another meaning of a psychic event which has not yet come to light and which may be important. Psychoanalysis is a process which takes time, and one condition of the analytic setting is that both patient and analyst be prepared to make a commitment to the process for an indefinite period. The argument that a lifetime of difficulty cannot be straightened out in a few months is a valid one. Concomitantly, however, as is true of all growth processes which should not be rushed, there is a welcome acceptance of increasing strength and of an end point of resolution and independence and of the resolution of difficulties.

The number of analytic interviews included as part of the preparatory, or "training," analyses required for future psychoanalysts range from less than 200 sessions at one end of a continuum, to almost 2,000 sessions at the other end. (Many psychoanalytic institutes now require a minimum of 300 hours for a preparatory analysis.) On the average, most analyses, whether conducted for therapeutic reasons, or as part of the training of future psychoanalysts, require between 2 and 5 years. The American Psychoanalytic Association recommends at least four analytic sessions each week, exclusive of time out for vacations, etc., both for preparatory analyses and analyses conducted by candidates at psychoanalytic training institutes. This figure reflects a tendency toward less frequent interviews, in comparison to the early days of analysis, when patients were seen daily except Sundays. On the other hand, however, most analysts feel that, on the whole, analyses are longer in duration.

The reasons for the tendency toward longer analyses vary, and they reflect both a change in the kind of problems patients are bringing to analysis, and an increasing stringency on the part of analysts with regard to the criteria for termination of treatment. In all likelihood, many of the short analyses which abounded in the formative years of psychoanalysis would not be regarded as successful analyses today; rather, they would be evaluated as cures which were based on the effects of suggestion (which was left unanalyzed), i.e., so-called "transference cures." Despite the fact that, on occasion, treatment may produce long lasting improvement and may be satisfactory from the patient's viewpoint, such cures are not analytic in the strict sense that a neurotogenic conflict has had a far reaching resolution.

Analytic setting. In addition to the duration of

treatment and the frequency of interviews, another characteristic of the analytic setting is the supine position of the patient on the couch or sofa, with the analyst seated behind the patient, partially or totally invisible to him. The use of the couch is, of course, a convention which had its origin in Freud's early experimentation with hypnosis. However, even after he had stopped using hypnotic techniques, Freud continued to find the couch a useful device. For one, it meant that the patient did not have to look at him, which he found uncomfortable when it continued for many hours. But beyond such considerations, the use of the couch was found to have a specific dynamic significance which transcended its original value: it assists the analyst in his attempts to produce the controlled regression which favors the emergence of repressed material. More specifically, the reclining position of the patient in the presence of the analyst will in most instances reproduce an ancient parent-child situation symbolically, although the specific nuances of its meaning will vary from patient to patient. Freed of the necessity to interact constantly with the analyst on the level of a real, adult, face-to-face and day-to-day relationship, the patient finds himself focusing more on his own inner thoughts, feelings, and fantasies, which can then become the content of his free associations.

Role of the analyst. An important factor bearing on the effectiveness of the analytic process is the analyst's attitudes, conscious and unconscious, toward the conflicts of his patient. Ideally, the analyst, who is himself well analyzed, is able to maintain an attitude of benevolent objectivity toward all the facets of his patient's behavior. In fact, however, just as the patient may form transferences toward the analyst, the analyst may form counter-transferences toward his patient if his therapeutic efforts are hampered by residuals, or portions, of old conflicts. And, like the patient's transferences, the analyst's *counter-transferences* are illogical and involve a repetition of the past in the present, or the inappropriate use of a stereotype. Moreover, since they produce a distortion in the analyst's perceptions of his patient, they impede the progress of analytic work. If, for example, the analyst has some need to ward off the same impulses with which his patient is struggling, impulses which are being intensified by the analytic work itself, a situation is set up which is characterized by a resistance of both patient and analyst to dealing with repressed material. The analyst's preparatory analysis is a safeguard, but it is by no means an iron-clad guarantee against such a problem. To avoid this problem requires diligent self-scrutiny by the analyst, as part of his never ending efforts to increase his self-understanding.

Psychoanalysis: Treatment Method

Overview. The chief external elements of the analytic situation have been mentioned. In addition, the

patient should be strongly committed to a persistent and stringent attempt at *self-understanding*. His life situation should be favorable enough to permit him to come for his analytic sessions regularly, and for as long as might be necessary to achieve his and the analyst's goals. He must agree to persist in the attempt to use the method of free association, which will be discussed in detail later.

But an analyst, a suffering patient, and compliance with the superficial requirements of the analytic setting do not necessarily make an analysis. The patient—and his analyst—must be able to participate in the analytic process, which consists primarily of the patient's recognition in himself (with the help of his analyst) of progressively deeper conflicts and the useful integration of warded off drives into his ego.

It seems likely that the ability to utilize the analytic process for curative purposes may vary from one type of neurosis to another. For instance, an obsessive-compulsive patient might come to analysis prepared to talk unceasingly and to examine the contents of his mind intellectually, but determined to keep his feelings at a safe distance. One of the defensive patterns basic to the development of obsessions is, in fact, the same separation of idea and feeling which the patient might show in his approach to analysis. On the other hand, an hysterical patient, swept along as he is by intense feelings, might very well have more difficulty adhering to the formal requirements of the analytic situation; yet, at the same time, he might be able to make rapid strides in the direction of integration and cure.

The "fundamental rule." The analyst and his patient share a division of labor. The analyst's job is to listen to his patient, to try to understand, and, choosing the moment, to interpret what his patient reveals to him. The patient's job, on the other hand, is indicated in the "fundamental rule." As part of the realistic collaborative approach to the cure of his neurosis, *the patient agrees to be completely candid with his analyst*. But analytic candor requires that the patient reveal things about himself which he does not even know that he knows. A statement representative of Freud's instructions about this aspect of psychoanalytic technique appears in *An Outline of Psychoanalysis*:

We pledge him to obey the fundamental rule of analysis, which is henceforward to govern his behavior towards us. He is to tell us not only what he can say intentionally and willingly, what will give him relief like a confession, but everything else as well that his self-observation yields him, everything that comes into his head, even if it is *disagreeable* for him to say it, even if it seems to him *unimportant* or actually *nonsensical*.

Implicit in the fundamental rule of psychoanalysis are two interrelated principles. First, in psychoanalysis there is a clear emphasis on the value of recognition and verbalization of psychic contents, of ideas, impulses, conflicts, and emotions. Second, psychoana-

lytic technique emphasizes the principle that action based on impulse without adequate prior consideration is to be avoided. In fact, the supine and relatively immobile attitude of the patient on the couch favors verbalization instead of action; this condition is further emphasized by the analyst's accepting attitude toward his patient's verbal productions. Prohibition of action bars musculoskeletal channels for the discharge of drive tension, which is then redirected into psychological pathways where, depending on the state of resistance, it may eventually reach verbal levels. This state of affairs swings the balance toward conscious remembering and away from blind repetition outside of awareness—or "acting out," as it is called. (In psychosomatic disorders, drive tensions may also be discharged through visceral channels, introducing additional problems in treatment.)

Some patients may take the fundamental rule so literally that they sabotage their treatment while giving an appearance of meticulously complying with its requirements: they may parody its spirit while obeying its letter. This is particularly likely to occur in some obsessional states, where the fundamental rule may be used as a weapon against the analyst, rather than the neurosis. Some analysts, therefore, do not always give their patients explicit statements about the fundamental rule, preferring instead to lead them to discover it for themselves through a study of the obstacles which they place in the way of communication. Properly observed, however, the fundamental rule leads to the patient's use of the technique of free association.

Free association. This is actually a misnomer, since the associations are soon seen to be directed by three kinds of unconscious forces: (1) the pathogenic conflicts of the neurosis, (2) the wish to get well, and (3) the wish to please the analyst. The interplay between these factors becomes very complex and at times threatens the progress of the analysis, as, for example, when some impulse which is unacceptable to the patient and which is a part of his neurosis comes into conflict with his wish to please his analyst, who he assumes also finds the impulse unacceptable. Or, the wish for cure may imprint a stamp of unreality upon the analysis at its inception, since the patient may see the analyst as a replica of some powerful, benevolent figure out of his real or fantasied past. There is an archaic quality about such intensely positive feelings and an archaic quality about the illogical negative feelings with which the analyst becomes invested. It may be difficult to demonstrate to the patient the illogical nature of his positive feelings, since he desperately wants an omnipotent and omniscient ally against the inroads of neurosis. Similarly, it may be difficult to demonstrate to the patient the illogical nature of his negative feelings, since he may be convinced that offense is the best defense. (These are merely generalities based on broad scope reference to positive and

negative feelings, which in actual clinical work must be specified, along with their specific consequences.)

Not even the wish to get well can be taken for granted, since it may be overridden by a stronger urge to suffer. Some patients seem to feel that they do not deserve to be well and meet each therapeutic advance with a fresh wave of illness, introducing additional problems in treatment.

The "rule of abstinence." The second principle involved here is another "rule," the "rule of abstinence." This does not mean, as it is often interpreted, that a patient must forego sexual gratification or give up his favorite foods. Instead, it is only through the optimal frustration of the patient's wishes in the framework of the analysis that the analytic process is propelled forward, that the patient becomes conscious of his psychic tensions, instead of reducing them in unproductive gratification or keeping them in repression. The key phrase, perhaps, is "optimal frustration," since few patients could tolerate for long a totally sterile, nongiving analytic environment; yet the analyst's temptation to play the role of the indulgent parent and to give beyond the requirements of the analytic process must be strongly resisted if the work of analysis is to proceed. Frustration in the analytic situation, which is so essential to forward motion, must, like interpretation, be optimally timed and dosed according to the patient's capacity to work effectively at any given time.

Transference. One criterion by which psychoanalysis can be differentiated in principle from other forms of psychotherapy, including psychoanalytic psychotherapy, is the management of transference. The term "transference" has been used earlier in this section in several contexts, without pausing for definition. Since it is central to this discussion and has gained wide currency in contemporary psychiatry as well, it would be productive to specify the sense in which it is used in classical psychoanalysis, as opposed to its broader implications in general psychiatry.

In general psychiatry, the term "transference" has come to be used as a loose designation for all aspects of the patient's feelings and behavior toward the physician. This includes rational and adaptive (overt) aspects, as well as those irrational distortions which arise from unconscious strivings. Therefore, when it is used in this encompassing sense, it might be more appropriate to refer to transference as a "relationship." In contrast, in psychoanalysis, transference is conceived of as an endopsychic phenomenon, that is, as a phenomenon which occurs entirely within the mind.

Definition. In *The Interpretation of Dreams*, Freud wrote that in the preconscious there are purposive ideas, ultimately derived from unconscious sources, which are "always on the alert." Using an anthropomorphic phrase to dramatize the concept, it can be said that these wishes may seize control of a neglected

train of thought in the preconscious which might itself be without any great significance. "They may establish a connection between it and an unconscious wish, and they may 'transfer' to it the energy belonging to the unconscious wish. Thenceforward the neglected or suppressed train of thought is in a position to persist, though the reinforcement it has received gives it no right of entry into consciousness. We may express this by saying that what has hitherto been a preconscious train of thought has now been 'drawn into the unconscious.'" The distortions of the otherwise rational manifest content of the dream are a clear example of the taking over of the preconscious material by unconscious wishes; for that reason, dreams, as well as parapraxes, are thought of as "transference phenomena." Freud saw too that the mechanisms of symptom formation show great similarity to those of dream formation.

Transference as distorted unconscious wishes.

Very early in his work, Freud observed also that patients tend to distort their view of their analyst in essentially the same fashion that they distort reality material in the dream. The patient's view of his analyst, like the dream pattern mentioned above, is modified by unconscious wishes which are always on the alert to attach themselves to a person in the environment. Since these repressed wishes arise from infantile sources, the relationship with the analyst is strongly influenced by the patient's struggle to gratify his unconscious infantile wishes through the analyst.

Such transference distortions are not limited to the psychoanalytic setting but arise in all conditions of human life. This includes a patient's relationship with any physician, where the reality of being a patient, with some degree of helplessness, combined with the realistic, appropriate expectation of receiving help from the physician, serves to reawaken the old parent-child wishes and struggles. But for several reasons, a neurotic person is more vulnerable to transference distortions of all of his relationships than is the person "free" of neurosis.

The interpersonal sense in which the term "transference" is described here, that is, in the sense of the illogical and emotionally colored distortions of a relationship with another person, is a variation of the endopsychic pattern previously mentioned. This becomes most readily apparent in the analytic situation, where the analyst attempts to conduct himself so that he becomes available for use by the patient much in the fashion of a bit of "day residue"—one of those insignificant bits of preconscious thought chains which gain importance through the transference of intense infantile wishes. This is in contrast to nonanalytic relationships, in which the relative freedom of both of the participants to respond more openly to each other may obscure the essential transference nature of some of the reactions; for example, marital partners might have strong, but unrecognized, transference reactions to each other.

Transference as generalized character pattern.

In a somewhat broadened sense, "transference" includes not only those distortions in relation to the analyst which derive directly from transferred infantile wishes, but also the distortions which derive from other intermediate dynamic sequences in which characterological defenses against those wishes predominate. One patient's over-all suspiciousness toward his analyst or another patient's blind trustfulness may be included under the rubric of "transference," whether it is a transference in the pure sense or part of a generalized character pattern which became evident during or after the latency period, without either distortion having been directed previously toward one of the crucial figures of childhood.

Nature of transference phenomena. A central characteristic of transference phenomena is their repetition. In those instances when transference occurs in the strict sense of the term, the unconscious wishes which are transferred are from the past. Hence, their intrusion into the present involves a reliving, and it is this factor which gives such a transference its unique capacity to reproduce the past before the eyes of the analyst in the present. Similarly, in those instances of transference which represent the fitting of the analyst into a characterological scheme, the understanding of the distortion also leads deeply into the past. This is especially evident in the form of repetitive patterns or stereotypes of behavior in the analysis.

One is tempted to conclude from this account that definite and specific events are frequently repeated or relived in the transference. In fact, this kind of repetition occurs only rarely. Rather, most of the analytic work is concerned with repetitive patterns of behavior which can be recognized as anachronistic, as somehow inappropriate to the present. Moreover, those patterns or stereotypes have many different, sometimes almost incompatible, meanings; and they call for some degree of reinterpretation, according to the context in which they arise.

Course of analysis. It is customary to think of an analysis as comprised of three principal phases—an opening, a middle, and a termination phase—which Freud likened to the opening, middle, and end games of chess. Each of these phases—in chess and analysis alike—has its special characteristics and techniques.

Initial phase of analysis: Orientation. From the analyst's point of view, two matters are uppermost during the initial phase. First, there are diagnostic questions to be asked and answered. This involves much more than attaching a label to the patient. Rather, during this opening phase, the analyst tries to get a sense of the plot, or story, of his patient's life, to get a picture of the major conflicts with which he was confronted in the course of his development, together with their attempted solutions. In this, the analyst is aided by the patient's agreement, under the terms of the fundamental rule, to tell him as

much about himself as he can, which usually includes a great deal of his past history.

The analyst's second concern is the establishment of a good collaborative working relationship with his patient. The opening phase is marked by evanescent transferences and a mutual "sizing up," as well as a progressive commitment to the analytic process. It involves, among other things, the process of training the patient to be a patient, referred to earlier. In this phase, the patient usually gets some relief from his symptoms simply from talking about himself in a supportive, accepting analytic climate.

Second phase of analysis: Transference neurosis. Sooner or later, though, the patient becomes more preoccupied with the present than with the past, and particularly with the analysis itself. This phenomenon occurs at the beginning of the second phase, which can be identified as the transference neurosis. In contrast to the transient transference reactions of the first phase, the transference neurosis is a somewhat variable but sustained network of transferences, in which the patient reproduces much of the essential material from his past. This new neurotic formation, a kind of refocused set of patterns which are now directed toward the analyst, arises in part as response to the analytic setting itself, with its use of the couch, of free association, and its symbolic reproduction of the parent-child relationship. It arises in part, too, from the effects of the analyst's interpretive activity, which may tend to limit the channels for the expression of unconscious strivings. In addition, the presence of the analyst rekindles the hope of achieving some of the impossible goals of childhood, and therefore some of the crucial interpersonal responses of childhood.

Although the transference neurosis was originally regarded as a serious obstacle to analytic work, analysts soon realized that in the repetitions which are manifested in the transference neurosis the analyst could observe first-hand many of the important conflicts and conflict-solutions of his patient's childhood, conflicts which had undergone repression long since, but which had not been otherwise resolved. Consequently, the transference neurosis, i.e., its gradual unfolding and its eventual resolution, becomes the central concern of the analysis.

The repetitions in the transference neurosis differ in some significant respects from the prototypal experiences which they seem to reproduce. At the time the traumatic events or situations which became the core of the later neurosis occur, the child's ego is relatively helpless against the demands of the id; and reliable, reality-adaptive ways of handling primitive id drives are not yet fully developed. In addition, for the child, the environment itself actually is, or at least seems to be, a greater source of potential danger than it is for the mature adult. In the analytic situation, however, under the conditions of the therapeutic alliance, the patient's besieged ego finds a new and strong ally in the analyst; and his superego's exces-

sive demands are made less powerful because of the patient's identification with the analyst.

But the situation does not remain simple and unclouded for long. Since the undoing of pathological repression is the hub of analytic work, the analyst, by insisting on a recognition of unwanted impulses, may seem to be siding with those impulses which are in repression. Sooner or later the patient will feel impelled to repeat old ego or superego defenses against threatening impulses, but now these defenses are also directed against the analyst, who stands for such impulses. In the simplest situation, an infantile sexual impulse which is now directed toward the analyst becomes the occasion for a variety of equally infantile guilt feelings. At times, the hope of finally gratifying ungratifiable infantile strivings overrides all other concerns, including analytic progress. In either event, motives have arisen for resisting the progress of the analysis.

Much more complex transference situations may evolve, as well, as indicated in the following example reported by Anna Freud in *The Ego and the Mechanisms of Defense*.

One of Miss Freud's patients had violent outbursts of aggression toward her analyst and others. During these episodes the patient felt that these people were keeping secrets from her, and she felt deeply disappointed and critical. In her analysis it was observed that the outbursts of aggression coincided with the threatened emergence of hidden masturbation fantasies for which she expected to be criticized. The forbidden fantasies were kept in repression; that is, they were the patient's secret, which she hid even from herself. The patient identified thoroughly with the anticipated criticisms, and attempted to solve her conflict by attributing her secret fantasies to others, including her analyst, and then redirect her criticism toward the analyst.

By the time the analysis is well into the phase of the transference neurosis, however, the analyst and patient will have firmly established a base line of collaboration and trust, so that their relationship can tolerate the stresses and strains imposed upon it by illogical strivings, both positive and negative. The crucial issue here is whether the patient is beginning to develop his power of self-observation in the analysis, so that he is able to stand beside himself, so to speak, and to evaluate objectively his own emotional experiences—at first through the eyes of his analyst, and later through his own. The specific fate of the previously ward off impulses is immaterial; they may be integrated into the ego in less infantile forms, or they may be repudiated with some finality. Either way, they no longer are active as foci for neurotic conflicts.

Termination of treatment: Resolution of transferences and infantile conflicts. The termination phase begins when the patient has finally relived much of the primary infantile situation and has begun to resolve infantile conflicts in various ways. Old conflicts are successfully reworked, with different, more adaptive results. In the hypothetical ideal analysis, the work of synthesis—of going ahead from the new

beginnings made possible by the analysis of the transference neurosis—is primarily up to the patient. The goals of the analysis have been reached if the patient becomes free enough to develop in his own way, although that development may not be fully apparent until long after the analysis has been formally terminated.

An important task of the termination phase is the dissolution of those positive but illogical bonds which at first served to propel the analysis forward. If there is not a thorough confrontation with reality at this stage of the analysis, it is possible that the analysis will fail. In fact, unresolved transference, both of negative and positive feelings, may necessitate reanalysis by the same or by another analyst. After the illogical, infantile components of the relationship have been removed, the analyst may still remain as a real figure to his patient. But it is the final dissolution of the transference bonds between patient and analyst which, in the long run, differentiates analysis from cure by suggestion.

As mentioned above, the events which have been described here are characteristic of a somewhat hypothetical ideal analysis; in daily practice they do not always proceed in the order given. Some patients, for example, start analysis with a full blown transference neurosis which has developed in advance of the initial interview and which may have taken shape under the stimulus of the expectation of being analyzed—whatever dynamic meaning that may have for the particular patient. Another patient may never experience a classical transference neurosis during his analysis but may, perhaps, experience it in some form after the termination of analysis. Or the transference neurosis may be so dim that it rarely comes into clear view. "Normal" physicians who undertake a preparatory analysis as a part of their analytic training, in particular, may demonstrate the transference neurosis in attenuated form during treatment. Frequently, however, after the period of analytic training is over, those same physicians will experience a classical transference neurosis during a second analysis, suggesting that its earlier development may have been inhibited by the demands of the training situation.

Interpretive process. In the hypothetical classical analysis, the intervention of the analyst in the neurotic conflicts of his patient is virtually limited to the process of interpretation. Classical analysis makes no provision for such measures as role-playing or manipulation of schedules; and the requirement that the analyst conduct himself so that he is available for use by the patient as a bit of "day residue" restricts his reality dealings with his patient to the bare essentials of arranging practical matters such as appointment times, necessary schedule changes, vacations, or fees.

Because of its importance, it is appropriate to examine the process of interpretation in some detail.

The verb "to analyze" means, in this context, simply to lay bare conflicts, portions of which have been unconscious. In a sense, this is a statement of the technical goals of the analysis as a whole, as well as a description of the minute-to-minute course of a single analytic hour. "To interpret" means to make intelligible and meaningful to the patient those psychological events which he has not hitherto understood. It means to place a seemingly meaningless psychological event into a chain of events where it seems to "fit," to belong, to become understandable.

The function of interpretation in relation to the transference. As mentioned earlier, foremost among those factors which are considered conducive to the development of a therapeutic regression is the analytic situation itself. This alone, in the view of some analysts, is probably sufficient to initiate the transference neurosis. In addition, however, there is general consensus that the interpretive therapeutic activity of the analyst facilitates the therapeutic regression.

Discussion of one of the important distinctions between the interpretive process in psychoanalytic psychotherapy and in psychoanalysis proper is relevant in this connection. In analytic psychotherapy, the patient's attention is directed toward extratherapeutic situations and events to a greater extent than is characteristic of psychoanalysis. In contrast, in psychoanalysis the analyst directs the patient's attention primarily to the events within the analysis itself, and to intrapsychic events. To epitomize this contrast (once again, in oversimplified form), activity in psychoanalytic psychotherapy may be described as centrifugal, that is, it leads away from the patient-therapist axis. But in analysis proper, the analyst's interpretations are centripetal, i.e., toward the patient-therapist axis. Thus, in psychoanalytic psychotherapy, interpretations focus on the transference only in its general interpersonal sense; however, in psychoanalysis proper, the transference constitutes the principal frame of reference for interpretation.

Concomitant with the centripetal direction of interpretation in a psychoanalysis—and, in fact, a necessary part of the interpretations—is the relatively greater attention paid to material which provides access to the deeper layers of the ego and to the id. This includes the interpretation of dreams and the analysis of fantasies and parapraxes, particularly when they seem to involve the analysis and the analyst.

Dream interpretation. The paradigm of psychoanalytic interpretation is the interpretation of the dream. Freud demonstrated that, contrary to the prevailing scientific opinion before 1900, dreams are meaningful and can be set into a context of happenings where their nonsensical elements become sensible ones. A full exploration of the meaning of a dream required the investigation of both current and past trends which are combined into a unity in the dream's manifest content.

More specifically, the technique of dream interpre-

tation must be considered from several viewpoints in planning the strategy of treatment. A dream is, of course, a sort of commentary on the events of the preceding day which arises from the deeper (i.e., unconscious) layers of the ego. The unconscious portions of the ego include events from the more distant past as well. Thus, the study of current distortions, as they are revealed by the mechanisms involved in the formation of the dream, provides valuable clues to the specific nature of those aspects of the past which are being relived by the patient in his relationship with the analyst. For obvious reasons, dream interpretation, however, can easily become a game played by patient and analyst, in which aspects of the dream are "interpreted" in much the same way a person looks up the meaning of a word in a dictionary. For that reason, dream interpretation must be used cautiously in an analysis, lest it become, as may anything else, a means of obstructing the unfolding of the transference neurosis. Nevertheless, long stretches of an analysis might be characterized by little except dream analysis: the other events of the transference might be so obscure that the patient's dreams may provide the only reliable index of what is going on. One of the principal stimuli to dream formation is the analytic climate itself, and under any circumstances the analysis of dreams provides indispensable information about the transference relationship which cannot be obtained in any other way. At the same time, dream analysis serves to intensify the transference relationship.

Interpretation of current conflicts in historical perspective. Theoretically and ideally, a complete psychoanalytic interpretation will include meaningful statements of current conflicts and of the historical factors which influence them. Such an interpretation would contain formulations of both sides of current and past conflicts, the defensive maneuvers which are used to lessen the impact of the conflicts, and the reasons why the conflicts are active currently. However, complete interpretations of this kind are seldom made to the patient in the course of an analysis; and when they are, they are most often used as a summarization of a long period of analytic work. Most of the comments which are actually made to the patient are much more limited in scope and deal with matters which are of immediate concern.

Detailed and elaborate interpretations are seldom arrived at in one piece; rather, they take shape gradually as the analytic work goes along. The piecemeal interpretive work must be concerned now with one side of a conflict, now with the other, or again with new conflicts which come into existence as inappropriate solutions to prior conflicts are attempted. Often, the simple repetition of a word, properly timed, can function as an interpretation by calling the patient's attention to a bit of "hidden" material. Conversely, an elaborate speech by the analyst may reveal nothing new or may actually impede forward motion of the

analysis. But occasionally—and particularly under the circumstances noted above—a full discussion (and synthesis) may be helpful.

The timing of interpretations. It is more difficult to formulate clearly what constitutes proper timing, and often this boils down to the analyst's tact and his empathic understanding of his patient. One danger is the too deep interpretation. Another is an interpretation which is made prematurely or which simply misses the point because the patient is not concerned with the subject matter at the time. To guard against this, it has been suggested that the analyst interpret something just before the patient might see it anyway, to interpret material charged with feeling, or to interpret "at the level of the focal conflict."

Of these various approaches to timing, French's notion of the focal conflict seems to give the analyst more cognitive control of the interpretive process than do the others, which rely, by and large, on what is called "intuition." French maintains that the patient is usually occupied with only one conflict at a time; this is the matter with which he is immediately concerned and which is surrounded by the greatest potential affect. Such a conflict, then, is "in focus." In good part, the analyst arrives at his own diagnosis of the conflict intuitively, but French's method provides cognitive means for checking the formulation.

In the first place, all of the material of a given hour—dreams, associations, nonverbal acts—must have some psychologically rational relationship to the conflict. If large portions of the material cannot be seen in meaningful relation to the postulated conflict, then some other conflict probably is in focus. In the testing and acceptance or rejection of hypotheses, the analyst may be guided by the annoying discrepancies which are incompatible with his formulation; and he should be ready to discard his hypothesis in favor of another which can accommodate these discrepancies. A second major consideration is that of a "fit" between the conflict which is focal and the material which preceded it in earlier hours—the very important principle of continuity. If the analyst suddenly finds that each hour seems to stand by itself and cannot be related to those which preceded and followed it, then he is probably not understanding his patient correctly. Again, the inability to formulate a focal conflict for several hours in succession is usually a signal that something important has been overlooked.

Strategy. Regarding the strategy of analytic interpretation, little has been said. Assuming that the analyst knows what is in focus, he must still assess the patient's capacity at the moment to benefit from interpretive intervention. The patient's lack of preparedness to deal with a direct interpretation may lead to the analyst's decision to bide his time while he tends to other factors, such as the reduction of anxiety through support.

It should also be pointed out that in French's for-

mulations of focal conflict theory, conflicts which are in focus initially may be far removed from the nuclear genetic conflict of the neurosis. In the analytic setting, however, the consistent application of focal conflict interpretation will cause the nuclear conflict eventually to become focal and subject to interpretation.

Psychoanalysis: Dynamics of Cure

The way in which an analytic cure comes about has not been fully formulated, but on some points there is more or less general agreement.

1. Although the process of analysis depends on the effects of suggestion at some stages, these effects must in the long run be removed. Otherwise, the cure may be dependent on the continued influence of the analyst.

2. The process of cure in analysis involves the undoing of repression safely and effectively, and both the repressing forces and the repressed strivings must be accounted for. Various formulations about the repressing forces have appeared in the literature, and several analysts have suggested that repressing forces are diminished when the patient substitutes the analyst's superego for his own. In effect, this would weaken the repressing forces as long as the patient remains in analysis. However, if the cure is to be a lasting one, it would be necessary for the patient's superego to undergo a permanent modification.

In neurosis, the superego is usually excessively strict; nevertheless, it is often corruptible and unreliable, and it cannot be depended on to contain within bounds the primitive strivings toward which it is directed. Permanent modifications of the superego come both from an identification with the more reliable and more benign superego of the analyst and from repeated confrontations with reality. Again, changes in superego functioning are a logical result of changes in ego functioning: conditions for the adult are no longer what they were for the child. The ego of the adult has less to fear from the repressed impulses themselves: it is finally in a position either to accept these impulses or to renounce them.

3. Frequently, toward the end of an analysis, a patient will recall some very positive memories about the parent figure he has consistently maligned. Occasionally, the analyst may be taken by surprise when these memories actually appear, although he may have inferred their existence previously from various leads. And the patient may be even more surprised, since he had been so convinced of the bad or evil qualities of the parent.

This unexpected appearance of memories of affection and understanding suggests that another factor might be at work in the dynamics of analytic treatment. It seems possible that in erecting defensive processes to repress the memory of some of the experiences of childhood, the ego shrinks away not only from negative memories, but also from positive

memories. Analysis, then, might have as one of its effects the emancipation from repression of certain nontraumatic memories as well as traumatic ones. Further, such a process may be significant in the development of greater strengths in ego functioning. The memory of a parent's love, and of loving a parent, may become a nodal point of strength. In general, the revival of memories of positive childhood experiences takes its place beside the identification with an essentially benign but realistically perceived analyst as two of the experiences which are indigenous to the analytic process through which the ego is strengthened.

4. The impulses themselves undergo change. Once freed from repression, it becomes possible for their infantile forms, characterized by the primary process, to undergo modification. More specifically, they enter the area of progressive neutralization of the ego where they can undergo gradual "taming." Analysis offers the possibility of an actual reduction in the intensity of the components of the conflicts, as well as the possibility of finding more acceptable ways of handling impulses of unreduced intensity. A successful bit of analysis is frequently followed by the patient's wondering what all of his concern and anxiety had been about in the first place. This is not because some new defense mechanism, such as denial, has come into operation, but results from the taming of the impulses themselves and their integration into the ego. In that way, instead of the new solution being largely a more acceptable method of channeling unmodified infantile strivings, the primary process quality of the drives themselves is lessened, and they take on a more reality-adaptive form instead. Some analysts have hypothesized that, at first, the drives pass through the "soothing" ego of the analyst. In any event, the goal of analysis with respect to the drives is to transfer them from the area of transference to the area of progressive neutralization.

Psychoanalysis: Indications

From considerations such as these, it follows that the primary indication for analysis is the diagnostic finding that, in all probability, the patient has had long standing conflicts which continue into the present in an active but unconscious form and which produce signs or symptoms, or character problems, sufficient to justify extensive treatment. The analytic patient has a conflict not with his environment (although it may manifest itself as such) but within the structure of his own personality. That conflict is inaccessible to consciousness, and the frustrated drives which are part of the conflict repetitively press for discharge or expression. With this phrasing of the internal dynamic situation of the patient, it becomes clear that the analyst can become available as a transference target for the patient's unconscious strivings. The ensuing transference reactions are vital elements in analytic treatment.

The "ideal" patient population. The concept of

the primacy of past conflicts with still unresolved strivings which are capable of being transferred to the analyst led to the identification of a group of clinical entities in which such responses could be expected to occur. More specifically, as mentioned earlier, psychoanalysis was considered by Freud to be the ideal treatment for the hysterics (conversion reactions, and the hysterical phobias or anxiety hysteria) and the compulsion neuroses. Analysis has also been considered the best treatment for certain perversions.

In recent years, however, analysts have noted that, at least in urban populations, patients with hysteric and compulsion neuroses seem to present themselves for treatment somewhat less frequently than they did in the past. They have been replaced by those with analogous character neuroses, that is, with a variety of oral, anal, phallic, hysterical, compulsive, and other character disorders. The psychoanalytic treatment of such character disorders has become commonplace, based in part on the development of ego psychology stimulated by Freud's structural formulation, by the pioneer investigations of Wilhelm Reich and others in the study of the process of character analysis, and by the psychoanalytic study of children.

Extensive clinical experience has indicated, however, that clinical diagnosis which is based on "standard" criteria is, in itself, only an incomplete guide to a decision about indications and contraindications for analysis. The clinical diagnosis must not be too simple; it must be thoroughgoing and sophisticated. And the individual patterns within the diagnostic group must be considered thoroughly. For example, an hysteric suffering from a monosymptomatic conversion may be defending himself against an underlying psychosis which could be aggravated seriously by analysis. Also, in less obvious ways, a severe obsessive-compulsive neurotic may be paranoid. One phobic patient may be analyzable; another may not be. Individualized study of the patient's conflicts is essential. In addition, attention has been focused recently on the study of the ego itself as a guide to analyzability.

Patient's motivation. Of the essence in assessing analyzability is the estimate of the patient's ability to form an analytic pact and to maintain a commitment to a progressively deepening analytic process which attempts to bring about internal change through increasing self-awareness. The ego of a patient in analysis must be such that he can tolerate the frustrations of his impulses without responding with some serious form of acting out or by shifting from one pathological pattern to another. For this reason, the psychoses and the addiction states would not ordinarily be regarded as suitable for treatment by psychoanalysis without extensive modification of the usual techniques. Most psychotic patients are excluded from traditional psychoanalysis because of the difficulty they have in forming the affective and realistic bonds which are essential parts of the trans-

ference neurosis which develops during the analysis. Phrased differently, the difficulty can be said to lie in the archaic character of the transferred feelings in such cases. Most patients with addictions are regarded as unsuitable because their ego is unable to tolerate the frustration of primitive impulses which is needed for progress in analysis, with the result that there is frequently an impulsive return to the use of addictive drugs.

There are exceptions, however. Some analysts have found certain alcoholics to be analyzable, depending largely on the nature and intensity of the basic conflicts. And some strides have been made in the analysis of psychotic patients as well, although there have been extensive changes in technique.

Psychoanalysis: Contraindications

The various contraindications to the use of psychoanalysis which have been described at length in the literature seem generally valid. (1) There may be an apparent absence of a moderately reasonable and cooperative ego. Adults over forty, for example, are often considered to lack sufficient flexibility for major personality changes. However, if there are good opportunities for libidinal and narcissistic satisfactions, analysis of patients in their forties or older may have a favorable outcome. (2) The neurosis may be so minor that the expenditure of time, effort, and money in a full scale analysis cannot be justified. (3) A neurotic reaction may have elements of such pressing urgency that there is not enough time to wait for the establishment of a transference neurosis. (4) A patient's life situation may be unmodifiable, on realistic grounds, to the degree that a successful analysis would only result in greater difficulties for him. (5) The analysis of friends and relatives by the same analyst is contraindicated because the many previous points of relationship could seriously cloud the patient's understanding of his current transference responses. It is clear from these various possibilities that, frequently, a short period of trial analysis is the only way to decide whether a patient is analyzable and whether he should be analyzed by a specific analyst.

Psychoanalytic Psychotherapy: Introduction

Obviously, then, psychoanalysis is not regarded as the treatment of choice for all types of psychiatric illness; nor are other forms of treatment merely second best substitutes. There are situations in which analysis is contraindicated, others in which it is unnecessary, and still others in which some other form of psychiatric therapy is the treatment of choice. For some of these situations, psychoanalytic psychotherapy, that is, therapy which is not classical psychoanalysis but is based on analytic concepts, has come to be regarded as a highly respectable set of procedures. Of course, psychoanalytic psychotherapy might also be chosen when, for various practical reasons, psychoanalysis cannot be arranged. In any event,

psychoanalytic psychotherapy is the treatment of choice in a great number of situations, certainly more frequently than is analysis.

Psychoanalytic Psychotherapy: Basis for Therapeutic Intervention

A brief discussion of the diagnostic process and the criteria which should determine the choice of psychoanalytic psychotherapy, as opposed to psychoanalysis, would seem appropriate at this point.

Diagnosis is the foundation of all forms of medical treatment. However, in psychiatric treatment, the initial diagnostic process and the ever necessary alertness to changing diagnostic signals during therapy are many-sided. Such signals would include pathological changes in somatic structure and function, as well as pathological changes in intrapsychic and interpersonal functions. Furthermore, strengths and assets in these areas, as well as pathological factors, must be evaluated. Again, some effort must be made to identify the multiple etiological agents to which the illness can be attributed, ranging from infection and neoplasm, through intrapsychic and interpersonal stress, all the way to the adverse influence of the culture and society in which the patient lives.

The diagnostic process on which the psychiatrist will base his therapeutic intervention in his patient's life must lead to something more than a mere label. That is, the "clinical diagnosis" should include more than the standard phrase used for the group or reaction type of which the patient seems to be an example (according to the moderately acceptable contemporary division of patients into groups or types of reaction). Rather, the diagnosis must include, as well, a comprehensive formulation of the essential issues in the patient's life. Concomitantly, the specialist, when he evaluates his patient's life and problems, should enhance his evaluation by as much precision and understanding as he is capable of. In brief, the effectiveness of psychoanalytic psychotherapy will depend in large measure on the validity of the clinical diagnosis. In outline, it should consist of a general statement, or diagnosis of the dynamics and genetics of the individual patient, based upon adequate study of the somatic, intrapsychic, interpersonal, and cultural aspects of his life.

Psychoanalytic Psychotherapy: Concept of Neurotic Conflict

Further comments about the essential structure of neurotic conflict and of pathological behavior are needed at this point in order to clarify some aspects of the diagnostic process. Once again, an oversimplified dichotomy will be used in making this clarification. Human behavior may be said either to arise from conflict or to be conflict-free. And usually it is behavior, symptoms, or discomfort arising from intense conflict which brings the patient to a psychiatrist for treatment. Notable exceptions do occur, how-

ever. Some patients, for example, do not seem to have enough conflict about carrying their impulses into action. The psychiatrist must be on the alert to distinguish that group from those patients whose seemingly impulsive behavior represents not an absence of conflict, but serious attempts to provoke punishment at the behest of an excessively strict superego.

Intrapsychic components. The basic conflicts of a persistent neurosis are, in general, primarily *intrapsychic*, an opposition between segments of functions of the personality. The conflict usually rages over some force or drive, biological or psychological, which is occasionally—and probably erroneously—called an “instinctual” striving. This drive is unacceptable to other segments of the personality, i.e., to other intrapsychic forces. Or, in another type of conflict, two unconscious strivings of a mutually contradictory nature may be seeking simultaneous expression.

Interpersonal components. However, interpersonal factors may be deeply involved as well. A patient may be seriously at odds with those in his environment in a variety of ways. At times, of course, the conflict with others is actually the manifestation of an intrapsychic conflict on an interpersonal stage. In a character neurosis, for example, the patient may not recognize his intrapsychic problems, because they have taken the form of conflicts with others in his environment or with the world in general. Consequently, whereas one individual may attribute his difficulties to his own illogical need to suffer, for instance, another might attribute them to fate, to “the breaks of the game,” or to bad luck, without ever becoming more than faintly aware of his own part in evoking some of his own bad luck.

In character neurotic patterns of the sort just described, the central problem still seems to be intrapsychic: it stems from an unconscious, pathogenic conflict. In essence, then, the patient who has a neurotic character differs from a patient who has neurotic symptoms, in that he has worked out different “solutions” for his conflicting feelings and drives. The symptom neurotic patient finds autoplasmic solutions to his conflicts; that is, he modifies himself through the formation of symptoms. In contrast, the character neurotic patient has found apparently alloplasmic solutions; but these solutions depend on the persistent distortion of his perception of the world and of the people around him. In other words, to cope with his conflicts, he develops defensive changes in his character structure.

Environmental components. Finally, conflict may be due primarily to the environment. These etiological factors are of great importance in the present context. In some patients, dynamic patterns have been so seriously distorted in the process of development that ego functions which ordinarily play a role in a fairly successful adaptation to the environment remain relatively undeveloped or otherwise distorted. This group would include those patients who are “fixated” at an

oral or dependent level, who have needs or make demands for help from those around them which can never be satisfied or can be satisfied only in part. In their preoccupation with the need to be dependent, such patients may never have developed the techniques of mutual helpfulness; under such circumstances conflicts with the environment are almost inevitable. Frequently, this leads to anxiety and resentment in both the patient and those around him. This group of patients whose capacity to adjust to the environment is impaired also includes some psychotics, e.g., some cases of schizophrenia, some cases with severe affective reactions, and also those with certain character disorders, such as the “as if” characters—those patients whose personalities consist mainly of the scars of old schizophrenic illnesses, to use a somatic metaphor, instead of healthy, growing flesh and blood.

Structural components. These comments about the diagnostic thinking which forms the basis for therapeutic intervention in psychiatric illness stress the need for an understanding of the patient's conflicts and of their solutions. It is imperative to mention also that a reliable diagnostic evaluation requires an assessment of those aspects of the patient's functioning which are free from conflict, as well as an assessment of the areas of conflict. What are the strengths and assets which the patient can draw upon?

A more extensive understanding of some central diagnostic issues can be achieved by a reformulation of the previous comments regarding conflict in the language of the structural propositions of psychoanalytic theory. Again, using a kind of anthropomorphic language to clarify the issues, one can say that in most individuals the id attempts to override the ego or the superego but finds firm opposition, except for brief periods or in limited ways. In impulse-ridden persons, however, the ego is not powerful enough, nor does it have a reliable enough ally in the superego, to stem effectively the strivings which arise from the id. There results a periodic eruption of behavior based essentially on primitive impulses, or on some combination of primitive impulse and defense.

In another group of individuals, the impulses undergo another vicissitude, which is also potentially pathogenic. In these patients the superego and the ego were strong enough, were able to muster sufficient defense, so that essentially the unacceptable impulses remained in the id. But the ego had to deploy permanently large quantities of its defensive forces in the process, forces which might have been put to better use in other ways.

These are only two of the typical patterns of the intrapsychic struggle phrased in structural terms. At other times the relative or absolute strength of the impulses themselves may increase, or there may be a relative or absolute weakening of the ego's defensive forces. One example is the shift of forces seen in adolescence, when the processes of physical maturation

and increased endocrine activity intensify both sexual and aggressive urges. For a time the ego may be partially disrupted by the more urgent strivings. In addition, the ego is faced with the task of finding a new adult identity to take the place of the old childhood identity. The relatively comfortable equilibrium which develops in latency when earlier intense sexual and aggressive strivings are relinquished in favor of sublimation and reaction formation is disturbed to some degree in all adolescents, and to a serious degree in some.

Assessment of the patient's ego strength. The assessment of the strengths of a patient's personality can be expressed in structural terms in a similar fashion. The phrase used most often is "ego strength." It would be of great value in diagnostic work to bring into focus the various ways of estimating the "strengths of the ego," but the concept eludes precise definition although it is indispensable in clinical work.

In operational terms, this concept gives rise to the following questions. What resources does the patient have upon which he can draw in the presence of severe pressure and impacts, both intrapsychic and environmental? Has his development been, by and large, a healthy one? Has he been able to come to terms with life in a genuinely adaptive and fruitful way? Or is he an "as if" personality who has been almost defeated by life (although he may not be aware of his disturbance) and learned to pretend that he is living a more or less normal existence? Or, has he made an even less fruitful adaptation to life?

Many people manage to function successfully for the most part, despite limited neurotic symptoms or character traits, until they are subjected to severe environmental stress. They may then discover that their ego lacks sufficient flexibility and resourcefulness to master the stressful situation to which they are suddenly exposed. Nevertheless, if these persons do not have to endure impacts in excess of the "normal vicissitudes of life," they may never come to the attention of a psychiatrist.

Psychoanalytic Psychotherapy: Definition

What, then, is psychoanalytic psychotherapy? It is psychotherapy which is based on valid psychiatric diagnosis and on psychoanalytic formulations. The diagnostic work-up should give the therapist an understanding of the patient's major conflicts and permit an evaluation of his areas of ego strength and weakness. Psychoanalytic psychotherapy also takes into consideration, insofar as it is possible to do so, the available information about a patient's historical development, especially his relationship with the crucial figures of his childhood. Essentially, the frame of reference developed by psychoanalytic theory provides the coordinates by which the patient's behavior may be evaluated.

In contradistinction to its use in this discussion, the term "psychoanalytic psychotherapy" is often used to

designate a fairly delimited form of treatment, a variety of intensive insight therapy. When it is used in this sense, psychoanalytic psychotherapy differs from analysis in that only limited sectors, rather than the patient's total personality, may come under the scrutiny of the therapist and his patient.

For purposes of this discussion, however, the term is used in a broader, more generic sense to indicate a continuum of therapies which utilize dynamic understanding of the patient based upon psychoanalytic findings and theories. When the term "psychoanalytic psychotherapy" is used in this broader sense, it becomes possible to see that various other psychotherapies, e.g., "brief psychotherapy," "superficial psychotherapy," "deep psychotherapy," and "intensive psychotherapy," differ only in specific details from one another but share in common a broad base of psychoanalytic understanding.

For a number of reasons, there is much interest in shortening the course of psychotherapy; the psychiatric literature includes numerous reports of experimentation with the use of a limited number of interviews for the focal treatment of an acute problem. Patients who respond best to this approach generally are reacting to some acute environmental stress or to a recent shift in internal dynamics. However, the treatment techniques employed are no different, in principle, from the techniques discussed in this section. There is little agreement among psychiatrists as to the criteria which determine whether or not the psychotherapy is to be considered as brief. Some argue that any treatment which takes less than 6 months is "brief"; others consider a course of six interviews a good working format for brief psychotherapy. In addition, some brief psychotherapies utilize a 15- or 20-minute "hour," instead of the more traditional 50- or 60-minute "hour."

The term "superficial psychotherapy" is taken to mean that the therapy does not have as its technique and its goal the bringing of unconscious material into consciousness. Nor, in the best sense of the word, does "superficial" psychotherapy imply superficiality of the therapist's attempts to understand his patient; rather, the term refers to the modest and limited goals of treatment. By way of contrast, therapies which aim at making the unconscious conscious may be referred to as "deep" psychotherapies. Classical psychoanalysis is the paradigm of deep psychotherapy in that sense. Another antonym of "superficial" psychotherapy is "intensive" psychotherapy.

According to the emphasis placed upon the use of free association, psychotherapies may be classified as "directive" or "nondirective." There is less utilization of free associative techniques in directive treatment than in nondirective treatment.

Unlike analysis, which has as its ultimate concern the uncovering and subsequent working through of infantile conflicts as they may arise in the transference neurosis, psychoanalytic psychotherapy takes as its

focus current conflicts and current dynamic patterns. Unlike psychoanalysis, which has as its technique the use of free association and the analysis of the transference neurosis, psychoanalytic psychotherapy uses interviewing and discussion techniques which use free association much less frequently. Finally, unlike analysis, the work on transference in psychoanalytic psychotherapy will usually be limited to a discussion of the patient's moderately superficial transference reactions toward the psychiatrist and toward others.

Psychoanalytic Psychotherapy: Guidelines

The focus and scope of psychoanalytic psychotherapy might best be described in terms of the following hypothetical situation. A patient presents himself for treatment. Thorough somatic studies have been done, and the chief issue is found to be a specific psychological conflict and its manifestations, for example, anxiety attacks. Diagnostic study indicates that the conflict seems to be of recent origin and current. But in it, perhaps, can be discerned the long term patterns which were the patient's typical response to older, infantile traumata. The job of the psychiatrist is to plan a therapy with the goal of achieving enough progress so that the conflict will not interfere with the patient's over-all adaptation.

In some cases, when there is little impairment of the ego, and when other conditions are favorable, the prescription for intervention might be to attempt a basic resolution of the conflict itself. For this, in suitable cases, psychoanalysis would offer the best chance of success. But the patient may not have adequate personality resources for psychoanalysis. Or he may need more supportive comments than are advisable during analysis. Or his problem might seem less serious and possibly more superficial than the problems of many others. Or he may have a history of rebounding quickly from partial neurotic decompensation. Or conversely, his problem may be so serious and so urgent that there is no time for the slow and gradual processes of analysis. Then, the psychiatrist must throw his weight behind one or more components of the conflict, so to speak, or try to foster a new and more effective solution. The psychiatrist may work intentionally toward strengthening the defensive forces of the ego or superego, in order to lessen the strivings which are seeking expression and which are stimulating conflict and anxiety.

At other times, the psychiatrist's course of action will be analogous to the incision and drainage used by a surgeon in the treatment of an abscess. If he can decide where the abscess is pointing, and if he has gained the patient's trust to some degree, as has the surgeon in a different dynamic situation, the psychiatrist may perform an "operation" equivalent to incision and drainage, by an incisive comment. Or by a leading comment based on incisive understanding, he may bring to the surface for discussion some pathological material which has been conscious or precon-

scious. Concurrently, there may be a limited attempt to arrive at insight into conscious and preconscious dynamic patterns (but almost never into deep unconscious patterns).

Or, again, a patient may have lost his bearings temporarily as the result of some difficult emotional problems. With a moderate amount of direction, support, and clarification of the issues by the psychiatrist, the patient may be able to make his own way again without much difficulty. Situations of this kind clearly call for something other than psychoanalysis.

A report by J. Norton on the treatment of a patient dying of cancer illustrates some features of psychoanalytic psychotherapy as discussed in this section. The treatment of the dying patient, as reported, involved maneuvers which are not part of psychoanalytic technique, but the therapist was guided in her choice of maneuvers by an understanding of the patient in the light of psychoanalytic findings. For example, regression was fostered, not for the sake of later interpretation, but for its own sake. It had value to the patient if it could mean greater security without too much hostility or anxiety, or if the hostility and anxiety generated by the regression were met by appropriate responses from the therapist, which would not increase the anxiety but would alleviate it.

Flexibility of psychoanalytic psychotherapy.

The concept of psychoanalytic psychotherapy provided in this section certainly does not exclude such measures as the use of psychotropic drugs. In fact, the use of such medication would be indicated for specific kinds of patients. Nor does it exclude the use of electroshock therapy or other legitimate somatic methods. In fact, psychoanalytic understanding, interdigitated with psychopharmacological and neurophysiological understanding, provides a set of coordinates by which somatotherapeutic methods, as well as psychotherapeutic methods, can be considered in the management of a particular patient. This is in accordance with general trends. As biological and psychobiological understanding are being coordinated with the understanding derived from cultural anthropology and other social sciences, an increasingly reliable basis for theory and for practice is evolving.

Flexibility of technique and adaptability to the patient's needs can be emphasized in psychoanalytic psychotherapy, whereas the analysis of genetic sources can be emphasized in psychoanalysis. In this conception, psychoanalytic psychotherapy can range from a single supportive interview centering around a current but pressing problem to many years of treatment with one or two interviews per week. In contrast to psychoanalysis, a list of disorders treated by psychoanalytic psychotherapy would cover a major portion of the field of psychopathology.

Treatment techniques. One point of difference from classical analysis is that psychoanalytic psychotherapy does not involve the use of the couch. The reason can be stated simply. The stimulation of tem-

porary regressive patterns of feeling and thinking, of high value in psychoanalysis, is much less appropriate in psychoanalytic psychotherapy, with its greater focus on more current dynamic patterns.

Generally speaking, in psychoanalytic psychotherapy, the patient and therapist are in full view of each other, in contrast to analysis, where the analyst is out of sight or at least out of the line of vision. The fact that the therapist is in the patient's line of vision in psychoanalytic psychotherapy may make him seem a more real person, and less a composite of projected fantasies. Furthermore, since psychoanalytic psychotherapy has a strong focus on the current dynamic patterns which are causing the patient difficulty in his extratherapeutic life, transference responses to the therapist are not inclined to become so intense as in an analysis.

Transferences in psychotherapy. Nevertheless, transference attitudes and responses to the therapist may arise from time to time and can be used productively. Spontaneous transferences in the therapeutic situation may give valuable clues about the patient's behavior in extratherapeutic situations, and at times about his childhood. In this way, too, they may inform the therapist about what probably is in focus for the patient at any given time, within or outside of the treatment relationship.

Another dichotomy may be formulated in this connection. The central focus of psychoanalysis is the analysis of transferences to the analyst. The central focus of psychoanalytic psychotherapy is the analysis of the patient's problems with other persons and within himself. The analysis of the transferences to the therapist often is a peripheral matter. If, during the course of therapy, it becomes necessary to interpret some transference strivings toward the therapist, an interpretation away from the therapist which says in effect, "now we can understand better what it is you are doing with your boss (or your wife, or with some other person) because we have seen it operate first-hand here in the treatment," can be of great value. By placing the emphasis away from the patient-therapist axis, the therapist can lessen the possibility of the development of an unmanageable or unrecognized transference neurosis.

In practical clinical work, the analyst and the psychiatrist are confronted daily with many exceptions to these simple dichotomies. In a psychoanalysis, it is necessary at times for the analyst to intervene in his patient's life in a very real way, i.e., not via interpretation of resistance and fantasy, but, for example, through the setting of appropriate limits, or in seeing to it that his patient has medical care which is very urgent but which cannot be sought spontaneously by the patient because of his neurotic problems. And the psychotherapist at times must work "in the transference" to convince his patient of the inappropriateness or the unrealistic quality of his strivings. But the analyst does not regard reality intervention as a

major focus of his work with his patient. Nor does the psychotherapist, however much he may know about psychoanalytic theory and about transference phenomena, deliberately set about establishing a transference neurosis.

In this regard, a word of caution about the transference neurosis in psychotherapy is indicated. An inexperienced psychotherapist, guided by the concept that patients must relive their past experiences in the treatment situation, may stimulate prematurely the unconscious strivings of his patient. Usually, the patient will break off treatment. Only when a good psychotherapeutic relationship has been established should there be even the kind of minimal focus on the transference that has value in psychoanalytic psychotherapy.

Psychoanalytic Psychotherapy: Types

In summary, then, the psychotherapies can be viewed as a sort of continuum, overlapping and complementary. At one end of the continuum would be the hypothetical "pure," "orthodox," "classical" psychoanalysis, with its emphasis on undoing of repression and recovering of past traumatic experiences and feelings. At the other end of the continuum is supportive therapy and perhaps a suppressive therapy. The middle of the continuum would consist of varying mixtures of "insight therapy" and ego-oriented exploration of present day difficulties, of which good psychoanalytic psychotherapy and good psychiatric social casework might be considered paradigms. There is some consensus as to the techniques used at the two ends of the continuum—about supportive therapy at one end, and about the conduct of a psychoanalysis at the other end. But in the central area of the continuum, extending far to the right and far to the left, the rules which govern procedure are less clear, except for some of the general considerations which have been mentioned above. And stating it in more positive terms, one of the points of view of this section is that, ideally, the therapeutic prescription at any position in the continuum is based upon sound dynamic diagnosis, which then points toward the necessary treatment.

The various types of psychoanalytic psychotherapy cited above are described in further detail below.

Insight therapy. This term is used at times for psychotherapies which stem from approaches other than psychoanalytic theory. In this section, however, the phrase is used to describe a type of psychotherapy based essentially on psychoanalytic understanding.

Insight therapy is the first to be discussed in this section for several reasons. The most general reason is that a productive response to psychotherapy is one step forward in human growth and development in which the phenomenon of insight may be a central component. The achievement of insight into the world around him and into himself is one of the great achievements of Man as a species, and as a biological and a culture-oriented organism. He has come to know that a stringent, critical but affectionate self-scrutiny,

as well as an outwardly directed scrutiny, can lead to a greater development of science, and of the growth of an individual and his creative potential.

There are other reasons for placing insight therapy first in this series. In the development of the individual, new insights, independent of psychotherapy, are of high value. Also, as part of psychotherapy, new and accurate insights can be very valuable steps forward. Finally, the concept of insight is a useful tool in the delineation of types of psychotherapy.

After this series of emphatic positive statements about insight, a comparable emphasis must be placed on the fact that insight (by the patient) is not a *sine qua non* of psychotherapy. (In Norton's treatment of the dying patient, for example, the development and use of insight by the patient was not a goal.)

Nature of insight. The exact nature of the phenomenon of insight is not fully understood. Terms such as "emotional insight" and "intellectual insight" have some value, as do the terms "ostensive" and "nominal insight." Using the language of the topographical proposition in psychoanalysis, the following comments may clarify part of the issue. A new perception and registration of an item of psychic content may occur in the preconscious as part of the experience of listening to an interpretation. This fresh preconscious registration may correspond closely to the registration in the unconscious of the pattern just interpreted. But the interpretation may not have produced a connection between the two representations. This limited effect would lead to intellectual or nominal insight. In another instance, however, when the interpretation does lead to a connection between preconscious and unconscious, it may have provided the new link which is basic to the undoing of repression. This more extensive effect would be emotional or ostensive insight.

Richfield's distinction between ostensive insight, which involves a direct experience with a phenomenon, and nominal insight, which involves an indirect notion of a phenomenon, is useful. An individual can have ostensive insight into some of the effects of alcohol if he takes a strong cocktail before dinner and is affected by it. He knows then from personal experience what it is like to be slightly intoxicated. But it is not necessary to be bitten by a cobra to know that its bite is dangerous and that it is good policy to avoid close contact with cobras. Richfield's contrast of two kinds of insight complements the more usual distinction between emotional and intellectual insight, and the distinction between the limited process of a new registration in the preconscious and the process of the undoing of repression.

In a discussion of insight psychotherapy as a variety of psychoanalytic psychotherapy, it is important to specify the area or level of understanding or experience about which insight is to be achieved by the patient. The emphasis of the psychiatrist in such therapy is on the value to the patient of gaining a

number of new insights into the current dynamics of his feelings, his responses, and his behavior, primarily in his current relation with other individuals. To a lesser extent, the emphasis is on the value of developing some insight into his responses to the therapist and into his responses in childhood. (This emphasizes the centrifugal interpretation of transference in psychoanalytic psychotherapy mentioned above.)

Such insight may be emotional and ostensive, or be intellectual and nominal. Emotional and ostensive insight often is much more productive than is intellectual and nominal, but the value of intellectual and nominal insight into dynamic patterns should not be minimized. Even in psychoanalysis, in the analysis of the transference neurosis, it is probable that intellectual insight comes long before emotional insight. The accumulation of many intellectual insights often lays the groundwork for emotional or "true" insight. "The voice of the intellect is a soft one," wrote Freud, "but it does not rest till it has gained a hearing. Finally, after a countless succession of rebuffs, it succeeds."

Indications. Insight psychotherapy is the treatment of choice for a patient who has fairly adequate ego strength to bring to bear on his problems, but who for one or another reason should not or cannot have an analysis. A typical example of a good candidate for insight therapy, rather than psychoanalysis, would be a young man, a college student, who is experiencing difficulties in his academic work and in his relations with women. The psychiatrist may understand diagnostically that there are one or several infantile conflicts still active which are molding the student's current reactions. The psychiatrist may make the diagnosis, also, of a developmental crisis—perhaps the transition from adolescence to adulthood. His prescription for his student-patient would take into consideration the probability that his troubles, although they seem urgent, will tend to resolve themselves more or less spontaneously, at least the developmental segment of the problem. But he recognizes the fact that while the student waits for time to exert its beneficent effect he may be slipping into deeper trouble, academically or otherwise, because of the unconscious conflicts which have survived in active form from his childhood. Psychoanalysis might be recommended. But if the student is to leave the city as soon as he finishes college, or would leave the city if he failed to continue in college, a psychoanalysis would not be feasible. Then the recommendation would be for psychoanalytic psychotherapy, with an emphasis on insight into the current forms of the old dynamic patterns, on their impact in his life, and on alternative attempts at solution.

Effectiveness. The effectiveness of the therapy obviously would not depend solely on the insights developed or used. The patient's therapeutic response would be based on other factors as well, for example, on the ventilation of his feelings in a nonjudgmental

but limit-setting atmosphere, on his identification with the therapist, and on other factors which can be included under the rubric of "relationship." Essentially, the new and productive relation with an older adult could be of great importance in helping him deal with that portion of his problem which centers around his maturing from adolescence to adulthood. This may include a progressive freedom from unrealistic inhibitions, the development of more secure inner controls over impulsive behavior, and a greater trust in his own ability to respond to his own impulses as well as to other individuals in ways that are acceptable to himself and to those with whom he wants to live.

A therapeutic relationship does not require an indiscriminate acceptance of all that a patient says and does. In fact, the therapist stands for long term as well as short term values, for the reality principle as well as the pleasure principle. At times, it is necessary for the therapist to intervene on the side of a relatively weak ego by giving unmistakable evidence of his expectation that the patient will try seriously for a better level of adjustment, or by setting realistic limits to the patient's maladaptive behavior. In doing this, the therapist in turn will try sincerely to be guided essentially by his dynamic assessment of the situation, as in his estimate of a "relatively weak ego," and not to be influenced by his own counter-transference responses.

Corrective emotional experience. One aspect of insight therapy can be discussed in terms of the concept of a corrective emotional experience. Inevitably, the attitudes of the therapist and his responses to the patient and his ideas and impulses are different from those of important figures in the patient's childhood. Hopefully, the therapist's responses are more suitable, more mature, more realistic, and potentially more productive. At times, the therapist, using his knowledge of the attitudes of significant figures in the patient's past life, discusses the differences between their attitudes and his own. The patient may come to see that he had generalized his parents' attitudes as being universal and had generalized his own responses to his parents' attitudes so that they became automatic responses to all parental or older figures. As an example, if the psychiatrist knows that his patient's parents most often were excessively lenient, and if the psychiatrist during the period of treatment has been unafraid to set appropriate and realistic limits when they were needed, he then can discuss and clarify the differences in his attitudes from those of the parents and can discuss the patient's current responses in terms of the differences. In such a sequence, there can be corrective emotional experiences for the patient as well as increased insight into his automatic patterns toward crucial figures in his current life.

The emphasis of the last paragraph was on faulty adaptive behavior which had its genesis in the pathologic aspects of the behavior of the parents. But it is clear from the data of psychoanalysis that even if

parents are ideal, the fantasies which their children usually have about them may have pathogenic potential. This, in fact, was one of the major discoveries of Freud, who found that the hysterics he treated had very rarely been involved in actual incestuous relationships with their parents, as they seemed to recall—that, instead, they had had fantasies, conscious or unconscious, which were of the utmost importance in the formation of their neuroses. So at times, the techniques of insight therapy and corrective emotional experience can focus on the effect of pathogenic fantasies about the figures of childhood. The patient who, as a child, did not distinguish fact from fancy to a sufficient degree can now, as an adult, see that his own hostility is not met with counter-hostility. From this he may realize that his own hostile impulses or fantasies are not so dangerous as they seemed, that parents or parent figures are not so unfriendly as he fantasied, and that he no longer need identify with an image of a parent whom he had imbued with hostility as a child.

Value of insight. Returning to the question of the nature of the insight which can be reached through psychoanalytic psychotherapy, it seems true that a patient can reach some degree of both kinds of insight, intellectual and emotional (to use only these terms for simplicity) during his therapy. The insight may not have been gained by direct perception and understanding of the infantile nature of the feelings and strivings toward the therapist. But the value of the insight can still be high enough so that, when the period of stress is over, additional work may not be necessary. This type of intellectual and emotional insight, even though it seems limited and superficial, may be sufficient to tide the patient over until the equilibrium with his environment is more favorable. He may learn to avoid the cobras of life, so to speak, without ever fully knowing why. If he can avoid them until his maturation brings him to areas where the cobras are fewer and farther between, his partial insight will have served him well.

Effect of transference. The above picture of a typical insight psychotherapy is too simplified. It will be complicated frequently by spontaneous strong transferences to the therapist which threaten at times to disrupt the treatment. These may occur even when no mistake seems to have been made by the therapist. He may not have played a part in evoking the transference reactions through the fostering of regression, or through deep interpretation of dreams, or through conveying to the patient the impression that the therapist expects the patient to have strong transferences as part of the treatment.

But a psychiatrist capable of a firm but affectionate scrutiny of himself will wonder if he has played a part in the development of a transference response which is too intense. His goal will always be development of greater skill in knowing what to say and when to say it. In this connection, a moderately good rule

of thumb is that the therapist should discuss transference chiefly when such transference seems to block the patient from continuing his frank and open discussion of his experiences, his feelings, and his problems.

In addition, transference manifestations occasionally can be pointed out, discussed, or dealt with in some other ways, even when they are not blocking the progress of the psychotherapeutic interviews. The manner in which this is done, if it is to be done, depends on the training of the psychiatrist. If he has had good training in psychoanalysis as well as in general psychiatry, he may decide occasionally in the course of a psychoanalytic psychotherapy to deal for a limited time with transference material essentially as he might deal with it in psychoanalysis. But if he has not had thorough training in psychoanalysis, he should not burden himself with the complexities that would appear if he attempted to deal with the infantile sources of the transference. He nevertheless can deal effectively with the significance of the transference as it throws light on the patient's contemporary life and problems, with only limited reference to his childhood. Such an emphasis on contemporary dynamics, even though it seems to minimize in practice the role of genetic factors, can be a significant part of the treatment process.

Supportive therapy. This is another phrase which needs qualification. It is used as if it referred to a separate and distinct entity, but it only means that there is greater emphasis on support than on other processes. Probably all psychotherapies have elements of insight, support, and relationship, but they differ chiefly in the relative emphasis and priority which the therapist gives to each element. As has been emphasized repeatedly regarding the other therapies discussed, supportive psychotherapy must be individualized and based on an understanding of the specific patient.

The goal of supportive therapy is a limited one. It offers support by an authority figure during a period of illness, turmoil, or temporary decompensation. It has the goal of restoring or strengthening the defenses and integrative capacities which have been impaired. It provides a period of acceptance and dependence for a patient who is acutely in need of help in dealing with his guilt, his shame, or his anxiety, and in meeting the frustration or the external pressures which have been too great for him to handle.

Supportive psychotherapy is of value in psychiatric conditions such as these: relatively mature individuals with limited symptoms based largely upon severe environmental pressures; individuals who, in general, have made a rather good adjustment and are in what seems to be only a temporary period of pressure, turmoil, temptation, or indecision; individuals who have been fairly responsible and supportive toward others in their life adjustment, but who now are required to give beyond their psychological means and

need to be given *to* so that they will have more to give in turn; individuals who are extremely resistant to expressive or insight psychotherapy and those who seem too sick to respond to expressive psychotherapy; and, finally, patients who have no drive toward a fundamental change in their adjustment and are essentially interested in a restoration of a more comfortable previous adjustment.

Techniques. Supportive psychotherapy uses such measures as a warm, friendly, strong leadership; a gratification of dependency needs if that can be done without evoking undue shame; support in the development of legitimate independence; help in the development of hobbies and of pleasurable but nondestructive sublimations; adequate rest and diversion; the removal of excessive external strain, if that is a productive step; hospitalization when it is indicated; medication which may alleviate symptoms (and often does more); and guidance and advice in current issues. It uses those techniques which may make the patient feel more secure, accepted, protected, encouraged, or safe, or less anxious and less alone.

However, this relationship must be handled with extreme skill and care. In the earlier discussion of other therapies, the dangers inherent in a mishandling of the transference have been emphasized. In supportive psychotherapy, one of the greatest dangers lies in the possibility of fostering too great a regression and too strong a dependency. From the beginning, the psychiatrist must plan to work persistently and with good timing toward weaning the patient to a resumption of a greater independence. But it must be added that there are some patients who require supportive therapy indefinitely, often with the goal of maintaining a marginal adjustment outside a hospital.

In supportive psychotherapy the verbalization of unexpressed strong emotions may bring considerable relief. The goal of such talking out is not necessarily or primarily that of gaining insight into the unconscious dynamic patterns which may be intensifying his current responses. Rather the reduction of inner tension and anxiety may result from the expression of emotion, and its subsequent discussion, and may lead to a greater insight and objectivity in evaluating a current problem.

Values of supportive therapy. This type of therapy is often regarded as less exciting, less dramatic, less interesting than is therapy directed more toward insight. But support of the patient when it is appropriate is certainly consistent with some of the best traditions of medicine. And supportive psychotherapy, correctly used, is of great value and is a rewarding experience for the psychiatrist who uses it. This is one of the several kinds of help for which the psychiatric social case worker, by training, is well equipped to offer to many patients. Also, the physician who is not a psychiatrist often can do this form of treatment effectively, although he usually is limited in what he can accomplish because he does not have knowledge

and training enough to make an accurate and full diagnostic assessment of his patient's emotional needs. This situation has been improving remarkably in recent years, because psychiatric training for nonpsychiatric physicians has been increasing in scope and quality.

Relationship therapy. This treatment stands somewhere between the supportive therapy just described and the expressive techniques which characterize psychoanalysis and other types of insight psychotherapy. It not only aims at a restoration of the *status quo ante*, but to some extent aims at a change in personality patterns and at a decrease in vulnerability to external pressures. Relationship therapy contains strong elements of support, and, in a way, it may be considered as a protracted form of supportive therapy, with deeper dimensions. But its methods and its goals are somewhat more complicated than those involved, for example, in supporting a fairly well adjusted person through some current crisis. Relationship therapy may grow out of the therapist's dissatisfaction with supportive therapy and a conviction that his patient may profit from a broader experience. He may want his patient to obtain more from the therapy than dependency gratification and the security and reassurance that comes from feeling accepted, supported, and sustained. Consequently, he may choose a relationship therapy, including in his psychotherapeutic approach more than support, more of the many attitudes which would characterize the helpful reliable parent or older sibling.

This therapy can be described as a fairly prolonged period of contact between a patient and a therapist in which the therapist can maintain, without too much conscious effort, a productive psychotherapeutic approach. The patient responds in various ways, and there develops an interplay of feeling, of communication, and of new experience. Certain therapeutic experiences occur for the patient, such as acceptance as worthwhile or potentially so; of the absence of condemnation or rejection because of defensive distortions; of an identification with some of the more successful achievements and adjustments of the therapist as they may fit his own needs; and of spontaneous corrective emotional experiences as a result of the therapist not responding in the neurotic fashion expected by the patient.

The therapist is interested in the dynamics of a patient's problems, but he is more interested in fostering a good therapeutic relationship. The cornerstone of that relationship is that the therapist's fairly consistent attitudes toward the patient are like a composite of those attitudes of a good, deeply helpful, father or mother, or of a good, deeply helpful, older brother or sister.

Advantages of relationship therapy. In this approach, the psychiatrist is not so much "treating" the patient as "rearing" him or providing the setting in which the patient can "rear himself," can grow and

develop. For this reason, relationship therapy often is recommended for patients who are in some sort of developmental turmoil, such as the transition from adolescence to adulthood, at whatever chronological age the change may occur.

Relationship therapy provides the therapist with frequent opportunities to behave in a fashion different from the destructive or unproductive portions of the behavior of the patient's parents. At times, such experiences seem to neutralize or to reverse some of the effects of his parents' mistakes. If the patient had overly authoritarian parents, the therapist's friendly, flexible, nonjudgmental, nonauthoritarian, but at times firm and limit-setting attitude, provides the patient with opportunities to adjust to, be led by, and identify with a new type of parent figure. In a similar fashion, patients who had overly indulgent, overly seductive, overly passive, or overly inconsistent parents now can begin anew, in a sense, brought up again by a parent figure who is not making the old mistakes and who is responding in a way palpably different from the patterns of the parents, or from the patient's fantasies of the patterns of the parents.

Therapy as a corrective emotional experience. Such an experience in a relationship therapy is one kind of corrective emotional experience. In this form, it is not associated with the type of clarifying discussion that may be used in insight psychotherapy. There are several misconceptions to be avoided in the use of the concept of the corrective emotional experience. It is better not to define it or to characterize it as involving a deliberate role playing on the part of the psychoanalyst or of the psychiatrist, although this impression might be gained from a perusal of the literature. Also, it should not be interpreted as implying that a corrective emotional experience is to be used in a psychoanalysis as a substitute for the analysis of the transference neurosis. Rather, a productive, workable, and reliable conception of the corrective emotional experience is that in psychoanalytic psychotherapy, the psychiatrist, with little or no role playing, can work toward his patient's having a number of corrective emotional experiences, some with insight and some without. Thus limited and defined, the corrective emotional experience becomes one of the fundamental techniques leading to therapeutic change.

With this approach, there is no danger that the corrective emotional experience will be used as a substitute for an analysis of the childhood roots of the transference. In psychoanalysis, the primary emphasis is upon the analysis of the infantile sources of the transference through a study of the transference neurosis. Corrective emotional experiences are not emphasized, although they may occur as one possible effect of the analytic work. But in psychoanalytic psychotherapy, there is little or no analysis of the infantile sources of the transference; and so the corrective emotional experience can be used freely, whenever it is indicated, as a therapeutic technique. It should perhaps be added

that in an analysis, if the analyst deliberately or artificially alters his usual behavior toward his patient in order to provide his patient with a corrective emotional experience, he runs the risk of making the transference neurosis unanalyzable by him. However, a full discussion of this technical matter goes beyond the scope of this section.

Suitable situations for relationship therapy. Relationship therapy is suitable for a variety of psychogenic illnesses. For example, it may be useful when a patient is very resistive to expressive psychotherapy or is considered too ill for such a procedure. It may be chosen when the diagnostic assessment indicates that a gradual maturing process based on the elaboration of new foci for identification can be regarded as the most promising path toward modification.

Relationship therapy, with the addition, when possible, of attempts at insight therapy, can form the backbone of the work of many psychiatrists. It may constitute a significant portion of the work of many psychiatric social workers, psychologists, and others. Possibly it can provide the best line of approach for the growing group of internists and other physicians whose psychosomatic and other medical interests call for the development of delimited techniques of psychotherapy.

Psychoanalytic Psychotherapy: Dynamics of Cure

In the discussion of psychoanalysis earlier, the techniques which foster the therapeutic, controlled, yet extensive regression characteristics of the transference neurosis were considered. Among those factors were the physical setting of the analytic situation itself, with the use of the couch; the high frequency of the interviews; the lack of a time pressure in an analysis; the emphasis on the discovery and interpretation of unconscious, historically determined dynamic patterns; and the use of techniques of dream interpretation which go below the surface of the manifest content.

Psychoanalytic psychotherapy can be examined in the light of these factors. The point has been made that the emphasis in psychoanalytic psychotherapy is more on current dynamic trends than on genetics, and more on the understanding of contemporary relations and dynamics than on the understanding of the transference, although it includes a productive consideration of significant nonlogical attitudes and responses toward the therapist.

But unlike psychoanalysis, in which a limited regression and dependency may be encouraged because of their value in work which will lead to maturity, progression, and independence, psychotherapy in general tends to discourage regression and dependence except in those special circumstances in which the need for support is great, either for a brief period, or more rarely for a long period.

The techniques which foster independence and pro-

gression in psychoanalytic psychotherapy are of two kinds, which can be called the techniques of commission and the techniques of omission. Included in the techniques of commission are interpretations according to the centrifugal principle (away from an emphasis on genetic transference interpretations). Also included is the creation of a supportive, collaborative relationship which clearly carries with it the expectation of growth and maturation. Included in the first group (of moves which foster independence) is the psychiatrist's willingness to interact with his patient, to be seen in his functioning as a real individual.

The second group, techniques of omission, are the moves which are to be avoided in order to prevent the fostering of dependence and regression. These moves stem from a misapplication of the "analytic model," from an unfortunate attempt to make psychotherapy into a kind of psychoanalysis rather than a psychoanalytic psychotherapy. Basic to this mistake is an exaggerated belief in the therapeutic value and power of release from repression, under almost any circumstance, and an associated mistake of a serious overemphasis on the value of deep "insight," again under almost any circumstance. From these mistakes follow certain incorrect moves or techniques which are to be avoided: the therapist's comments to the patient about symbols in the patient's material, even when the symbols cannot be related easily and obviously to current material; the interpretation of the latent dream content rather than of the manifest. It is clearly not necessary for a therapist to disclose to his patient everything he has been able to deduce about him. In addition, through a curious negative twist, there may be a phobic avoidance of a transference interpretation when it is genuinely needed to unblock progress.

One complication of analytic psychotherapy (and of psychoanalysis also) is that therapy—even supportive therapy—may become a way of life for a patient. This at times may be a manifestation of uncontrolled or uncontrollable regression. Some patients, of course, whose egos may be such that they are unable to stand alone and in all likelihood never will be able to, may need permanent supportive treatment. But most often "therapy interminable" seems to result from a subtle interplay of silent transference and counter-transference factors, with the therapist finding unconscious gratification in fulfilling some of the many parental roles for his patient, who in a complementary fashion finds the reenactment of childhood or the apparent fulfillment of ungratified childhood wishes only too seductive.

In addition, if intense transference responses appear without adequate preparation, a sort of "wild analysis" or "wild psychotherapy" may result. Usually, the patient then will break off treatment, convinced either that his therapist has problems more severe than his own, or that psychotherapy is just not for him.

Another problem can arise. Some inexact interpretations can be a comfort to the patient to the extent that they permit him to rationalize his own problems, to lessen his anxiety by making a displacement away from prime causes. In this event, a new intellectual idea has been substituted for a possible true insight.

But inexact interpretations have their value. At times they may restore a workable but neurotic equilibrium. At times they are resting places in the search for a more adequate understanding.

Some Miscellaneous Forms of Psychiatric Treatment

In addition to those forms of psychological treatment which utilize chiefly the techniques of the patient's talking and his nonverbal communications and cues, and the verbal and nonverbal responses, comments, clarifications, and interpretations by the therapist, there are certain other forms of treatment which can be conceptualized according to psychoanalytic principles and which should occasionally be included in the psychiatrist's prescription for his patient. These forms of treatment utilize dynamic understanding of the individual patient and his problems, but verbalization and discussion of conflict are not their primary techniques. Rather, they lie in the borderland between psychotherapy—the "talking cure"—on one side, and nonspecific environmental and physiological treatment techniques on the other side. Often, the role of these psychiatric therapies is one of facilitating psychotherapy; but occasionally, as will be shown, they may become central in the treatment plan.

The treatment techniques to be considered here include such methods as environmental manipulation, activity therapies, and bibliotherapy.

Environmental manipulation. At times, removal of the patient from a stressful environment holds the greatest hope for successful treatment, particularly if the patient's condition might deteriorate unless the external stresses are removed or if, at best, the patient would only continue in a fruitless stalemate with external forces.

Vacation. Common instances of this form of treatment range from the recommendation of a vacation for an overworked patient to foster home placement for a child. Once again, however, the recommendation for individualization of the treatment cannot be made too strongly. In the case of a vacation, for example, a seemingly innocuous holiday can become a disaster. A patient might be maintaining his dynamic psychic equilibrium only through such mechanisms as overwork, perhaps out of a guilty need to suffer. To remove the external pressures through a vacation is to risk upsetting a precarious equilibrium; the consequence might be a serious and severe regression or depression instead of the hoped for restorative respite from the stresses of everyday life. An inquiry into the causes of the overworking is often more to the point

than the recommendation that the patient take a vacation.

Hospitalization. Hospitalization is a major form of environmental manipulation which may be called for in the course of some psychotherapies. The psychiatrist will consider hospitalization when his patient shows unmistakable evidence that his customary manner of dealing with his environment has become impaired to such an extent that he has become a danger to himself or others around him. The term "danger" used in this sense refers not only to suicidal and homicidal possibilities, but also to such dangers as the unwise acting out of the hypomanic or manic patient or drug addict, or the life-threatening withdrawal of the catatonic patient. Hospitalization may provide the only setting in which psychotherapy can be effective with those patients; but it may simultaneously seem to the patient to be a defeat, a possibility which might impair his chances of recovery.

Foster home placement. Foster home placement for children is another example of environmental manipulation which requires careful consideration of the complete picture. It is usually undertaken only when careful study indicates that the child would not have an opportunity to form satisfactory healthy identifications in his own home environment and when there is a high probability that that environment will not improve sufficiently in the predictable future. Once again, the risks of intervention are great, and it is often difficult to decide whether or not a child would in fact be better off with foster parents and away from his biological parents.

Activity therapies. The various forms of psychotherapy attempt to work with pathogenic conflicts, in general through facilitating their recognition and verbalization and subsequent integration by the patient. This process requires, most of all, the renunciation of immediate gratification of strong psychological strivings. But there is another possibility for the reduction of psychological tension, that of its direct expression in action. Activity therapies utilize this approach. These are therapies which depend for their effect not upon the verbalization of psychic contents, but upon the reduction of intense and perhaps unacceptable or conflict-filled strivings through active expression of derivative and related drives. In this group are the occupational therapies, recreational, industrial, dance and music therapies, and other forms of treatment. The activity therapies are often used in hospitals; but only rarely are they employed in out-patient psychotherapy, although a psychiatrist might urge his patient to develop a hobby, play golf, or take up bowling.

A basic assumption about the various activities encompassed by occupational therapy is that some activities are more therapeutic than others in specific problems. For example, it is often observed that depressed hospitalized patients seem to benefit from

monotonous tasks which they can regard as demeaning, thereby giving some expression to their wish to suffer in a harmless and even constructive way, refocussing some of their aggression away from themselves and onto their environment.

Process in activity therapy. In all of the activity therapies, and especially in occupational therapy, there is an increasing awareness that it is the process, and not the product of the process, which is of greatest importance. It is more important that a patient *do* leatherwork or *make* a finger painting than that the purse or the picture be of good quality, although that may also be important to the patient. It is possible to have a room full of hospitalized patients silently engaged in dull, repetitive tasks, without a flicker of human interchange among them; such a situation probably would have a low therapeutic value. There is a growing tendency today, however, to utilize occupational therapy for the fostering of better interpersonal relationships between the patients and with the therapists. Many therapists today want to know something of the patient's dynamics and background in order to provide him with occupational tasks which better meet his therapeutic needs.

It also seems likely that a patient will make different uses of occupational therapy at different times during his illness. At one time, it might serve to break into the tedium of an otherwise bleak hospital routine. Again, an occupational task might serve to reduce anxiety through muscular activity. Or at another time, there might be some strengthening of the patient's ego through the mastery of a new skill. Or the occupational therapy might serve as a vehicle for the formation of new interpersonal relationships which the patient needs.

In some hospital settings, where the psychiatric staff is in short supply but long demand, it is possible that the occupational therapist is almost the only person who has some consistent interpersonal contact with a patient. Perhaps the nondemanding occupational therapist in that setting may be sufficiently therapeutic to bring about a reversal of the regressive forces of a psychosis, serving as a preparation for other forms of psychological treatment, including psychotherapy.

Other forms of activity therapy may serve more directly as expressions of conflict components. Here recreational therapy should be considered, in which competitive games, for instance, may give acceptable expression to hostile urges. Also dance therapy, in the form of expressive physical movement, may serve to drain off intense drives. But of greater importance in these therapies is the almost inevitable psychological contact with other human beings which helps to reverse regression.

Even food can be conceptualized as therapy. Almost everyone will treat himself to some favorite food—usually fattening and forbidden—at times of frustration and stress. An analytic patient may have

a rich malted milk before or after an anxiety-laden analytic hour. But the systematic giving of warm drinks and simple foods to a newly hospitalized patient at some time during the admission procedure may be therapeutic in the sense that it helps to establish an interpersonal bridge between the patient and the hospital. It repeats symbolically the earliest mother-child linkage.

Bibliotherapy. A question frequently raised by patients in psychotherapy and in psychoanalysis is: "What should I read to help me to understand myself better?" For patients in psychoanalysis, the answer is usually simple: "There is no homework." This poses a special problem in the treatment of those patients who, by virtue of their work or profession, are required to read technical materials about mental health. Psychiatrists in analytic training or psychiatry residents in psychotherapy or analysis are examples. The reading of technical materials may well become a locus of resistance in those patients; and while the therapist or analyst usually cannot forbid the reading of technical books and articles, he still must deal interpretively with the resistance which that reading serves. For one thing, any article or book about psychiatry is a generalizing statement about a class of people; and its uncritical application to the individual reader is at best a risky proposition. All physicians are familiar with this problem in another context—the tendency of medical students to suffer from whatever disease they happen to be studying this week.

But for some patients, the use of literature for therapeutic purposes, bibliotherapy, does seem to have a limited usefulness. Some persons whose conflicts are not too severe may derive comfort and support from the Bible. Others may gain some limited, though genuine, insight into their own dynamics by reading any of a number of books on mental health. A good marriage manual may be therapeutic for the emotional problems of a marriage if they are not severe.

In yet another sense, the study of literature may have some very real value. Psychiatrists, especially, find much of value for their general understanding of their patients through reading some of the world's great literature. In some psychiatric hospitals, patient groups have been formed for the study of great books; but even here, the question must be raised as to whether the socialization may not be more beneficial than the insights which may be gotten from the books.

Suggested Cross References

For a detailed discussion of the theoretical model of psychoanalysis and psychoanalytic psychotherapy, see Section 6.1 by Mack and Semrad, on Sigmund Freud, in Area C, on current theories of personality and psychopathology. Diagnosis in psychiatry is discussed at greater length in Area E, on assessment in psychiatry. Finally, the several sections included in Chapter 36 in this area of the volume deal specifically

with the role of the environment and occupational therapy in the treatment of psychiatric illness.

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behavioral "problems" as quickly as possible, by controlling the learning behavior of the patient. As such, behavior therapy has been described as a new and different mode of psychotherapy by its several proponents. In this section, the major features of its development will be summarized, and the ways in which behavior therapy differs from the more traditional psychotherapeutic approaches will be specified. A brief summary of the techniques employed by various schools of psychotherapy to modify behavior, and the theoretical propositions from which these derive, will provide a useful context for the subsequent analysis of behavior therapy.

Historical Perspective

Control of human behavior. Early in his history man discovered that there were three principal ways of controlling or modifying human behavior (see Figure 1).

First, behavior can be modified by changing the antecedent situational events which precipitate specific forms of behavior (Figure 1a). For example, a child who does poor schoolwork and is a disciplinary problem while he is in a class supervised by a particular teacher may become an effective, cooperative student if he is assigned to a different class with a different teacher. This observation underscores the fact that behavior is a function of the situation in which it occurs. That is, some behavior patterns can be regarded as related to specific situations, since they reliably and consistently occur together.

Second, the kind of behavior which occurs in a particular situation can be changed or modified (Figure 1b). For instance, a child can be taught to engage in constructive compromise activity, rather than throw a temper tantrum, when he encounters a frustrating situation. Particularly important are those instances in which a person's behavior is a result of the way he perceives the situation in which he finds himself. Thus, modification of the method he employs to cope with the situation may be contingent upon the therapist's ability to help him to construe it in a different and more effective way.

Third, the situational consequences to which the behavior leads may be altered, thereby modifying future behavior (Figure 1c). This concept is based on the broader proposition that some types of behavior are learned because they regularly lead to satisfying outcomes, or because they enable one to avoid unpleasant or painful consequences. Thus, when aggressive attacks on others have consistently led to punishment for assaultiveness, hostility may give way to more cooperative attitudes because of the concomitant rewards. Again, a child's fear of dogs may be modified by exposing him repeatedly to satisfying and nonfrightening experiences with animals.

Throughout history, various devices, such as situational manipulation (changing a person's environment), exhortation, advice, persuasion, teaching,

34.2 BEHAVIOR THERAPY

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As an approach to the treatment of disordered behavior, behavior therapy represents a relatively recent development in the field of psychotherapy. In brief, it constitutes an attempt to alleviate specific

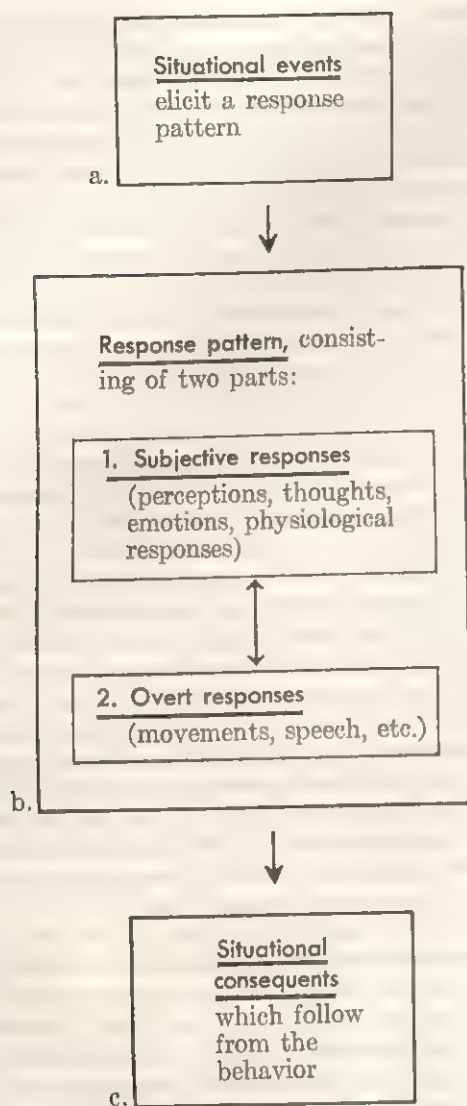


FIGURE 1. Simple model of a behavior sequence, showing the three primary ways of modifying or controlling human behavior.

prayer, reward, praise, punishment, and medication, have been used to influence the behavior of individuals. Each of these procedures emphasizes one or another of the three principal methods of modifying behavior described above. However, despite their general effectiveness, some types of behavior are very resistant to change by these methods, for various reasons. In such cases, the usual procedures do not seem effective, or they may actually exacerbate the problem. For example, motor paralysis, skin rashes, tics, delusions, hallucinations, and various forms of antisocial behavior have often persisted in the face of the most strenuous efforts to change them. In certain situations, neither the manipulation of the situational antecedents (Figure 1a) nor the alteration of the consequences of behavior (Figure 1c) has produced results of any apparent significance.

Traditional Concepts of Behavior

Emphasis on subjective factors. The fact that certain modes of behavior are not affected by common techniques of intervention led Freud and others to conclude that the difficulty lay within the behavior patterns themselves (Figure 1b). However, behavior patterns have two major components. (1) Those responses which are overt and therefore accessible to the observation of others (e.g., muscular movements or talking) are often referred to as behavior proper. (2) A second group of responses are subjective; that is, they are self-observed. This category of responses could include thinking, those aspects of emotion which are not communicated (i.e., feelings), and images. The fact that these components are frequently referred to as aspects of personality rather than behavior may be attributed in large measure to Freud's contention that the difficulty in modifying certain cases of behavior disorder was that this disorder actually resided within the individual's subjective thoughts and the emotions which accompanied them. Accordingly, he focused on certain types of thoughts, which he initially called traumatic memories and subsequently referred to as wishes.

In the realm of psychotherapy, then, the primary emphasis throughout the first half of the 20th century has been upon subjective factors. Freud set the prevailing pattern by delineating the organization of personality and its components (id, ego, and super-ego) and emphasizing the role of these components as primary determinants of behavior. This theme was echoed by those who followed: Jung specified the role played by complexes and drives (and their related thoughts and feelings) in the acquisition and maintenance of behavior. Adler spoke of the apperceptive schema, a network of thoughts and perceptions which the individual develops, and he elaborated upon the fact that the individual's actions are guided by his anticipations of the consequences of these actions (goals and guiding fictions). Rank spoke of will and counter-will as well as fear and guilt, and of dependent orientations as determinants of behavior. And, more recently, these themes have been sustained, with individual modifications, by such theorists as Rogers, Horney, and Harry Stack Sullivan.

Altering subjective events. Consistent with this point of view, within the framework of traditional psychotherapy, efforts have been directed toward the modification of overt behavior by altering the antecedent perceptions, thoughts, and feelings (subjective responses) upon which that behavior depends. Access to these subjective (cognitive, intervening) events has been effected by means of verbal interaction (the therapeutic interview). Efforts are made to change the way a person thinks by getting him to talk about his thoughts. Concurrently, the assumption is made that if a person learns to think and feel differently, he will act differently.

Although the "talking cure" has been preeminent in traditional psychiatry throughout most of this century, it has been criticized on several grounds: (1) the length of time said to be required to produce changes by this method, (2) the limited variety of problems amenable to its application, and (3) the restrictions on the number of individual patients who can be treated because of the time and expense involved, and because of the limited number of qualified practitioners. Moreover, objection has been made to the lack of precision in theory and the variability in treatment techniques which has characterized the field of psychotherapy. These factors are not considered by critics to be conducive to the effective treatment of behavior disorders.

Theoretical Rationale for Behavior Therapy

Eysenck's studies. These criticisms, sporadic but persistent, were crystallized by a group of workers in England. In the early 1950's, H. J. Eysenck, a professor of psychology at Maudsley Hospital in London, reported on surveys of evaluative studies of psychotherapy. As a result of his investigations, Eysenck concluded that, by and large, it could not be demonstrated that psychotherapy had been any more efficacious than other treatment approaches; indeed, in many instances it could not be demonstrated that psychotherapy was superior to no treatment at all.

Although these surveys possessed serious methodological weaknesses, they stimulated the London group to search for another, more effective approach to mental illness. Subsequently, they adopted the idea, urged by others as well, that the field of clinical psychiatry should incorporate the contributions of the basic behavioral disciplines. Since psychotherapy represents a process of reeducation or relearning, why not base efforts to facilitate such relearning on the knowledge about the way humans learn which had been gained in the experimental laboratories? Eysenck and those who have followed his lead have explicitly declared this to be their approach, and the group has coined the term "behavior therapy" to represent this orientation.

Characteristics of Behavior Therapy

Definition. Behavior therapy is best described as an approach, rather than a specific treatment technique. The term behavior therapy was chosen to reflect the emphasis which this group of clinicians places upon the overt, and objectively observable behaviors of patients. In contrast to psychoanalysis and the psychotherapies, which focus on subjective behavior, i.e., thoughts and feelings, and seek thereby to effect changes indirectly in the patient's overt behavior, the behavior therapy approach addresses itself directly to the patient's overt behavior. In fact, it has been suggested that changes in thoughts

and feelings may be effected by changing the way one acts, rather than vice versa.

Thus, the focus of treatment is one of the characteristics which identify the behavior therapy approach. In addition, its treatment procedures derive directly from principles of learning developed in the experimental laboratory. Moreover, an attempt has been made to integrate some of the conceptual precision and procedural systematization of the laboratory into clinical practice.

Theoretical model. In general, behavior therapists have adopted as their theoretical model one of the several variations of psychological learning theories which have been developed in experimental laboratories during the last 50 years. Naturally, different theories as to how learning occurs have had different implications with regard to psychotherapeutic treatment procedures. Thus, those therapists who have followed the lead of Pavlov, Watson, and Guthrie have been guided by conditioning, or conditioned learning theory (Figure 1a), and have emphasized the fact that interrelationships between situations and responses develop as a function of the manner in which the situational stimuli are presented. On the other hand, Thorndyke, Hull, and B. F. Skinner, the leading proponents of reinforcement theory, have been notable in their exploration of the effects of different consequences, positive and negative, in determining which behavior will ultimately be acquired (Figure 1c). Finally, during the past several decades, the personality theorists, such as Allport and Rogers, have emphasized the role played by the subjective aspects of behavior (thoughts, feelings, perceptions, and images), which they have conceptualized, in turn, as traits, attitudes, and predispositional organizations.

Concept of disordered behavior. The behavior therapist regards both neurosis and psychosis as examples of learned behavior. Disordered behavior does not differ in principle from normal behavior. Rather, disordered behavior patterns are viewed as inappropriate or maladaptive habits which have been learned and continue to be maintained in much the same way one acquires desirable habits. They occur in a person's repertoire as a result of repeated exposure to aversive events (and hence are conditioned) and are maintained because they consistently lead to positive effects or make possible the avoidance of deleterious ones. The disordered aspects of an individual's behavior may represent a small or a large part of his total behavior, depending on the severity and persistence of aversive events and other factors. Psychiatric syndromes, then, are merely viewed as collections of faulty habits, interrelated in various ways.

This view is in direct contrast to the concept that psychiatric syndromes are produced by one "central cause" or disease process. The behavior therapist does not assume that inappropriate behavior is the symptom of some underlying disease process or psycho-

logical state, and he explicitly eschews the notion that neurotic symptoms stem from such underlying causes. Consequently, he feels that the focus on "underlying causes," which is characteristic of other theories of psychopathology, has led to a neglect of the presenting problems. Many behavior therapists believe that this misplaced focus has led, in turn, to unsystematic treatment, a failure to specify the problem behavior, an assumption of a "single cause" for the multiplicity of factors involved in inappropriate behavior, and a presumption of a degree of uniformity which is not justified by the data.

Correspondingly, purposive accounts are avoided, and preference is given to concepts which identify the external and identifiable conditions which control the behavior in question. Early learning experiences are regarded as unimportant for treatment purposes, unless the same conditions which were related to the initial acquisition of the behavior continue to be operative. No particular stage of development is characteristically considered to render a growing person more vulnerable to some types of emotional learnings than any other stage.

In summary, the development of behavior therapy has been accompanied by a rejection of the traditional concept of disorder (which is often referred to as the "psychodynamic approach to behavior") and of the techniques which have stemmed from emphasis upon the "inner and underlying determinants" of human behavior.

Treatment Techniques

An armamentarium of treatment techniques has been developed, based on the literature on experimental psychology, which are designed to effect the direct modification of behavior. As mentioned earlier, these techniques derive from different theoretical positions. Consequently, they are often described in different terms and are based on different rationales. However, there are areas of agreement and these will be described briefly.

Goals of behavior therapy. By and large, behavior therapy is problem-oriented. Since psychiatric syndromes are conceived of as collections of faulty habits, it is assumed that these habits can best be modified if they are the direct focus of treatment and are changed one by one. It is characteristic of behavior therapists, in general, to take the presenting problem of the patient as the focus of treatment. To illustrate, if the patient complains of excessive motor and muscular tension, the therapist's efforts are directed toward reducing that tension. And if tension represents his only presenting complaint, treatment will be considered complete when its reduction is effected. Characteristically, no attempt is made to unearth the underlying sources of a given tension; therefore, extensive inquiry to that end is not required. The reconstruction or reorganization of the person's patterns of interpersonal interaction, or modi-

fication of his behavior through awareness and understanding, do not represent major objectives in the treatment process. Consequently, treatment objectives are characteristically much more limited, and perhaps more attainable, than is the case in traditional psychotherapy.

Therapeutic process. On the whole, therapy tends to follow a typical course, as outlined below.

Determination of the behavior to be modified.

Ordinarily, this is accomplished by means of interview, although some investigators have employed questionnaire forms as a means of standardizing and augmenting the patient's self-report. Efforts are made to identify precisely the nature of the patient's complaints with respect to his overt, objectively observable, behavior.

Establishment of the conditions under which the behavior occurs.

Again, primarily by careful inquiry, efforts are made to determine precisely under what circumstances the behavior has been observed to occur, the antecedent associative conditions, and the characteristic consequences of the behavior. If, for example, the patient complains of unaccountable fears, attention is directed to those occasions when he is aware of feeling afraid, as well as those events which typically follow the occurrence of fear.

Determination of the factors which are responsible for the persistence of the behavior. A decision is reached as to whether the patient's response appears to be the result of a simple conditioned fear; whether it reflects an initial fear that has become generalized, so that it occurs in related but different sets of situations; or whether the response seems to persist because of the consequences to which it leads. This analysis is focused on the search for external conditions, antecedent and consequent, which can be considered instrumental in maintaining or controlling the behavior in question.

Selection of a set of treatment conditions. Circumstances are selected which can be deliberately manipulated by the therapist (sometimes called the operator) to modify, counteract, or undo those factors operative in the patient's individual situation.

Arrangement of a schedule of retraining. A retraining experience (consisting of individual units, which are often called trials) is planned, during which the patient's behavior is systematically subjected to modified conditions. Treatment is terminated at the point at which the behavior sought begins to occur at the desired level of incidence.

Techniques for modifying antecedent conditions. Again, the specific methods which have been developed to date are numerous and varied. However, most of the procedures designed to modify antecedent conditions can be encompassed in the classification presented below, which has been adapted from Grossberg's formulations.

The first group of procedures have in common the fact that they are directed toward the *modification*

of the interrelationships between responses and the situations in which they occur (interrelationships between *a* and *b* in Figure 1). These procedures will be referred to by the labels which are employed most frequently in the current literature and are therefore most familiar.

Desensitization technique. In those instances in which an inappropriate pattern of response (such as fear or disgust) has been acquired in relation to a particular object or event, a method of systematic habituation has often been employed. Stimuli which elicit the maladaptive response are selected. The subject is then repeatedly exposed to these stimuli at such low levels of intensity that they do not evoke the complete response pattern. Exposures are then continued at gradually increasing levels of intensity, until even high intensity levels of that stimulus no longer elicit the former inappropriate response. This procedure has been used successfully to reduce exaggerated startle response to noise in military settings. It has also been used repeatedly in the elimination of exaggerated and inappropriate fears, and it has been applied to such problems as feelings of guilt and self-derogation with reported success.

Reciprocal inhibition technique. In certain respects this technique closely resembles the desensitization technique; however, it introduces an additional factor. It is based on the fact that in the human repertoire there are some response patterns which are incompatible with, and antagonistic to each other, e.g., fear and sex, anger and digestion, relaxation and distress. The objective of the procedure, then, is to arrange conditions so that a more appropriate response will occur in relation to the troublesome situation, to replace the subject's maladaptive response. Thus, in those instances in which an inappropriate pattern of behavior has been acquired in relation to a person, event, or object (such as a fear of small animals), efforts are made to elicit another response at a stronger level of magnitude, one which is incompatible with the initial response. Most frequently, this has been accomplished when relaxation as a pattern of response has been pitted against fear. More specifically, patients are trained in relaxation procedures, either by instruction or by means of hypnosis. Conditions are then arranged so that the pattern of relaxation becomes systematically associated with the stimuli which have hitherto elicited fear.

Reciprocal inhibition and desensitization. The two methods described above have often been combined into one treatment program, an innovation which is attributable to Joseph Wolpe, who has become a prominent exponent of the behavior therapy approach in this country. This third, combined procedure has become a widely used and successful form of behavior therapy in the treatment of phobic patterns of response. As the first step in this technique, the therapist establishes a list of the situations which elicit the undesirable pattern of behavior. These are

ranked in ascending order, in terms of the intensity of the response which they elicit. The subject is then trained in relaxation procedures. Following this, he is asked to visualize the fear-inducing situation which stands lowest on the list (the weakest) while he is relaxed. A few trials of desensitization are usually sufficient for the relaxation pattern to occur in place of the fear. The desensitization procedure is then continued up the hierarchy of situations, until the most intensely disturbing situation can be visualized while the patient is relaxed. Usually, the pattern of relaxation which occurs during the symbolic representation of the feared event generalizes to the real-life situation itself. According to individual clinical reports, the entire range of phobias has been successfully modified by this procedure. In addition, it has been reported to have been successful in the treatment of a case of bronchial asthma in which desensitization involved a demanding wife and the antagonistic pattern of behavior employed was assertiveness.

Conditioned avoidance technique. The foregoing techniques have been characteristically used in relation to patterns of avoidance (such as fear or aversion) which are deemed inappropriate in the context in which they occur. When the therapist must deal with patterns of approach (in contrast to patterns of avoidance), the opposite conditions for relearning are established. To illustrate, in those instances in which the patient has learned to seek out persistently inappropriate situations, for example, when he has learned to drink excessive amounts of alcohol or to make homosexual advances, conditions are established in which aversive stimuli (e.g., electric shock or nauseant drugs, such as apomorphine and emetine) are systematically paired with the situational stimuli which elicit the inappropriate response. Thus, for instance, in the treatment of fetishists electric shock is repeatedly associated with the object of their sexual arousal, and conditioned aversion to the formerly attractive stimulus is thereby established. In brief, the procedure is similar to the technique of reciprocal inhibition, but it operates in reverse. Reports as to the success of this procedure in the modification of behavior have not been uniform. It has been used primarily in the treatment of sexual perversions (homosexuality, transvestitism, and fetishism), and with alcohol addiction, and success and failure have been reported with equal frequency.

Techniques for modifying environmental consequences. To move on to the second set of procedures, we encounter those techniques which focus on the *modification of the interrelationships between the responses and the consequences to which they lead* (interrelationships between *b* and *c* in Figure 1). As a result, the therapist's efforts in this area will entail a manipulation of the consequent conditions to which the behavior leads. In general, these techniques fall into two groups. The first group of techniques is directed toward increasing the likelihood that a de-

sired response, i.e., behavior, will occur in those instances in which it is infrequent or absent. Thus, it is employed in those cases in whom the absent behavior (such as the failure to eat, talk, or interact with others), constitutes a behavior deficit. In contrast, the second group of techniques is directed toward producing a decrease in the likelihood that a response will occur because it is considered undesirable, maladaptive, or inappropriate.

Positive reinforcement. In those instances in which a necessary or desired response occurs infrequently, efforts are made to increase its frequency by systematically arranging for positive, satisfying, and therefore rewarding events to occur each and every time that the response is made. Thus, for example, Bachrach et al. successfully reinstated the habit of eating in a woman suffering from anorexia nervosa, whose weight had fallen from 118 to 47 lb., by means of this technique. To do so, they arranged conditions so that pleasurable experiences, such as visits from relatives, companionship with fellow patients, music, and watching television, were entirely contingent upon her eating. This procedure has also been used to good effect in encouraging a wide variety of more socially effective behaviors in hospitalized schizophrenics. Other workers have reported successes in reinstating talking in mute catatonics and in facilitating the development of socially-oriented behavior in autistic children. Frequently, the reward of food and candy has been the successful reinforcing condition in producing such modifications in psychotic and schizophrenic patients. The technique of approximation, or shaping, constitutes an important component of this procedure. Often the desired response pattern does not appear initially in its final form. In that event, the therapist reinforces only those responses which move in the direction of the final performance which is the treatment objective. This technique was employed by Bachrach et al., and it has also been used by Bangs and Freidinger in the successful treatment of a case of aphonia, which required the patient to engage in graded vocal activities, increasingly similar to normal speech.

Negative reinforcement. In the foregoing procedure, efforts are made to increase the likelihood of a response by supplying a positive consequence whenever the response occurs. In this procedure, efforts are made to increase the probability of the occurrence of the response by exposing the patient to an unpleasant or aversive stimulus beforehand and then removing the stimulus directly after the appearance of the response which is sought. This technique has been used only infrequently since the therapist is required to expose the patient to noxious conditions until the desired response is forthcoming, thereby impairing his willingness to continue to undergo treatment. Although it has not been formally identified as such, it may, however, be a procedure which is already

being implicitly employed in such settings as prisons and reform schools.

Aversive conditioning (punishment). In arranging for conditions to occur after the emission of a response in order to reduce the likelihood of its recurrence, one of the basic procedures employed by the layman is to expose the subject to unpleasant consequences. In everyday parlance, this is referred to as punishment, but the term is rarely used in the clinical setting, for obvious reasons. However, it is a procedure which was introduced some years ago by Mowrer for the treatment of enuresis, with good effect. More specifically, conditions were arranged so that wetting the bed led to the triggering of an electric mechanism, the ringing of a bell, and the subsequent awakening of the subject. Jones, in reviewing 15 studies on this technique, discovered a recovery rate of 76 per cent among the patients treated. It has also been employed in the treatment of speech disorders by arranging, for example, for a brief blast of loud noise to follow each stuttered word. Electric shock has been applied in the treatment of occupational cramps, primarily writer's cramp, with good effect. Occasionally, verbal measures have been utilized as well. Wolpe reported that he was able to remove a patient's obsession by shouting "Stop!" whenever the patient signaled that he was experiencing an obsessive thought.

One of the reasons simple punishment has not been used more extensively stems from laboratory observations which have indicated that it is not as effective as positive reinforcement and that its primary effect has been to prompt the subject to "do something else." As a result, it has been used more often in combination with positive reinforcement, with the therapist arranging not only for the punishment of the undesired response, but also for the reinforcement of the response being sought. Thus, Walton and Black have reported the cure of an aphonic woman by manipulating the length of the practice sessions she was required to attend to reward increases in voice volume and punish volume decreases.

Extinction technique. Frequently, it is possible to reduce the likelihood that a response will occur, not so much by subjecting the patient to deleterious consequences, but by arranging for no consequences to occur at all. This is particularly useful in those instances in which the undesired response has characteristically produced some "benefit" to the patient. Thus, Walton reported the cure of a woman whose excessive scratching aggravated a severe skin rash by instructing her fiancé and family to omit the excessive attention which seemed to reinforce this response.

As is true of aversive conditioning (i.e., punishment), extinction procedures have often been used in combination with reinforcement, in the hope that this will further facilitate learning. To illustrate, this

combined procedure was applied recently in the treatment of the maladaptive classroom behavior of two psychiatric in-patients. In this case, the teacher withheld her attention from the boys until appropriate behavior occurred and then rewarded them generously with attention and encouragement. This procedure resulted in marked academic and social improvement in each of the boys.

Negative practice technique. One final procedure has been employed widely in the treatment of a variety of behaviors since its introduction by Dunlap as early as 1932. In this instance, the subject is instructed to practice the undesired response, deliberately and repeatedly. Obviously, this procedure could not be utilized in certain kinds of behavior, but it has been used with repeated success in the treatment of tics, nail biting and thumb sucking. Certain types of stuttering problems appear to respond to this approach as well. There is a great deal of disagreement as to precisely why this technique works at all, and in what way it might be related to the procedures earlier described. It is possible, however, that stable relationships between the stimuli and the response are interrupted because the response is being deliberately emitted under all sorts of stimulus conditions. It is also possible that repetition of the response produces a negative consequence (fatigue, for example), which, in turn, reduces the likelihood of its recurrence.

Applications of Behavior Therapy

As evident from the examples cited, behavior therapy techniques have been applied to a wide variety of clinical problems, in both neurotic and psychotic patients. Consistent with the approach, the treatment has focused on specific sets of problems or habits, thus giving rise to the impression that it is a monosymptomatic type of treatment. In fact, the initial efforts of behavior therapists follow the experimental tradition, in that they involve the modification of simple types of problems before attempting to alter complex combinations of disordered behavior, such as are encountered in the advanced and crystallized psychiatric syndrome. However, there is no reason why these techniques cannot be applied to complex organizations of disorder. The only prerequisite for such procedures would be the careful specification of the sequence in which the particular modifications would have to occur.

Apart from such considerations, behavior therapy may also be of particular value in the treatment of children. For one, the problem behavior manifested by these patients have not yet had time to form complex organizations and patterns. Secondly, while traditional psychotherapies may encounter real difficulties in the treatment of children because of their limited verbal facility, behavior therapy can circumvent such difficulties.

Evaluation of Behavior Therapy

Behavior therapy has enjoyed a prompt and interested response throughout the clinical field in the short time it has been in existence. Dollard and Miller's pioneering attempt to describe psychotherapy in terms of Hullian learning theory did much to create a receptive climate for behavior therapy in the United States. In the years since, many clinical investigators have adopted the approach and are submitting it to trial in a variety of contexts and in a wide array of clinical problems. An extensive literature has been accumulating rapidly. However, despite these developments, the approach is relatively new and is still undergoing modification and elaboration. A solid foundation of traditional treatment procedures has not been established as yet. No formal training centers are in existence to date, although several are in the planning stage. Most present day behavior therapists have not been formally trained but have acquired their skill as a consequence of their own initiative and experimentation.

Specific advantages. As an approach, behavior therapy appears to offer several distinct advantages. It presents a useful alternative to traditional psychotherapy, and for certain types of problems it may prove to be more effective. Thus, it has contributed to the general development of the field by encouraging different types of treatment for different types of problems. Its problem-oriented approach is conducive to the careful accumulation of data concerning response to treatment, providing for the initial establishment of a base line against which outcome and follow-up assessments can be compared. Since it is focused upon specific and limited objectives, it may require a shorter number of treatment sessions to accomplish the same result and thereby provide considerable savings in the time and expense customarily involved in treatment. It maintains a potential applicability to a wide segment of the population, as opposed to the traditional psychotherapies which have often seemed to be more suitable for persons in the higher socioeconomic brackets. In contrast, in principle, behavior therapy can be adapted to meet the needs of those who are intellectually, emotionally, or culturally disadvantaged.

Finally, and perhaps most importantly, behavior therapy provides a rationale whereby individuals other than the therapist can be trained to implement therapeutic procedures, so that parents, marriage partners, and ward attendants can function as auxiliary therapists. It may be speculated that this not only extends the range of the therapist's effectiveness but may influence the development of preventive techniques.

Effectiveness of treatment. The recovery rates reported for behavior therapy procedures are, typically, impressively high. Wolpe, for example, reports that 90 per cent of the patients treated by such procedures are cured or much improved, and this figure is im-

pressive when compared with the usual 65 to 75 per cent usually cited for short term insight therapies and the proportions below 50 per cent which have been reported for psychoanalysis. However, it must be remembered that these reports are based on subjective judgment, that such reports characteristically suffer from poor criteria for assessing behavioral change, and that better experimental controls are needed. Nor have these reports established which learning theory has proven most helpful. Certainly, no current concept of learning can be considered to be entirely satisfactory, and it is possible—indeed probable—that quite new theories will have to be developed.

Satisfactory empirical comparisons of the results of behavior therapy techniques, as opposed to other kinds of treatment, and as opposed to no treatment at all, have yet to appear. Very few such comparisons have been done so far. In one such study, desensitization procedure was compared with a traditional conversational psychotherapy and an attention-placebo treatment for alleviating "stage fright." It was reported that all three forms of treatment had some effect, although the traditional counseling was not more effective than the placebo, while systematic desensitization was significantly more beneficial than either of the other two techniques. On the other hand, in a carefully controlled study by Cooper, two groups of patients, one of which had been treated by behavior therapy and the other by a variety of other methods available in the Maudsley Hospital, were followed up a year later. In this instance little if any difference was found between the two groups.

Conclusions

Despite the enthusiastic emphasis upon a new and different approach to the treatment of behavior disorders which characterizes the writings of many behavior therapists, it is possible to demonstrate that there is no basic incompatibility between the more traditional psychotherapeutic approach and behavior therapy (Peterson and London), that many of the procedures employed in behavior therapy have also been employed in the context of the verbal psychotherapeutic methods (Ford and Urban), and that many of the principles underlying the implementation of each may be the same. Finally, careful study of behavior therapies reveals that they do, in fact, deal with both subjective responses (personality) and overt responses (behavior).

Even so, the emphases within behavior therapy will prove to be extremely useful to the field as a whole. Despite the fact that traditional psychotherapy has dealt with many of the same issues and techniques, the scales may have become tipped in the direction of an overemphasis upon the subjective antecedents of behavior, with a corresponding neglect of objectively observable aspects of behavior and its dependence upon situational determinants. Behavior therapy will

provide a useful service in helping to redress the balance. Finally, its greatest strength lies in its basic goal—to establish clinical technique firmly upon the foundation of the basic experimental disciplines. Nothing could be more useful than the reminder that the knowledge and methods of the laboratory scientist can be successfully applied in the clinical situation, as illustrated by the fact that treatment procedures can be derived from learning theory, explored in the laboratory, and subjected to controlled clinical tests.

Suggested Cross References

The various learning theories from which behavior therapy derives are discussed in Area B of this volume (see Chapter 3, on basic psychological sciences). See also Area C for a more detailed discussion of current theories of personality and psychopathology and the other sections in this chapter for alternate viewpoints of psychotherapy. For a discussion of the issues regarding symptom removal as opposed to treatment of the underlying disorder, see Frazier and Carr's section (Section 23.4) on the phobic reaction in Area F, on psychiatric disorders.

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34.3 CLIENT-CENTERED PSYCHOTHERAPY

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History

Client-centered psychotherapy was conceived of and came to fruition in the period from 1938 through 1950: it underwent its initial development at Ohio State University in the years from 1940 through 1945; during the following 5-year period, from 1945 through 1950, it was further elaborated at the Counseling Center at the University of Chicago.

The label "client-centered psychotherapy" was intended to underscore a focus on the internal phenomenological world of the client, or patient. The term "client" was chosen to indicate that the individual seeking help is perceived (and valued) as a self-responsible person, rather than an object for treatment. Initially, these clients consisted primarily of maladjusted and neurotic students, children, and parents; however, in the years since, the patient population has expanded to include a continuum ranging from chronic schizophrenic patients to competent business executives seeking self-enhancement.

From the beginning, client-centered psychotherapy has been noted for its dynamic quality: it does not represent a dogmatic school of thought but has changed over time, as a result of the knowledge gained through the increasing and varied experience of the large group of therapists using this approach. Other changes have emerged from the findings of a continuing, multifaceted program of research.

Distinctive Characteristics of Client-Centered Psychotherapy

Since it is obviously impossible to touch on all the aspects of the client-centered approach in this very brief exposition, it might be well at the outset to state a number of the characteristics which distinguish this point of view from other forms of psychotherapy. Of these, some characteristics can only be cited; others will be described briefly. These distinctive elements include: (1) the developing hypothesis that certain attitudes in the therapist constitute the necessary and sufficient conditions of therapeutic effectiveness; (2) the developing concept of the therapist's function as that of being immediately present and accessible to his client and relying on his moment-to-moment experiencing in the relationship with the client; (3) the continuing focus on the phenomenal world of the client; (4) a developing theory that the therapeutic process is marked by a change in the client's manner of experiencing, with increasing ability to live more fully in the immediate moment; (5) continued stress on the self-actualizing quality of

the human organism as the motivational force in therapy; (6) a concern with the process of personality change, rather than the structure of personality; (7) emphasis on the need for continued research to gain essential truths regarding psychotherapy; (8) the hypothesis that the same principles of psychotherapy apply to all persons whether they are categorized as psychotic, neurotic, or "normal"; (9) a view of psychotherapy as one specialized example of all constructive interpersonal relationships, with the consequent generalized applicability of all knowledge gained from the field of psychotherapy; and, (10) a concern with the philosophical issues which derive from the practice of psychotherapy.

The Developing Concept of the Therapeutic Relationship

Concurrent with the development of client-centered psychotherapy, there has gradually evolved the concept that therapeutic success is dependent not primarily on the technical training or skills of the therapist, but on the presence of certain attitudes in the therapist. When they are effectively communicated to and perceived by the client, these attitudes are considered to be the crucial determinants of therapeutic progress and constructive changes in personality. Concomitantly, it is hypothesized that it is these attitude patterns which account for change, whether one is dealing with "normal," neurotic, or psychotic individuals. Thus, the client-centered point of view represents a unified approach to therapy, no matter what diagnostic label has been assigned to the client, or patient. In this respect, the client-centered approach differs sharply from other therapeutic orientations.

Therapist's attitudes. Three attitudes or conditions appear to be most important for the success of therapy, on the basis of research findings. These are: (1) the therapist's genuineness, or congruence; (2) the therapist's complete acceptance, or unconditional positive regard for his client; and (3) a sensitive and accurately empathic understanding of the client by the therapist.

Genuineness of the therapist. The presence of this attitude, which is perhaps the most basic, means that the therapist is endeavoring to be what he is during his encounter with his client. He is without pretense, openly reflecting the feelings and attitudes which he is experiencing at the moment. Obviously, this requires self-awareness on the part of the therapist. The feelings he is experiencing must be available to him, so that he may deal with these feelings and communicate them if they persist. It also means that the therapist enters into a direct personal encounter with his client, meeting him on a person-to-person basis. It means that he is *being* himself, not denying himself.

Since this concept is liable to misunderstanding, it may be advisable to state some of the things this atti-

tude does not imply. It does not imply that the therapist will burden his client with the overt expression of *all* his feelings. Nor does it mean that the therapist must disclose his total self to his client. It does mean, however, that he will not deny to himself the feelings he is experiencing at the moment—that he is willing to acknowledge any *persistent* feelings, negative or positive, which exist within him in the relationship, and to communicate these to his client. It means he will avoid the temptation to adopt a facade, to hide behind a mask of professionalism, or to adopt a confectional-professional attitude.

The second and third attitudes which are described in the following paragraphs also facilitate therapy, but if the therapist is genuine in the relationship with the client, he may be helpful even when he is not experiencing these other attitudes.

The therapist's unconditional positive regard for the client. The presence of this second condition which appears important for therapeutic movement and change means that the therapist communicates to his client a deep and genuine regard for him as a person with potentialities, a regard which is uncontaminated by evaluations of his thoughts, feelings, or behavior. The therapist experiences a warm acceptance of the client's expressions as part of his total personality and places no conditions on that acceptance and warmth. He does not accept certain feelings in his client and disapprove of others. Rather, this condition implies *not* making judgments. It implies that the client's expressions of painful, hostile, defensive, or abnormal feelings will receive as much acceptance as his expressions of good, positive, and mature feelings.

Unconditional positive regard, when communicated by the therapist, functions to provide the nonthreatening context in which it is possible for the client to explore and experience the most deeply shrouded elements of his inner self. The therapist is neither paternalistic, nor sentimental, nor superficially sociable and agreeable. But the fact that the therapist really cares about the client is a necessary ingredient in his efforts to create a "safe" environment in which the client will be motivated to explore his deepest thoughts and feelings and share them with another human being.

Accurate empathic understanding. The third essential attitude for a productive therapeutic relationship is empathy. It implies that the therapist is completely at home in the universe of the client. It is a moment-to-moment sensitivity to events in the immediate present. It is the therapist's ability to sense and understand the client's inner world of private personal meanings, as if it were the therapist's own, but without loss of the "as if" quality.

The ability and sensitivity required in order for the therapist to communicate his understanding of these inner meanings to the client in a way that allows these experiences to be "his," is the other major aspect of accurate empathic understanding. The

therapist's ability to sense the client's fear, his confusion, his anger or rage, as if these were feelings the therapist himself might possess (but is not currently experiencing) is the essence of the perceptive aspect of accurate empathy. Communicating this perception in a language attuned to the client, and thereby allowing him to sense and formulate his fear, confusion, rage, or anger more clearly, is the essence of the communicative aspect of accurate empathy.

Validation of the therapeutic importance of these attitudes. Research investigations have tended to confirm the hypothesis that these three attitudes are important antecedents of therapeutic movement and progress. This statement is applicable both to neurotic individuals who are strongly motivated to seek help and to chronic schizophrenic persons with no conscious desire for help. It applies whether these attitudes are rated by impartial investigators, after they have listened to segments of recorded interviews, or whether they are measured by the Relationship Inventory, which taps the client's own perception of the therapeutic relationship. It has also been found that these attitudes remain quite constant throughout therapy, so that the degree to which they are present as early as the fifth interview constitutes a good prediction of the degree of objectively measured change which will take place in the client. Thus, the ultimate success or failure of treatment can be predicted with a modest degree of accuracy at a relatively early stage.

The Therapeutic Process

It is impossible, of course, to do justice to the richness of the therapeutic process in this brief account. In a broad sense, the process may be described as the client's reciprocation of the therapist's attitudes. As he finds someone listening to him with consistent acceptance while he expresses his thoughts and feelings, the client, little by little, becomes increasingly able to listen to communications from within himself; he becomes able to realize that he is angry, or that he is frightened, or that he is experiencing feelings of love. Gradually, he becomes able to listen to feelings within himself which have previously seemed so bizarre, so terrible, or so disorganizing that they had been shut off completely from conscious awareness. As he reveals these hidden and "awful" aspects of himself, he finds that the therapist's regard for him remains unshaken. And, slowly, he moves toward adopting this same attitude toward himself, toward accepting himself as he is, and thus prepares to move forward in the process of becoming. Finally, as the client is able to listen to more of himself, he moves toward greater congruence, toward expressing all of himself more openly. He is, at last, free to change and grow in the directions which are natural to the maturing human organism.

Theoretical model. A more technical description of the therapeutic process, which is supported by empirical findings is appropriate here.

It is established knowledge that the client in the process of therapy shows movement on each of a number of continua. Starting from wherever he may be on each continuum, he moves toward the upper end. Regarding feelings and personal meanings, the client moves away from a state in which they are unrecognized, unacknowledged, and unexpressed; he moves toward a flow in which continually changing feelings are experienced in the moment, knowingly and with acceptance, and may be accurately expressed.

This process involves a change in the manner of the client's experiencing. Initially, he is remote from his experiencing. For example, the person who intellectualizes talks about himself and his feelings in abstract terms, leaving the therapist with serious doubts as to what is actually going on inside him. From this position of remoteness, he moves toward an immediacy of experiencing, in which he lives openly in his feelings and knows that he can turn to his experiencing to discover its current meaning. The process involves a loosening of the cognitive maps of experience. Whereas he previously construed experience in rigid ways which were perceived as external facts, the client now moves toward having changing, loosely held constructions of meaning in experience, constructs which are modifiable by each new experience.

Results of Client-Centered Therapy

Data from a wide variety of research studies suggest that individuals who are involved in the type of relationship just described, even for a relatively limited number of hours, show profound and significant changes in personality, attitudes, and behavior, changes that do not occur in matched control groups. Even though it may be imperfectly realized, in this type of therapeutic relationship the individual becomes more integrated, as evidenced by projective tests, for example. He shows fewer of the characteristics which are usually termed "neurotic" or "psychotic," and more of the characteristics of the healthy, well functioning person. He alters his perception of himself, his self-concept becomes more realistic, and he becomes more like the person he wishes to be. He values himself more highly, and he has a greater capacity for self-direction and self-expression. He achieves greater self-understanding; becomes more open to his experience, denying or repressing less of it; becomes more accepting in his attitudes toward others, seeing others as more like himself. In his behavior, he shows similar changes. He is less frustrated by stress and recovers from stress more quickly. His day-to-day behavior becomes more mature. He is less defensive, more adaptive, better able to cope with difficult situations and problems.

Continuing expansion of research. One of the distinctive features of client-centered therapy is that from the beginning it has been focused upon research. As an approach, it has been committed to the belief that the phenomena of therapy may, and should, be

subjected to rigorous research investigation. To this end, thousands of therapeutic interviews have been electrically recorded and have provided the raw data for many studies. Live interviews have been filmed as well, in order to subject the process to a closer, even more intensive, investigation. An annotated bibliography (Cartwright, 1957) showed that the reports of more than 100 investigations had been published on all phases of therapy—the therapeutic relationship, the process, the results, and the theoretical formulations and predictions.

Since the publication of that bibliography, there has been an increase in the development of research in all its phases. New instruments have been devised for the measurement of therapeutic conditions. Various scales have been prepared for assessing the effectiveness of the therapeutic process. A research project to investigate the efficacy of psychotherapy with hospitalized schizophrenics has been completed. An exhaustive study of time-limited therapy has been conducted. Many individual research projects, investigating different aspects of client-centered psychotherapy, or investigating hypotheses growing out of the theory on which it is based, have been completed.

Applications of a Client-Centered Approach

In client-centered therapy the therapeutic relationship has always been conceived of as a special instance of interpersonal relationships in general. Change and growth in therapy has also been seen as a special instance of growth and development in any human being. Perhaps it is because of these two points of view that client-centered theories and methods have been utilized in a wide variety of settings which bear no resemblance to the formal therapy situation. The client-centered approach has had a wide and receptive audience, not only among therapists, but among school and vocational counselors, leaders in the field of group dynamics, marriage counselors, industrial counselors, speech therapists, teachers, business executives, clergymen of many faiths, social case workers, and others. And it has been used effectively in widely different cultural settings—in France, Belgium, Italy, and Japan, for example. Workers in community development in this country and in other countries have drawn upon client-centered theory and practice to facilitate the independent growth of community responsibility and problem-solving skill. In brief, this point of view has been perceived as having significance for many people in varied occupations and diverse cultures.

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Hypnotic phenomena have probably occurred in one form or another since the beginning of man. However, these phenomena were first mentioned as a therapeutic tool in the 18th century by Mesmer, who referred to hypnosis as "animal magnetism." In the next century, Braid, Charcot, Liebeault, Bernheim, Janet, Freud, and many others studied hypnotic phenomena. Since the early 1930's, there has been a resurgence of interest in the medical uses of hypnosis in the United States, which has been pioneered and influenced largely by M. H. Erickson.

Our knowledge of hypnosis has evolved in much the same way as our knowledge of transference, which appears to be a basic element of hypnosis. When the concept of transference was first introduced in psychoanalysis, many psychoanalysts erroneously assumed that the phenomenon occurred only in the analyst's office and in relation to the analyst. However, when the concept of transference was further developed and clarified as referring to that aspect of the patient-doctor relationship which is nonrational, it became apparent that transference occurs more or less frequently, if not constantly, in varying degrees of intensity with different people. It also became evident that the clinician can identify transference phenomena by scrutinizing both the patient's perceptions and his evaluations of them.

By the very nature of the patient-doctor communication in the psychotherapeutic setting, the documentation of transference phenomena, as they occur in that relationship, is likely to be greater than our knowledge of the phenomena which underlie any of the patient's other associations. But there is no reason to believe that the transference phenomena observed in psychotherapy are not representative of what goes on regularly, probably even more intensively, in many other facets of the patient's life.

The individual's ability to achieve a hypnotic trance, that is, to become more or less fixed or "frozen" in a dissociated state, is probably activated and reactivated many times during his lifetime. If the clinician can help the patient to experience this hypnotic state of dissociated concentration and, at the same time, structure it toward the therapeutic goal, conditions are favorable for using hypnosis as an adjunct in treatment.

For centuries, poets, writers, and philosophers, as well as clinicians and scientists, have alluded to the many levels of awareness experienced by human beings from day to day, and even from moment to moment. But when the clinician structures and maintains a specific type of dissociation in the patient, we can, by definition, call this "hypnosis." The crucial difference between this state of hypnosis and other dissociated states the same patient may experience is that the patient is responding to a stimulus which has been knowingly established and perpetuated by the clinician according to a deliberate design, and in order to achieve a specific goal.

34.4 HYPNOSIS: AN ADJUNCT TO PSYCHOTHERAPY

HERBERT SPIEGEL, M.D.

Nothing can be done in psychotherapy with hypnosis that cannot also be done without hypnosis. The advantage of hypnosis lies in the fact that it serves to accelerate, sometimes considerably, the impact of psychotherapeutic intervention.

If it is true that hypnotic phenomena occur spontaneously, as seems evident, the physician can expand his clinical skills by learning to identify trance capacity and then to activate, control, and channel it for defined therapeutic goals.

A heuristic view. The definition of the word "hypnosis" (from the Greek word *hypnos*, meaning sleep) can be misleading because the phenomenon to which it refers is not a form of sleep; rather, it is a complex process of heightened or aroused concentration. Although peripheral awareness is reduced in sleep and hypnosis alike, focal awareness, which is almost obliterated in sleep, is at optimal capacity in hypnosis.

It is difficult to estimate the number of instances when dissociation occurs without the "official" label of hypnosis. For example, women who deliver their babies by means of muscle relaxation techniques without chemical anesthesia are experiencing the equivalent of hypnoanesthesia, although neither the doctor nor the patient may acknowledge that hypnosis is being used. Similar experiences occur among patients who endure such procedures as direct laryngoscopic, gastroscopic, and proctoscopic examinations without awareness of pain or discomfort. When a drug has a so-called placebo effect, this may be interpreted as indicating that various dissociated experiences occur in the therapeutic setting that are beyond the direct effects of the drug itself. Outside the clinical setting, variants of the complex phenomenon of dissociation called hypnosis are experienced in fugue states, sleepwalking, day-dreaming, intense concentration on work or play, and "miracle" cures.

Characteristics of Hypnosis

There are a number of theories which attempt to describe the essential nature of hypnosis. Their mere abundance is, in itself, evidence of the difficulty of formulating a concept of the phenomenon in terms of its elements. However, an operational, phenomenological definition is possible.

Definition. Hypnosis can be described as an altered state of intense and sensitive interpersonal relatedness between hypnotist and patient, characterized by the patient's nonrational submission and relative abandonment of executive control to a more or less regressed, dissociated state. In the clinical situation, it is actively instigated and knowingly enhanced by the hypnotist and structured for goal achievement.

Hypnosis is a structured form of aroused concentration that can be disciplined and directed toward specific therapeutic goals. In practice, the operator provides one of the signals that activates the patient's capacity for a shift in attention to guided areas. The patient's dissociated attention is constantly sensitive to, and also responsive to, cues from the hypnotist, thereby permitting the patient to concentrate intensively on areas or conditions the clarification of which can lead toward the designated goals.

Capacity for hypnosis. It should be emphasized that the patient must have a latent capacity for aroused concentration which can be tapped and then structured by the hypnotist-therapist. The notion, based on the Svengali-Trilby myth, that the hypnotist can project or exert some mysterious power on the subject, has never been substantiated clinically or experimentally. The most that a hypnotist can do is provide an appropriate occasion for the subject to activate his own capacity for the trance experience. This capacity, or lack of it, is not necessarily identified by the patient's conscious evaluation of his hypnotizability. Some patients who assert that they urgently want hypnosis are incapable of entering the

trance state. Others may openly defy the trance-inducing signals and simultaneously enter the trance.

The three phases of trance induction. The phenomenon of trance induction is a three-stage operation, although the delineation of each is not always discrete.

Patient's perception of the aura. This is an anticipatory phase, which is anxiety-provoking to the extent that it elicits whatever transference potential exists in the patient. If the reputation of the hypnotist, his appearance, or his presentation is such that it coincides with the patient's transference predisposition or expectancy, the necessary rapport is comparatively easy to establish. The patient thus becomes more receptive to the physician's signals to enter the trance; he is apt to reach a more intense dissociation and is therefore able to accept more fully the directions given him during the trance state.

Psychophysiological enhancement. During this second phase, the art of induction consists of (1) the hypnotist's indicating, in advance, the probable, and therefore the predictable, psychophysiological phenomena that will occur when the patient takes the position and performs the physical acts according to his directions, and (2) the hypnotist's tacit implication that these phenomena are due to his signals. In addition, the patient's suspense, resulting from his repetition of the specified movements and the passing of time, accentuates the psychophysiological effect.

The "plunge." During the third phase of trance induction, the patient more or less abandons his executive controls and shows nonrational submission to a dissociated state. The situation is analogous to that of the swimming coach and the swimmer. The coach can guide the swimmer to the edge of the pool, can instruct him how to jump into the water, and can even anticipate his actions once he has jumped. But at some point the swimmer's tie with the coach cannot determine the ease, speed, and confidence with which he explores the water. Similarly, the hypnotist has the broad power to structure the nature of the patient's nonrational plunge into submission with relative abandonment of his executive control. However, he cannot determine either the moment or the manner of the patient's submission.

The specific induction technique is almost inconsequential in the production of the trance. Creating an atmosphere of appropriate security and relaxation is important. But these elements are secondary, compared to the expectation of both the patient and the doctor and the relationship between them. The patient is encouraged to make himself comfortable and to concentrate. The operator may then ask him to gaze at a dot on a card, a spot on the ceiling, or a pencil point; to roll his eyes up, as if he were trying to look at his eyebrows; to concentrate on holding one hand in a raised position; to sway back and forth from a standing position until he falls back into a chair placed behind him; or to perform any one of an

almost limitless number of procedures that involve concentration. In brief, the operator chooses a technique with which he feels comfortable and confident, and which the patient finds acceptable (and sometimes even expects).

The phenomenology. The specific objective and subjective phenomena which occur can vary widely, depending on the expectations of the subject and the hypnotist. Allowing for this, in Western culture, the trance state can generally be characterized for practical clinical purposes as existing at one of three levels. The light trance is most readily identified by motor alterations, e.g., hyperkinesis or retardation. The middle range is usually distinguished by these changes, plus sensory alterations, such as paresthesia, analgesia, anesthesia, partial amnesia, and posthypnotic compliance to simple signals. The deep somnambulistic level is characterized by the additional features of posthypnotic compliance even to bizarre signals; visual, auditory, and tactile hallucinations; time distortion; age regression; hypermnnesia or selective amnesia; profound anesthesia; and the ability to maintain the trance state with the eyes open.

These levels are by no means fixed; they may vary in the same subject from time to time, and even within the same trance experience. However, when the operator's instructions are appropriate, the level generally tends to remain fairly constant and to be responsive to the conditions necessary to achieve the desired treatment goal as understood by the patient. For example, a woman who has successfully delivered her baby by hypnosis without chemical anesthesia has attained her goal. Since she no longer needs to concentrate on being aware of her sensations, she may ask for chemical anesthesia while the episiotomy is being repaired.

Compulsive triad. Of all the phenomena related to hypnosis, none is more impressive than the patient's post-trance compliance to an instruction given him during the trance. To illustrate, while the patient is in a deep trance, the hypnotist tells him that when he is out of the trance, he will respond to a specified signal in a specified way. Moreover, he will respond in the predictable pattern that prevails in all such post-trance responses. For example, while hypnotized, a patient may be told that when the hypnotist lights a cigarette after the trance, the patient will ask for one, puff at it once or twice, and then put it out. It can be predicted with confidence that after the trance the patient will do precisely this. It is also predictable that (1) he will have an amnesia (more or less) to the general context of the instruction (technically called the signal), (2) he will comply with the instruction compulsively, and (3) he will rationalize his act of snuffing out the cigarette by saying, "This cigarette is stale," or "I must be catching a cold," or something along those lines.

These three reactions, which are identified as a "compulsive triad," constitute a potent, identifiable

constellation of predictable behavior. The triad can be regarded as a unit of organized behavior that is at least partially dissociated and, at the same time, predictably responsive to a preconditioned stimulus. Moreover, while the triad is most clearly seen when the signal has been planted during a deep trance, it can also be observed in an attenuated form when the signal has been implanted during a light trance. The patient may not have total amnesia, but the compulsive compliance is subtly apparent, in that he shows mild discomfort or anxiety and seems obliged to rationalize his feelings.

The compulsive triad also appears in nonhypnotic experiences. A person may have received a certain signal in childhood, and may have given a certain response that was appropriate to his mode of life and private beliefs at that time. Years later, when a similar signal occurs, the person, motivated by the psychological compulsion to repeat and by transference, exhibits the triad of amnesia around the original stimulus, compulsiveness in repeating his original response, and rationalization of his act. Furthermore, his current response is motivated by his past conditioning; it does not represent a rational reaction to his present situation.

In the compulsive triad the psychiatrist has available a unit of predictable behavior that he may use therapeutically. For example, he can study the role of this behavior unit in the patient's development, or he may use it to influence or to inactivate certain behavior. As these behavior patterns emerge, he learns more about the patient's specific assumptions about himself and the world around him. By induction, the therapist gains knowledge that can contribute to his evaluation of the patient.

Psychotherapeutic Application of Hypnosis

The major function of the doctor who uses hypnosis in psychotherapy is to design a sound psychotherapeutic program which aims at solving the patient's problems. Almost any of the treatment designs discussed elsewhere in this chapter may serve as the appropriate primary treatment strategy. Hypnosis is not a treatment in itself, but an adjunct to treatment. It enables the psychiatrist to focus the patient's intense concentration on certain areas. The desired information can be reached more directly through hypnosis than when the psychiatrist must depend on the patient's free association, with its mass of resistances, irrelevant information, and conscious censure. Since the patient's intensified transference and attention are focused on the treatment situation, an atmosphere of receptivity enhances his capacity for exploration and change. But the clinician's ability to hypnotize a patient does not, in itself, assure therapeutic success. This will also depend on the physician's knowledge and skills in helping the patient to move toward relevant therapeutic goals.

Prerequisites for therapeutic effectiveness

Therapist's role. If the therapist believes that the dissociation and concentration obtained in hypnosis can facilitate treatment, he must assume certain responsibilities. In general, these may be formulated as follows. (1) The therapist must identify the capacity of the patient for the trance experience. This is determined by a brief trial with one of the many induction techniques and will depend on the psychiatric evaluation as well. Approximately four out of every five persons are capable of at least a light trance. In fact, even psychotic patients have periods of lucidity during which they may be capable of the concentration necessary for hypnosis. (2) The therapist must provide the optimal conditions necessary for the trance, including patient-doctor rapport, security, and physical comfort. (3) The trance must be structured in accordance with the therapeutic goals; the therapist is obliged, therefore, to delineate these goals in terms of the patient's needs and ascertain that they are clearly understood by the patient. (Naturally, the therapist must also have the skills necessary to induce and maintain the trance, and be able to handle the material produced in the trance state.) (4) Finally, the therapist must educate the patient to respond at a given signal in the service of the treatment program. Moreover, in some instances, the patient must be taught to produce this response in his daily life, as well as in the clinical setting.

Patient orientation. The adjunctive role of hypnosis lies in its ability to reduce the time needed for treatment by cutting through the patient's resistance, thereby permitting the therapist to use transference as a therapeutic device, operative in a desirable direction. As in all psychotherapeutic encounters, the effectiveness of hypnosis will depend on the patient's well-being, which, in turn, will be determined by the following conditions: (1) restoration of the patient's previous level of self-esteem; (2) the alleviation of stress in his environment; (3) the patient's reformulation of the symbolism of his symptom into a less extreme form (although the basic language will remain the same); and (4) the provision of a clinical atmosphere of flux which will allow the patient to re-order his own evaluation of the complex balance between the possible secondary gains derived from invalidism and the loss of his self-respect as a result of the same invalidism. Failure to achieve this critical reorientation can sabotage the ultimate treatment goals and any meaningful consolidation of change toward health, even when symptoms are demonstrably revoked in the treatment setting.

Basic Strategies in the Use of Hypnosis

The use of hypnosis to facilitate psychotherapy involves two basic strategies: the first strategy is to enhance the patient's control; the second is to uncover the material the patient has repressed. These two

motifs are not mutually exclusive and may be used with the same patient during different phases of treatment. Usually, however, one strategy tends to dominate the type of treatment application in any given therapeutic project.

Control enhancement. Control enhancement is usually focused upon (1) symptom alteration, or (2) attitude alteration, as substitutive and diversionary experiences. These are essentially suppressive and containment operations, designed to increase the patient's control so that he can learn more effective ways of achieving the defined goals of his therapy. The techniques may overlap, and sometimes they are used at the same time. Apart from such considerations, in general, the safe and appropriate use of symptom and attitude alteration requires only the knowledge of human behavior which is expected of any competent clinician.

Symptom alteration. Symptom alteration is simply direct guidance which veers the patient's attention away from his symptoms and concomitantly reminds him that more resourceful and effective means are available for his use in coping with problems of adaptation. For example, an embarrassing exposed head tic may be converted to a hidden toe tic, and panic may be converted into problem-solving. The phobic reactor can learn to differentiate real danger from generalized fear, and a confused, disoriented person can reestablish time, place, and self-identity.

Attitude alteration. Attitude alteration presents the patient with an alternative attitude toward a chronic, recurrent disability or a pending problem-posing event; and, by invoking the power of compulsive compliance with the posthypnotic signal, it influences the patient to abandon old perspectives and adopt new ones in the service of more effective adaptation. For example, compulsive cigarette smoking can be stopped when the patient concentrates on his new need to respect his body and to protect it from poison; pain can be endured when a mother wants to experience the birth process and to deliver her baby without chemical anesthesia; psychogenic paralysis can be cured when the patient realizes that he no longer has the need for invalidism; phonation can return when the aphonic patient learns a new way to express and cope with a secret, critical grievance; depression can lift when confusion about guilt is clarified.

Uncovering repressed material. Uncovering that which is repressed, both affective and cognitive content, may be accomplished (1) by simple abreaction, or (2) by more complex exploration of past events.

Abreaction. The release of repressed material can sometimes be provoked by design. Frequently, however, such material bursts through without an evocative signal from the therapist when the appropriate therapeutic atmosphere has been established. The sanctioned abandonment of the patient's executive control to the therapist may be sufficient to permit the release of highly charged affect. This occurs fre-

quently in attenuated form during the course of the patient's various psychotherapeutic experiences. However, it is usually in patients whose syndromes developed as a result of recent situational catastrophic experiences, such as war, fire, or accident—experiences which, if not uncovered, may develop into traumatic neuroses. Often, just the opportunity for release provided by the treatment setting and the subsequent reconstitution of self-esteem are all that are needed for clinical success. For example, the battle casualty can reenact the traumatic event, recall forgotten details, give vent to his fears and guilt, and discover that he can still live with honor.

Explorative uncovering. This is the most subtle form of hypnotic intervention in psychotherapy. It makes use of the hypermnnesia that is possible in this state of aroused concentration, and it permits a piecemeal collection of presumably isolated data from the past. To illustrate, a remembered episode of being choked reawakens old attitudes toward an older brother. When the connections and trends become apparent, an insight is permitted that frees the patient sufficiently to change toward health. This process is sometimes called hypnoanalysis; this is a misleading term, however. First, in this context, hypnosis is not primary but secondary to the explorative technique. Second, this is not analysis in a psychoanalytic sense. The therapist is maneuvering so actively in the role of hypnotist that he cannot observe the many transference and countertransference phenomena as readily as the analyst can in the usual psychoanalytic interchange. In intensive psychotherapy, without the strictures of the psychoanalytic technique, however, the explorative uncovering can be a valuable data-collecting procedure, especially when amnesia for specific events is at issue.

Precautions and Contraindications

In general, hypnosis is remarkably safe when it is used with sound clinical judgment, in a goal-directed setting. There are, nevertheless, some precautions to be observed.

Usually, the suspicious or paranoid patient will avoid or resist efforts at hypnosis and evoke a self-protective defense against this intrusion. Occasionally, however, such a patient may go into the trance state, only to have the experience evoke latent fears and suspicions which present a potential threat to the physical safety of the therapist. As a useful safeguard against this type of reaction, the hypnotist should pace the hypnotic intervention in accordance with the interests and desires of the patient and never use coercive ploys. This allows the patient the freedom to stop whenever he feels threatened by the interaction.

Another concern arises with respect to the sensitive, fragile patient who has already suffered many painful failures. If his expectations regarding the rewards to be derived from hypnosis are unrealistic and therefore unlikely to be fulfilled, the probable failure may be

so traumatic that the risk of disappointment is not clinically justifiable. However, with time and clarification, the patient's high expectations and the impact of disappointment may become attenuated sufficiently, so that the experiment may be attempted with reasonable safety.

Generally, a hypnotized subject cannot be coerced into performing an action that violates his values and beliefs. However, since perceptions can be temporarily altered by hypnotic signals, it is possible that, during the time period necessary to discover the disparity between the patient's compulsion to comply with the therapist's signal and his resistance to it, he may feel confused and unable to exercise his best judgment. During this transient period, the patient may commit an act which is somewhat disparate with his usual conduct. The more intense the trance state, the greater the likelihood that this can become a critical issue. It is self-evident, therefore, that the operator must assume a degree of responsibility for the patient, especially during the time period when he has entrusted some of his usual controls to the operator. In this respect, the hypnotist's responsibility toward the patient is not unlike that of the anesthetist toward the anesthetized patient.

To illustrate, a hospitalized patient was given a posthypnotic signal to fall asleep at 10:00 P.M. She did so; but at the time she was sitting in a chair watching television in the ward room, and she had to be carried to bed. The posthypnotic signal had been faulty. It should have included the qualification that the patient would respond to the signal only when she was in bed and prepared for sleep, at 10:00 P.M. or thereafter. One might speculate that, if the patient had been walking through the hospital corridors or along the street at 10:00 P.M. and, because she was unable to use her own judgment, had suddenly fallen asleep, she might have been injured. (At the same time, it is possible that under such circumstances the patient might have experienced a quick transient confusion and have fought off the signal to fall asleep until she could get into bed.)

The point should be emphasized, however, that the hypnotized patient needs supervised protection until sensory-motor alterations are corrected by customary controls.

In a broader sense, clearly, the use of hypnosis as an uncovering device demands certain precautions. The explosive abreaction may require psychological restitutive measures which are part of the repertory of the experienced psychotherapist. Therapist-induced explorations into amnesic realms of the past can become mischievous unless they are conducted in a disciplined manner within a designed treatment program. Therefore, for the protection of the patient, the uncovering and explorative applications of hypnosis should be performed only by those clinicians who are adequately trained in reconstructive psychotherapeutic techniques.

Just as hypnosis in the treatment setting can facilitate a thrust toward health, it can also facilitate a therapeutic "error." The leverage potential works both ways for the intervener. When a therapist com-

mits an error in a nonhypnotic setting, the patient who has ready access to his own faculties can critically judge and cope with the error, at least to some extent. However, this same capacity for critical appraisal is not readily available to the patient in a trance state, so that correction of the error either is delayed or may not be made at all. The existence of such a possibility lends support to the contention that, as a general rule, intensive short term insight therapy should only be practiced by the experienced psychotherapist. The novice needs the checks and balances that are possible when psychotherapy proceeds at a slower pace. Similarly, the risk of error further emphasizes the needs to limit the general use of hypnosis to symptom and attitude alteration in the service of containment and control, and to reserve the uncovering techniques for those clinicians who have been trained in the psychodynamics of intervention.

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of the therapist with the patient, verbally or through limited affective demonstration; (2) the direct interpretation, in Freudian terms, of the patient's psychotic thoughts and behavior (i.e., the therapist "talks" to the patient's unconscious); and (3) the assumption by the psychiatrist of an authoritative and omnipotent, yet benevolent and accepting, "foster mother" role toward the patient. The third element is the governing principle of the method.

Concept of psychosis. This form of treatment is based on the assumption that psychosis is psychogenic and that it differs from neurotic or normal behavior mainly in degree of disturbance. The neurotic state always precedes the psychotic, and after treatment the patient reverts to a "neurosis." Every psychosis can be divided into eight phases, which vary in severity. In the Freudian idiom, these correspond to the pregenital levels of development to which the psychotic is said to regress, ranging from early oral to late anal. Basically, a psychotic person is reexperiencing a distorted infant-mother relationship (not necessarily as it existed in reality, but as the child interpreted it), which has taken the form of an inner ego-superego conflict. Because of some deviation in her "mothering instincts" (whether real or imagined), the mother is perceived as "indispensable, but deadly."

Treatment Techniques

Although few formal techniques of therapy have been specifically enunciated by Rosen, recent observers of his methods have attempted to codify several of the more familiar procedures. These have been described as follows. (1) The therapist makes transference interpretations, the nature of which depends on the phase of the psychosis, in which he is referred to as the omnipotent figure. (2) Direct interpretations are made, more in keeping with the manifest content of the patient's productions, which contain no reference to the therapist. (3) The transference is focused, the internalized, "bad" mother is then attacked, and the therapist is substituted as the "good" mother figure. (4) The therapist enters into the psychosis, and therapist and patient are allied against the patient's illness ("insanity" or "craziness"), which the patient must then accept. (5) The therapist promises to help, care for, and cure the patient. (6) Finally, there is some affective demonstration by the therapist, for instance, by seductiveness or tactile contact. Those factors and processes which are typically associated with psychotherapy, e.g., insight, dreams, abreaction, and the confidentiality of the therapeutic situation, are not considered essential in this context.

Treatment setting. Originally, the treatment was carried out in a state hospital setting; later, it was attempted in private practice. As it is practiced currently, the patient lives in a foster family-like setting with several assistants (either former psychotics or

34.5 DIRECT ANALYSIS

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Introduction

Direct analysis is a unique method of psychological treatment of the psychoses—specifically, the schizophrenias, manic-depressive reactions, and paranoid states—which was promulgated by Rosen in 1943 and later refined by him. In general, treatment consists of three elements: (1) the active intervention

students) who are with him constantly and whose primary function is to administer to the patient's physical needs and reinforce the psychiatrist's interpretations and role.

Duration of treatment. Resolution of the psychosis may take from a few weeks to more than a year; on the average, the duration of treatment during the acute phase of the illness is 4 months. Follow-up treatment during the neoneurotic phase is on a weekly or biweekly basis and may last an indefinite time. During this phase, standard techniques are used, and no direct interpretations are made. Follow-up treatment is directed toward resolution of the oedipal situation; i.e., having identified with the "mother-psychiatrist," the patient must now form an adequate relationship with the "father-psychiatrist."

Evaluation of Treatment

The effectiveness of this method of therapy is still in dispute. Questions have been raised as to whether direct analysis cures the psychosis or merely represses it; whether the danger of producing anxiety through deep interpretation of unconscious material is as minimal as claimed; whether it is the interpretations which produce the therapeutic effect, or the personality of the psychiatrist; and whether the pa-

tient can maintain his gains. In this connection, a 10-year follow-up study of 19 of the original 37 cases treated showed that 18 had relapsed into psychotic episodes, 10 required some form of somatic therapy, and 8 continued psychotherapy. On the basis of these findings, it was concluded that direct analysis was no more effective than other standard treatments. However, in a more recent study of 14 patients treated by direct analysis, 10 were found to have made an adequate social improvement after a 5-year period. Clearly, in view of these conflicting reports, direct analysis still awaits final evaluation.

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Group Psychotherapy

34.6 GROUP PSYCHOTHERAPY

ALEXANDER WOLF, M.D.

Introduction

Studies in the behavioral sciences show that we, as a society, are becoming more group-oriented in effecting individual and cultural changes. In response to this cultural process, group psychotherapy has been added to the original treatment scheme of the one-to-one, doctor-patient relationship. Although many feel that group psychotherapy further diminishes individuality in our society as well as in psychotherapy, in fact, group psychotherapy may prove to be one of the most important means of preserving the uniqueness of the individual as he struggles to adapt to complex organizational demands and yet maintain his own identity. In other words, group psychotherapy is an effective means of helping the individual to deal with the confusion, anxiety, alienation, helplessness,

and hopelessness he feels as he tries to cope with the insistent reality of increasing group pressures.

Definition. It is not easy to find a satisfactory definition of group psychotherapy. Some definitions are too broad; for example, a 1944 *War Department Technical Bulletin* states: "...any procedure which tends to improve the mental health of more than one individual, is group therapy." Others prefer a very limited definition. J. M. Cotton has written: "I would define group therapy as an attempt to reinforce and strengthen the individual's defenses against anxiety by identification with, analysis by, and support from the group." R. J. Corsini's definition lies somewhere in between the preceding two: "Group psychotherapy consists of [the] process occurring in formally organized, protected groups and calculated to attain rapid ameliorations in personality and behavior of individuals through specified and controlled reactions."

A more comprehensive definition might read as follows. Group psychotherapy is a broad designation for that form of therapy which is practiced by clinicians in groups formed for the specific purpose of helping

individuals with their psychological and emotional difficulties, the depth of such therapy depending largely on the individual technique of the therapist. According to this definition, then, social, educational, athletic, professional, and organizational groups, while they may produce positive benefits, cannot be technically classified as therapy groups.

History. Group therapy began in America as a medical experiment, rather than a psychiatric one. Between 1900 and 1906, J. H. Pratt, a Boston physician, held classes at home for tubercular patients who could not afford to be treated in a sanatorium. In these classes he gave instructions on how to keep temperature charts, on proper diet, rest, and habits of cleanliness. Pratt found that patients benefited enormously from these classes and learned to cope not only with the physical illness, but also with the emotional problems arising from the illness. Between the years 1906 and 1956, Pratt published six papers, the first titled "The Home Sanatorium Treatment for Consumptives," and the last using the term "group psychotherapy." In this period group psychotherapy evolved into an important therapeutic technique.

During the 50 years between 1906 and 1956 there was much individual experimentation with group psychotherapy techniques, much of which was never reported. However, among the significant historical dates, the following are worthy of note.

1910. J. L. Moreno began to work independently in group psychotherapy in Vienna.

1921. E. W. Lazell reported the group treatment of psychotics in institutions, using didactic lectures.

1925. Trigant Burrow introduced the term "group analysis." Burrow's studies grew out of his work with individuals and were based on his social views, plus his belief that the analyst's position in the traditional, analytic setting was too authoritarian for the mental health of either therapist or patient.

1929. Louis Wender began his work in psychoanalytically oriented groups, as opposed to educational, supportive, or inspirational groups.

1930. S. R. Slavson introduced activity group therapy, designed primarily for children between 8 and 15 years of age.

1931. L. C. Marsh reported 20 years of experience with group psychotherapy, utilizing the repressive-inspirational method and the idea of milieu therapy, which involved the entire personnel of an institution.

1934. Paul Schilder began using group psychotherapy with 50 patients at Bellevue Hospital in New York City, combining psychoanalytic and social points of view in his technique.

Historically, this was the broad setting for group psychotherapy as we know it today. The following figures demonstrate the dramatic increase in the literature published between 1906 and the present. Between 1906 and 1935, 54 publications discussed group psychotherapy. From 1936 to 1940, there were 69 publications on the subject. From 1941 to 1945, the

number jumped to 203. After 1945, the growth was spectacular. Between 1946 and 1950, 536 papers were published, and there were 879 between 1951 and 1955. Since then, publications have been still more numerous.

The cumulative impact of the depression and the tensions created by imminent war helped bring about a striking general acceptance of group psychotherapy as a treatment method. During that uncertain period, a growing number of patients who could not afford individual treatment sought treatment in group psychotherapy.

It was the Second World War, however, that gave group psychotherapy its greatest impetus. Even the United States Army encouraged the use of group psychotherapy. The following quotation is from the same *War Training Bulletin*, mentioned earlier: "The favorable response of patients to comparatively brief treatment in groups warrants widespread adoption of this method of therapy. When patients are treated promptly, a majority can be salvaged." Many individual therapists were, of course, strongly opposed to this new method of treatment. Many more, however, joined the ranks of group psychotherapists, and this number has been steadily increasing. Today, almost every psychoanalytic training school provides some instruction in group psychotherapy techniques, and many newly established schools of psychotherapy have centered their orientation around group methods.

Treatment Techniques

The techniques of group psychotherapy are almost as numerous as its practitioners. This has, unfortunately, led to some confusion. In all fairness, it must be said that any innovation calls for experimentation. Although many have tried to put various techniques of group, as well as individual, therapy to scientific test with respect to both method and cure, few can, as yet, claim scientific validation in many areas. The experiences described in the literature on group therapy are *clinical*, and will be presented as such in this section. The prevailing techniques which will be discussed here do not represent a complete survey of the multitude of individual variations now being practiced. General categories, however, are discernible and can be described. Broadly speaking, these are: (1) psychodramatic, (2) reeducational (lecture-discussion), (3) experiential-existential, (4) group dynamic, and (5) group psychoanalytic.

Psychodrama. This technique, developed by J. L. Moreno, is discussed elsewhere in this chapter (Section 34.10). Nevertheless, any survey of group therapy must at least mention it, since psychodrama is everywhere classified as a group therapy technique. Not only has it been used widely in the form originated by Moreno, it has also brought about many variations such as role-playing, which is used in group dynamics, leadership training groups, and therapy groups where imagined situations are set up and roles assigned to be

enacted by various members of the group. Some therapists use script-writing as a help in problem-solving, while others, who stress a societal orientation, employ what they call sociodrama, building their situations around such social problems as racial conflict, labor strife, gang warfare, and drug addiction, rather than around individual, emotional problems.

Reeducation (lecture-discussion). The lecture-discussion method, its definition implied in its title, is used mostly with homogeneous groups, that is, with groups made up of patients who suffer from a specific, common difficulty. Groups classified under this heading would include the following.

Patients with organic disorders. Such disorders include parkinsonism; adult cerebral palsy; and debilitating or disabling surgery, such as colostomies, removal of the larynx, and the like. Many groups comprised of patients with these problems originate in hospitals; they may continue to meet there or in doctors' offices. Although the lecture-discussion, classroom technique is most widely used, there have been reports that modified psychoanalytic approaches have been tried with success.

Patients with mental and emotional disorders. Group therapy has proved effective with institutionalized psychotic patients, the mentally retarded, patients who have received shock treatment, alcoholics, stutterers, and drug addicts. Here, too, psychoanalytic principles have been successfully introduced.

Persons with social problems. Lecture-discussion-oriented group therapy has been most successful with divorced adults (with and without children), the aged, and inmates of reform schools and prisons.

Preventive, supportive, and educational groups. Group therapy has had interesting implications for the even more widespread dissemination of mental hygiene concepts among mothers of nursery school children; mothers of children with organic, medical, and emotional disorders; parents of delinquents; expectant mothers; and certain groups of key personnel, e.g., hospital staff.

The lecture-discussion, classroom technique includes excursions into psychodrama and psychoanalytic formulations at times, but the major emphasis is on education and reeducation, and the strengthening of defenses, rather than on exploration of the personality with a view to actual character change.

These groups, unlike the heterogeneous therapeutic group, often perpetuate themselves in clubs, to assure members some kind of social life and continued mutual support. These clubs are formed not only for patients with specific symptoms, but also for superannuated neurotic or postpsychotic patients who have completed their treatment or can no longer derive any direct benefits from therapy and yet are in need of some kind of continuing care, attention, and warmth from people who understand and take an interest in them.

Experiential-existential technique. Briefly de-

scribed, experiential psychotherapy emphasizes the immediate, feeling experience of the patient, rather than his rational intellectual exploration of its meaning, history, and implications. Furthermore, the experiential therapist stipulates that the patient-therapist relationship must be a "total" one, involving the therapist to the same degree and on the same levels as the patient. In other words, in an emotional sense, the therapist becomes a patient in the group, albeit the most experienced patient and the one around whom most of the interaction is centered. He can relate to other group members or not, be therapeutic or not, as he chooses. "Only this bilateral approach," wrote Hugh Mullan in 1955, "produces sufficient anxiety to force the patient into a totally new way of responding."

According to some experientialists, conflict is an indispensable part of therapy, and one way of maintaining that conflict is for the therapist to expose his counter-transferences within the group rather than elsewhere, as more traditional schools would advocate.

In summary, the experiential technique is primarily a "here and now" technique, stressing the group as the setting for interpersonal and intrapersonal responses, with as little reference as possible to past history, experiences, or relationships. The therapist participates in the same way as the patient. Acting seems to be preferred to talking, feeling to thinking, and intuition to rationality and reason.

It is difficult to describe or differentiate the existential technique. At the outset, however, a distinction must be made between the philosophy of existentialism and the actual therapeutic technique. Many existential therapists maintain that, while their theories about humanity and its development, growth, and problems may differ from those of other schools of philosophy, their therapeutic techniques follow, or at least do not clash with, those of the schools of traditional psychotherapy to which they happen to belong. Thus, many therapists who call themselves existentialists actually practice traditional psychoanalysis in groups, with some personal variations. In contrast, others stress the methods of the experimental school, made popular by Whitaker and Malone, which focuses on group conflict and stress and which diverges at many points from more conventional forms of therapy, existential and otherwise.

The therapists who practice existential techniques also differ from most other group therapists in their emphasis on the importance of nonverbal communication. The here-and-now experience is valued above all other experience in the life of the patient. The group is considered to represent a microcosm of the outside world, where loneliness, desperation, greed, lust for power, as well as other aspects of the human condition exist. (It should be pointed out that, naturally, nonverbal communication is observed in other group therapy methods as well, but, in contrast to the existentialist approach, it is considered there to be

merely a natural part of communication, requiring neither more nor less attention than any other part.)

Group dynamics. The group dynamicists have recently gained in importance in the group psychotherapy movement. Group dynamics, fathered by Kurt Lewin, is the term originally used by its practitioners, only some of whom are psychotherapists, to describe the study of the nature of groups, the dynamics of groups, and the ways in which groups affect the individual and vice versa, in relation to problem-solving, purposes, and goals. Groups, according to the group dynamicists, have a dynamics of their own, depending on the nature, status, values, and goals of the individual members and of the leader, just as the individual's psychodynamics are shaped by his biological heritage and his historical interaction with his parents, siblings, peers, persons in authority, and, by implication, society and/or culture. Some social scientists believe that the group dynamic emphasis, when applied to education, community, and business groups, can lead to authoritarianism. Others maintain that this is an excellent method for training natural leaders and to help other members to assert themselves appropriately, i.e., to compensate for failure and to cooperate for success.

For our purposes, group dynamic therapists can be defined as those who make the group, rather than the individual, the center and focus of therapy, or, in other words, those who use techniques which focus on group themes, group relationships, group reactions, and group interactions. The writings of group therapists who have embraced group dynamics also suggest that they find techniques derived from individual psychoanalysis insufficient, and the goal of psychoanalysis (psychodynamic personality change through insight) inadequate to the group setting. Conversely, the psychoanalytically oriented group psychotherapist believes that, while group dynamics is admittedly an interesting and important subject for study by the social psychologist, it has little to offer systems of therapy for the individual. In fact, the psychoanalytically oriented therapist feels that one of the values to be gained from an understanding of group dynamics is that it alerts the therapist to certain "dangers" and thereby permits him to forestall the possible domination of the individual by the group without leaving him isolated.

Psychoanalysis in groups. The group therapy techniques described above (psychodrama, reeducation, experiential-existential techniques, and group dynamics) all borrow from established psychoanalytic techniques, in spite of their occasionally strongly expressed rejection of many of these techniques. The psychoanalytically oriented group psychotherapist finds the group setting quite different from the one-to-one setting which characterizes classical psychoanalytic treatment. However, he has not found it necessary to discard either the basic philosophy of psychoanalysis or its basic techniques. As the opportu-

nity arises, he has adapted these techniques to gain new insights which derive from a new frame of reference—the needs of the individual patient, as these emerge in response to the interaction of the group.

S. R. Slavson, an outstanding theorist and practitioner of group psychotherapy whose orientation towards the structure and function of the human psyche is based on Freud's formulations, has pointed out that treatment in a group setting "necessitated modifications as well as expansion of Freud's basic concepts," but that "these diversional necessities in no way detract or counter the profound laws formulated by Freud. It is safe to assume that were he active in the psychosocial climate of the present era and the cultural and clinical settings, and with groups, he himself would have modified his practices, though hardly his basic discoveries." Slavson then quoted a relevant statement made by Freud: "I have dug the tunnel," Freud said, "others will have to let in the light."

Relationship between group therapy and individual psychoanalytic psychotherapy. Current theories of personality have been translated into group psychotherapy, as well as individual treatment techniques. Thus, in addition to those group therapists whose techniques derive from classical psychoanalysis and neo-Freudian concepts, other more culturally oriented therapists have patterned their techniques after the theories of Horney, Adler, Harry Stack Sullivan, etc. These theoretical differences are not minimal. Nevertheless, for the most part, the techniques employed in group psychotherapy are based on the fundamental principles of psychoanalytic theory. Thus, they include exploration of the patient's personal history, to make the unconscious conscious, facilitate the expression of repressed material, and ward off tendencies to act out; the use of free association; the interpretation of dreams; and analysis of transference phenomena and resistance, with the concomitant goal of helping the patient to work through his problems so that he may achieve creative change within himself and in his relationships with others. In groups which are governed by these psychoanalytic principles, the emphasis is on the individual, and his relationships with other members of the group are studied in the light of his own neurotic history, i.e., the hostility and aggression which characterizes his object relations; his self-destructive drives; and his values, goals, and aspirations as these emerge in his interactions within the group.

Therapeutic "philosophy." This interaction, besides setting up and developing shifting relationships within the group, also elicits support for individual group members, permits catharsis, encourages reality testing, applauds insight, deplores resistance, and stimulates the courage necessary to replace old defenses with more appropriate patterns of behavior. Usually, interaction does not have to be stimulated artificially. The different and conflicting psychodynamics of the character structures in the group generally provide

sufficient provocation for such interaction. Apart from such differences, it is assumed that patients treated within the group share a consciously held common goal (therapeutic help). As their personal motivations become clearer, they are better able to evaluate the extent to which they evoke positive or negative responses from other group members, and the personality changes which are necessary if they are to achieve the specific individual goals they are striving for.

All the aspects of the patient's life are important, both within and outside the group setting, whether they refer to the past or the present; and undue emphasis on any one aspect fosters resistance. Therefore, if a patient relates only to the group or does not relate to the group at all; only to the past or not at all to the past; only to the present or not at all to the present; only to his outside life or not at all to his outside life, this is interpreted as resistance. As he becomes aware of, and is able to resolve the resistance, he will become more flexible, his capacity for change will grow, and he will then be able to meet the challenge of new choices as they open up for him.

Practical Considerations

Suitability for group therapy. Every therapist must, of necessity, differentiate between those patients who may benefit from group therapy and those who should be excluded. Slavson, for example, thinks homosexuals will not be helped in a group. Others feel that certain types of patients with character neuroses or psychopathic tendencies are best excluded. The decision is usually based either on the individual's need for personal attention, or on his potentially destructive influence on group interaction.

In general, the following formulation is useful in determining suitability for therapy. In forming heterogeneous groups, certain readily identifiable types are best excluded: serious psychopaths who may be dangerous and who always covertly disrupt the group; alcoholics who cannot control their drinking and are repeatedly intoxicated at group meetings; patients with severe mental retardation, who can frustrate the group by holding it back; severe stutterers; paranoid patients who are likely to incorporate other group members into their systematized delusions; hallucinating psychotics; and hypermanic patients. In addition, according to some authors, the group is always potentially dangerous for cardiac patients, and they should be excluded from all types of therapeutic groups. However, other therapists have included patients suffering from a variety of psychosomatic disorders in therapy groups. Moreover, patients in the other excluded categories have been found to benefit from group therapy when they are assigned to homogeneous groups, whose members suffer from the same problems. Thus, in general, patients with personality disorders, psychosomatic disturbances, psychoneuroses, and ambulatory psychotics

can be considered as eligible for some type of group therapy, as can borderline cases of any type. It may be added, in this connection, that, contrary to Slavson's findings, increasing clinical experience has shown that homosexuals respond well to therapy in heterogeneous groups.

Patient orientation. Most patients will need some kind of advance preparation before entering a therapeutic group, although on rare occasions a patient does not want or need this preparatory period. For the majority, however, individual therapy sessions should be scheduled to prepare them for this experience. The number of sessions may be limited to one or include as many as a hundred, depending on the indications. Most of these patients will have questions to ask and resistances to be explored. Some of the typical questions asked, and some answers which may be given are listed below.

Questions. (1) Will the humiliation of exposing himself to others be too much to bear? (2) Can he trust his fellow patients not to reveal his confidences to people outside the group? (3) Will he be able to share the analyst's attention? (4) And, most important of all, will he lose his individual identity by becoming "one of a crowd?"

Answers. The following reassurances usually prove sufficient to allay these anxieties. (1) The patient need never reveal anything painful or embarrassing until he is ready to do so. (2) He need never reveal his last, but only his first name. (3) He may resume individual therapy whenever he feels he needs the therapist's complete attention, unless this is a resistive maneuver. The group provides a setting in which he can be helped by others and offer his help to them in turn. He enters voluntarily and can leave voluntarily. At the same time, the group experience can help the patient to understand that his need for the therapist's exclusive attention can be traced back to experiences in early childhood, and why these should be worked through. (4) As to the preservation of the patient's "uniqueness," it can be made clear that this form of group therapy aims at the analysis of the individual in interaction with others and that recognition of the individuality of each member in relationship to himself and in communication with others is the focal point of treatment. It should also be pointed out that all therapies are directed toward the individual's self-fulfillment, maturation, and the development of responsibility, to the concomitant removal of neurotic blocks and alleviation of psychic pain. Participation in a group may help the patient to find out to what extent his "problems" are the result of his excessive need for approval and acceptance from others, or to an excessive fear of rejection; at the same time he will learn to differentiate between morbid dependence and constructive interdependence.

Size and structure of the group, and over-all organization of the treatment plan. Therapists differ on the size of the group necessary for optimal

treatment; however, it is generally agreed that a group should include between 7 and 10 patients. Most therapists also favor heterogeneous groupings (that is, men and women from different economic and social levels, and with different psychopathology).

Most groups meet once a week for 1½-hour sessions. In addition to regular meetings, some therapists include alternate sessions in their treatment plan. The therapist is not present at alternate sessions; and patients usually meet at one another's homes, rather than the therapist's office. Therapists who object to these alternate sessions maintain that patients always need the supervising authority of the therapist so that they will not act out or inflict psychic harm on each other by amateur interventions and interpretations. On the other hand, advocates of the alternate session consider it to be most valuable. They believe that its inclusion in the treatment plan helps the movement of therapy toward cure: the patient proceeds from dependence on the therapist (authority-parental figure) to dependence on his peers (the group) and then to dependence on himself, hopefully striking a rational balance between independence and a wholesome interdependence on others. If this movement can be stated as one of the goals of group psychotherapy, it can also be inferred that the patient will be able to carry over these altered perceptions of himself and others into his personal and professional life.

Combined therapy. Some therapists make combined individual and group therapy a mandatory condition of group therapy. Others feel it must be one or the other—group at the beginning, individual therapy in the middle, and group at the end. Still others see group therapy only as a terminal phase of individual therapy.

The question is really an open one, depending solely on the individual patient. Some patients are not suitable for group therapy at all; others will always need individual attention in addition to it; some will need it rarely; and some may never have to see the therapist alone during the entire course of treatment, except for the initial interview. Here again, as in other instances, generalizations should be avoided. It is even possible that there can be too much of a good thing, i.e., too much therapy.

Psychoanalytic Treatment Techniques in Groups

The literature suggests that most analysts use much the same technique in the practice of group psychotherapy as they do in individual therapy. The various divergencies in technique and in the theoretical viewpoint of the different schools of psychotherapy have been discussed briefly above. The following discussion will deal specifically with the application of psychoanalytic principles to group therapy.

Basic design. As mentioned earlier, the basis for psychoanalysis in groups is interaction. Through interaction, the psychodynamics and psychopathology of each individual can be exposed to study. To foster

this interaction, the analyst provides the setting, and in part the climate and opportunity for the expression and examination of each patient's provocative tendencies. He can help differentiate the healthy provocations, which stem from a real desire to proceed with the process of mutual discovery and interrelatedness, from those which are unhealthy and seek to exploit the group. These less healthy provocative roles are bound to appear in time. Any given group of patients will include some exhibitionists, some seducers, and some manipulators. It will include patients who cannot stand silence; compulsive organizers, who cannot tolerate formlessness or waiting; compulsive socialites, who must always keep the party going. And each of these patients will contribute to the interaction of the group. The mildly hypomanic will be stimulating, the schizoid facile with unconscious material. Even patients with psychopathic trends, who try to exploit the group in order to express their irresponsibility, defiance, and moral laxity, tend to mobilize feelings in defense. And, in their own way, even the silent members stimulate by frustration, inviting attack when they do not respond actively to invitations to participate.

While group members interact, the analyst pursues the emergence of unconscious material until each patient begins to relate his interactive thoughts, feelings, and behavior inside and outside the group to an *unconscious dynamic structure* which has a history and which is capable of being changed.

Analysis of the transference. This design of psychoanalysis in groups is based on a belief that the analysis of the bilateral transference constitutes the group's most important work. In the group setting, the patient recognizes in time that his transference represents a projection, rather than objective reality; and he gradually begins to see that his acute feelings of anxiety, irritability, depression, fear, or helplessness are inappropriate to the present moment and stem from his early relationships with crucial figures in his environment.

The concept of transference is easier to state than to grasp and work through. The analyst knows that the pursuit of transference will have to be repeated over and over again until the patient can learn to spot, chart, control, and, hopefully, work through his transference patterns.

In this, the patient is helped immeasurably by the group, as different members bring into awareness shadowy transferences (to siblings, aunts, uncles, teachers, etc.) which are peripheral to the central transferences (father, mother). It is the emergence and analysis of these multiple unconscious misperceptions, central and peripheral, that give depth and breadth to the classical theory of transference and make psychoanalysis in groups such an intensive and dramatic process.

Group process. Unfortunately, to date, the group therapeutic process has defied attempts at accurate

second hand description. Verbatim transcripts, sessions recorded on sound or video tapes, novels, and radio and television reproductions—all of these have failed to communicate the actual experience. Only training and clinical experience can convey the essence of the group process. For one thing, a "typical group session" does not exist. All sessions are atypical, except for the fact that patients compulsively repeat their psychopathology. And, in fact, one of the values of group psychotherapy is that the patient's defenses and resistances are demonstrated over and over again in different situations and with different people. Nevertheless, some broad generalizations can be attempted.

1. Each therapist will, in some measure, set the tone or climate of the group, according to his own training and personality, his resources and limitations. If he tends toward rigidity, he will establish many formal rules to govern specific aspects of the patient's conduct inside and outside the group. Another therapist, whose attitude is *laissez-faire*, will lead a group in which almost anything goes. Some will make the group itself or group dynamics the focal point of attention; others will stress the expression of irrational feelings; and still others will keep working to elucidate the psychodynamics and psychopathology of the individual patient, using the traditional tools of psychoanalysis to analyze transference, resistance, the latent content of dreams, and free associations.

2. The only session one might call "typical" is the first meeting of the group, when most patients (including the therapist) usually feel anxious. Here a standard opening question might be: "How are you feeling at this moment?" or "Did anyone feel anxious about coming here today?" This will usually bring a response, momentum will build up, and experience has shown that this momentum will usually carry over to the next session unless the therapist has set a climate which is too rigid. Indeed, it is the therapist's job to let momentum build up, so that material is released, particularly associations which are usually repressed. From that point on, he uses whatever interaction is going on to point out resistances and transferences and to open doors to alternative, healthier ways of thinking, feeling, and reacting.

3. The therapist does not "direct" the group, nor does he interrupt with premature interpretations. Generally speaking, he intervenes when verbal acting out has continued too long, when a patient is blocked or has reached a plateau, when aggressive or sexual acting out or some form of self-destruction seems imminent. General recommendations about the type of intervention most appropriate in such cases cannot be made. Each situation must be handled according to the therapist's evaluation of the individuals involved, and each situation represents a test of the therapist's training, experience, and judgment. Although it is difficult to chart a typical session, it is possible to give one example which includes verbal acting out; the building of momentum and group interaction; the in-

tervention of the therapist, and his pursuit of analytic material with analytic tools, leading to insight and some working through.

Patient *A*, a bright, accomplished woman, told patient *B*, a relatively mature, sophisticated man, that she was sorry she had missed the alternate session at his home. Patient *B*, infuriated, accused her of insincerity: since she had just entered the group, she could not possibly have a real interest in him. The therapist did *not* intervene at this point to suggest the possibly healthy (reality-bound) motives behind *A*'s remark (curiosity, a desire to be accepted by the group, etc.). Instead he let the interaction continue. *A* kept protesting her sincerity; *B* continued to lash out at her, his fury mounting, until *A*'s frustration finally reduced her to helpless tears. Some members of the group defended *A* and expressed their anger at *B*. Some sided with *B* and heaped scorn on *A*. Some berated the therapist for not taking sides, and some were bored with the whole business.

Finally, one patient asked a key question: "Suppose *A* were in fact being superficially polite? What was so terrible about that?" *B* began, through free association, to relate the situation to other instances in his life when he felt he had been duped. On the other hand, *A* was asked why *B*'s angry suspicions could reduce her to tears, and she, in turn, used free association to connect the reaction with similar experiences in her past. By this time, the therapist was also taking part, as earlier dreams were recalled and fantasies added. Finally, *A* realized that, when she was in a tight spot (with her mother) she usually used tears to escape her mother's anger. And *B* admitted, in turn, that he could forgive and forget only when he had beaten his opponent (a brother figure) to his knees. The therapist suggested that transference had played an important role in governing the responses not only of *A* and *B*, but also of other members of the group, whether or not they had actively participated, and free association continued on this level.

This is only one of many instances which could be cited where a seemingly innocent remark set off a chain reaction that was valuable for the entire group. However, it was valuable because the therapist knew when not to intervene and when intervention was appropriate. This judgment is not so difficult as it may seem, if the therapist will remember that time must be allowed for the interaction to develop and that the goal for the patient is "working through" (the discovery of healthier, more reality-bound alternatives to self- and other-defeating patterns of behavior). Because of the support she received from group members, *A*'s ego strength increased to the point where she no longer felt she had to ingratiate herself with *B* or any other members of the group, including the therapist. The reality of peerage in the group diluted her misperception of copatients as mother substitutes, so that she was no longer so threatened by them and could be more appropriately assertive. It turned out that *B* had repeatedly rejected *A* as an interloping younger sibling; moreover, as *B* saw it, *A* was favored by the therapist (whom he perceived as a brother figure). Gradually, with the help of the group members, he became conscious of this subjective distortion in successive encounters. This awareness enabled him, though not without a struggle, to view the therapist objectively and to share him with his copatients. Outside the group, *A* and *B* were similarly able to overcome these transference problems.

Working through. The working through process begins almost as soon as the patient begins to understand his psychodynamics and psychopathology and becomes aware that choices are open to him other than those created by his history and dictated by his repetition compulsion. Termination of therapy is signalled by a decreasing tendency to make self- and other-destructive transference involvements and by an increased desire to establish realistic communication under circumstances in which formerly the patient might have reacted with indifference, withdrawal, rivalry, hostility, depression, defiance, despair, submission, or collapse. The recovering patient shows growing signs of developing his own independence and authority when he welcomes responsible interdependence and when he is able to maintain his own rational opinions while accepting the views of others. In termination, as in treatment, the group provides a good setting for concrete and objective observation of the patient's progress from three points of view: the patient himself, his fellow group members, and the analyst.

Profile of the Group Therapist

The competent group therapist should be thoroughly trained. He should have a capacity for empathy and the ability to recognize and resolve his own counter-transference problems so that he can cope with his patients' neurotic responses, accept the projection on himself of a variety of transferences, and avoid, whenever possible, counter-transference misuse of the patient. The therapist should be able to admit his mistakes and avoid compulsive leadership, yet accept the responsibility of his vertical, hierarchical position in the group. Although he pursues analytic techniques, he should avoid technical terms and dogmatic, authoritarian attitudes. When patients falter, he should remain optimistic, but yet realistic; and he should react to group members with thoughtfulness, simplicity, and honesty. He should be alert to, and, whenever possible, analyze resistance, transference, and neurotic alliances within the group, without disrupting the free movement and interaction of its members.

Finally, he should be skilled in handling individual crises which call for astute resolution, such as imminent sexual or aggressive acting out between members; in coping with a patient's immediate investment of copatients with frightening, catastrophic transferences; in anticipating suicidal attempts; and in dealing with scapegoating. Efforts should be made to deal with these situations within the group setting. However, the analyst should be ready, when his judgment prompts him to do so, to transfer the patient from one group to another, or into individual or combined therapy.

Suggested Cross References

See, also, Area C of this volume, on current theories of personality and psychopathology and, in par-

ticular, the section on psychoanalytic theory (Section 6.1, by Mack and Semrad). For a discussion of psychoanalytic treatment techniques, the reader is referred to Section 34.1 by Stewart and Levine on psychoanalysis and psychoanalytic psychotherapy, in this chapter.

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34.7 COMBINED INDIVIDUAL AND GROUP PSYCHOTHERAPY

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Introduction

Combining individual and group psychotherapy for the same patient has become increasingly favored as the treatment of choice for many types of patients. Treatment consisting of various combinations

of individual and group therapy is applicable, in most instances, regardless of the particular theoretical bias of the therapist or analyst. Combined therapy cuts across theoretical lines and is espoused by representatives of most schools of psychoanalytic and psychological theory. The combination of intrapsychic and group process modalities utilizes two potent therapeutic forces which can deeply affect the patient's psychological status.

History. This combined method of psychotherapy is relatively new. In 1950, Klapman commented on the "shuttle" process in individual and group therapy. Fried and Papanek were among the first to utilize and describe combined individual and group therapy, and Sager elaborated extensively on the treatment technique and underlying theory. Demarest and Teicher advocated the use of a different therapist for each modality. Cappon described a method whereby individual therapy of moderate duration is followed by a terminating period of group therapy. Other authors (Hulse, Greenbaum, Bieber, and Jackson and Grotjohn) have advocated varying emphasis on special applications of either the group or individual therapy aspect of the treatment procedure. In this context, one form of therapy (usually individual), is considered to be the major tool of treatment while the other (e.g., group therapy) represents the ancillary method. Berger and Stein have elaborated on the particulars of transference phenomena in combined treatment. Finally, Redl has pointed out that an individual approach to dynamics and therapeutics is not sufficient in itself.

Rationale. Both individual and group psychotherapy contribute to the therapist's understanding and ability to help a patient. Individual psychotherapy does this largely through intensive exploration of the one-to-one (dyadic) relationship, by means of introspection and self-search and an experience with a "good" parent, the therapist. Group therapy is effective, in turn, because it provides opportunities for study of the patient's multiple transferences, identifications, and intragroup concepts and actions and because it provides an experiential framework for such change. Thus, both are potent therapeutic instruments for the clarification of those basic misconceptions of self and world which are the psychological source of much aberrant behavior.

Since a complete account of the many varieties of combined individual and group therapy practiced by psychotherapists is beyond the scope of this section, only concurrent therapy—that is, simultaneous individual and group treatment, usually with the same therapist—will be described in some detail. However, the techniques, theory, assets, and potential disadvantages of this specific form of combined therapy can be extrapolated to other types of combined treatment situations. Similarly, this form of combined therapy in particular and combined ther-

apies in general are readily adaptable to hospital, clinic, and private practice.

The Concurrent Treatment Technique

Basic formulations. Patients who have been in individual treatment for varying periods of time may have group therapy added to their therapeutic regimen. Groups usually include from 6 to 10 patients, who meet with the therapist once a week for a 1½-hour group session (some groups meet for an additional weekly "alternate" session, without the therapist).

In individual sessions with the patient, the therapist should avoid any expression of his opinion of the dynamics, symptoms, or actions of other group members, lest the patient assume that he is discussed with others in a similar fashion. If, on the other hand, such confidences lead the patient to feel that he and the therapist are cohorts, and that this makes him "superior" to the rest of the group, the effect on his therapeutic progress may be equally detrimental.

The group experience and the productions it stimulates should be treated in individual sessions in much the same way the therapist would treat other material from the patient's current life. A certain separation—and yet an obvious relatedness—between the two forms of treatment exists and has certain advantages. The kind of material to be brought to one type of session from the other depends on the therapist's sensitivity in assessing the patient's readiness to deal with anxiety-producing material. Obviously, unless his action is based on sound therapeutic considerations, reference by the therapist in group session to the "secrets" a patient has revealed in individual treatment would, at the least, close off the patient's communications. Concomitantly, if the patient feels that every time he says something meaningful in the group, the therapist will press him to elaborate on the matter in the following individual session, he will soon become a nonproductive group member. Yet, there is much material that can, and should, be exchanged between the two sessions.

Role of the therapist. The therapist's position as group leader is based on the assumption that he is not a patient. After the first few sessions, his professional training and title are not sufficient to enable him to maintain his position as leader. Rather, his continued leadership will depend on his skill and objectivity in distinguishing his role from that of the patient. In the group, the therapist's true reactions and values will, inevitably, become more apparent to his patients than would be the case in individual psychotherapy. Obviously, it is often necessary to be spontaneous; however, the analyst should screen his remarks and reactions on the basis of their therapeutic usefulness.

No guidelines can be set down as to how to conduct combined therapy. Group and individual sessions are

best conducted in the therapist's characteristic style, based on the theoretical system he has adopted. However, flexibility in technique and theory is important if the therapist is to deal effectively with the wide range of problems which will arise and which he might not normally encounter in clinical practice.

Preparing the patient for the group. Most patients readily accept the idea of entering a group, owing in part to positive transference, i.e., their "faith" in the therapist and his recommendations. And, of course, most have heard about group therapy or analysis. Patients who ultimately accept the therapist's recommendation of group therapy frequently show good insight into their problems during these preliminary discussions. Those who respond negatively to this suggestion often do so because they resent an intrusion into the uniqueness of their relationship with the therapist. Paranoid patients who have irrational fears regarding the group which have become incorporated into their system of delusions will also resist any attempt on the part of the therapist to induce them to enter group therapy.

The patient's reaction to the therapist's recommendation of group therapy may not be immediately evident. However, in the meeting which follows the session in which the subject is first broached, typically, the patient will produce one, or several, of the following reactions. (1) What appears to be a rational acceptance of the idea—and, concurrently, a lack of productivity during the treatment session. If this "blocking" is atypical, it is, of course, significant. (2) Overt anxiety. (3) Expressed feelings of rejection and/or anxiety, based on some variation of the feeling that the patient is being excluded from a unique relationship with the therapist. (4) Curiosity about the group experience and an eagerness to begin group psychotherapy, which may represent a mature reaction or a neurotic one. (5) The patient may declare his firm refusal or reluctance to join the group (which was not expressed previously). In short, the suggestion of group therapy may have stirred up latent anxieties or resistances and mobilized defenses.

For the most part, however, resistance in individual sessions which is due specifically to assigning the patient to a group is usually overcome within a few weeks. In fact, the majority of patients report a feeling of relief after their first group session. It was different from what they had expected, and not as frightening; or they actually enjoyed the experience. Many have also expressed these feelings in the group and, possibly, ventilated their initial anxieties there as well.

Nor does the introduction of group sessions to a patient in individual therapy appear to lessen the intensity of his transference reactions. As is true of other intense relationships in his life, the patient is

able to react to the therapist differently in different situations.

Indications and contraindications for combined treatment. Instead of selecting patients for combined therapy because they have done poorly or reached a "stalemate" in individual treatment, many mental health workers now regard combined therapy as the preferred form of treatment for a great variety of patients.

Almost any type of patient who is suitable for individual or group psychotherapy may profit from combined treatment. As pointed out above, the crucial point is not so much *who* as *when*, in terms of the stage the patient has reached in individual treatment. Thus, no patient should be induced to join a group at a point in treatment when he will experience this as a serious rejection and a loss of the therapist's favor. This is true, in particular, for suicidal patients. (At the same time, however, if they become suicidal subsequently, the group can often be most helpful to them.) This form of treatment may also be contraindicated for certain patients with marked hostility who act out much of their anxiety. Such patients often find the group experience very frustrating and may make life extremely unpleasant (and nontherapeutic) for the other group members. Fortunately for their copatients, if not for themselves, they do not tend to remain in combined treatment for long.

Therapeutic Process

At first, recordings of the same patient in both individual and group situations may well sound like two different patients, working with separate therapists. Only after careful attention to the latent content of the material can one see the connections between one form of therapy and the other, and how these reflect different aspects of the same individual. As therapy progresses, the relationship between the material covered in each setting emerges even more clearly: although frequently they do not appear to be related on a conscious level, the unconscious parallel lines of therapy begin to converge. As therapy proceeds, these lines approach each other more and more closely, until the patient arrives at an actual insight and undergoes a major change in conceptualization and behavior, or until his altered underlying concepts effect spontaneous changes in his behavior without the formal verbalization of an insight.

One of the most fascinating aspects of combined group and individual therapy lies in the fact that it enables the interrelationship of insight and interaction to facilitate change in the patient. Insight is generally considered to be the major means of producing beneficial behavioral changes in patients in analytic types of individual treatment; interaction is believed by many to be the major instrument of group therapy. Yet both insight and interaction are

continuously operative in both forms of treatment, even though the therapist may emphasize one rather than the other.

Expressed differently, much of human behavior involves the individual's adaptation and reaction to others. Significant interactional experiences may or may not have been formulated into concepts. When concepts have been formulated, these must be retained on a conscious or unconscious level. In these cases, individual psychoanalytic therapy can be very useful. When significant experiences have not been conceptualized, the experiential aspects of group therapy often lead to more constructive results. When they are used in combination, the value of each treatment modality may be enhanced.

Suggested Cross References

Detailed expositions of the technique and theory of individual and group treatment are set forth elsewhere in this chapter. See, in particular, Section 34.1 on psychoanalysis and psychoanalytic psychotherapy by Stewart and Levine, and Section 34.6 on group therapies by Wolf.

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34.8 FAMILY THERAPY

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Introduction

Definition. Family therapy derives from two fundamental propositions. First, the family is conceptualized as a behavior system with unique properties, rather than the sum of the characteristics of its individual members. Second, it is postulated that a close interrelationship exists between the psychosocial functioning of the family as a group, on the one hand, and the emotional adaptation of its separate members, on the other. Family therapy has evolved from these propositions as an approach to the link between disorders of family living and the disorders of individual members of a family by means of dynamically oriented interviews of the entire family population. This is based on the assumption that these individual emotional difficulties stem from disturbances in the over-all interaction of the family. More specifically, then, treatment focuses on the family as a natural biosocial unit and encompasses all the persons within that unit (including grandparents; extended kin; and others who are not consanguineous, but who, nevertheless, play a significant role in family life—as well as the "crucial" figures in the family organization).

Goals of treatment. Broadly conceptualized, family therapy reflects this theoretical orientation in that the family therapist seeks to relieve emotional distress and promote mental health in the family as a group, as well as in its individual members. Accordingly, the goals of treatment may be delineated as follows: (1) to resolve or reduce pathogenic conflict and anxiety within the matrix of interpersonal relationships; (2) to enhance the perception and fulfillment by family members of one another's emotional needs; (3) to strengthen the immunity of the family against external and internal crises; (4) to promote more appropriate role relations between the sexes and between the generations; (5) to strengthen the capacity of individual members and the family as a whole to cope with destructive forces from within, and from the surrounding environment; and (6) to influence family identity and values so that they are oriented toward health and growth.

History of Family Therapy

When psychotherapy is viewed in historical perspective, one can detect a progressive change in orientation. Thus, the emphasis on individual symptoms and conflicts has shifted to the evaluation of total personality functioning, to the relationship between

personality development and role, and, finally, to the significance of patterns of family and community organization as factors in the pathogenesis of mental illness. The development of family therapy as a treatment method (and its subsequent contribution to community mental health programs) was a logical consequence of these progressive changes in orientation. At the same time, if the widespread implications of these therapeutic innovations and the factors which propelled them into being are taken into consideration, the evolution of family therapy can be attributed to a number of confluent forces. These include (1) revolutionary transformations in traditional family patterns, induced by social change and accompanied by increasing signs of disordered human relationships both within and outside the family; (2) recognition of the validity of the principle of contagion of emotional disturbance and, concomitantly, of the direct relationship between social and emotional disorder; (3) greater awareness of the limitations of conventional methods of diagnosis and treatment as they relate to the individual patient; (4) new developments in the behavioral sciences, specifically in ego psychology, small group dynamics, social psychology, anthropology, and communication; and (5) the changing role of the psychotherapist in the community.

Treatment Method

At present, family therapy is still in an experimental stage. Consequently, its principles are being applied in diverse ways to a wide range of family problems by therapists who frequently differ in basic orientation. Nevertheless, some universal principles can be formulated.

The presenting problem. An evaluation of family interaction and of the behavior of its individual members will frequently disclose evidence of long standing pathology. Nevertheless, as long as the emotional functioning of the family retains some semblance of balance, there is no urgent need for psychiatric referral. The timing of the demand for professional help coincides with the immediate, dramatic impact of a decompensation of the previous state of balance, which, in turn, results in a distressing family conflict. Critical upset of the emotional equilibrium of the family as a group is often a significant indication of the psychiatric illness of one, or several, of its members.

The family members feel that something is deeply wrong, but they do not know what, or why; nor do they know how to rectify the situation. Customarily, one of the members is pushed forward as the sick, disabled one. However, in actuality often several and sometimes all of the members of the unit are disturbed albeit in different ways and to different degrees. What the psychiatrist faces then, is a cluster of psychiatric illnesses which involve interrelated and interlocking processes.

Whatever the presenting complaint, and regardless of which member is labeled "the sick one," the entire family is invited to come in and "talk it over." Subsequent therapeutic interviews may be conducted either in the therapist's office or in the patients' home. Traditionally, families are seen once or twice a week for about an hour.

Intake and diagnosis. For obvious reasons, the more traditional intake and diagnostic procedures may be unsuitable. It is preferable, instead, to initiate contact with the whole family in a fresh, unprejudiced way, without having obtained historical data beforehand from its individual members. As the group wrestles with its immediate distress, a kind of living history emerges which is apt to be more relevant and meaningful than the data elicited through traditional history-taking procedures.

In the course of the "therapeutic struggle," and particularly during induction, when anxiety may be at a high level and defenses relatively ineffective, selected historical fragments are volunteered by individual members of the family and consensually validated or invalidated by the group. The evaluation of these spontaneous historical disclosures constitutes a meaningful experience for the therapist. Factors of pathogenic significance which derive from the past can be identified in the contemporary emotional crisis of the family, although they may now be organized and expressed in a different way. In fact, the importance and relevance of this historical information hinges on the ability of the therapist to place it in proper perspective as an active part of the present. This is not the "dead past"; rather, it is the "live past" of the family, which poignantly illustrates the interrelationship of family dynamics and individual psychiatric disorder.

It follows, then, that family diagnosis and therapy are interwoven, parallel activities. The heightened intimacy which characterizes the family treatment interview enhances the therapist's insight into the pathogenesis and varied symptomatology of emotional disorder, just as it increases his understanding of the dynamics of behavior.

Initial interview. Diagnosis and therapy begin with the therapist's first face-to-face contact with the family. At the outset, families present themselves in extraordinarily diverse ways. Some hide behind a facade or are self-protecting and withholding. Others seem tense and troubled or are frantic and panicky; still others act as though they may "explode" at any moment. The therapist formulates his initial observations of the personalities of the various family members, their way of interacting, their adaptation to family roles. How do they enter the treatment room? Who sits next to whom; who looks toward whom; who looks away from whom? Who speaks; who listens? Who smiles; who frowns? Typically, the family arrives at the initial therapeutic sessions in a

state of tension, apprehension, and frustration. The therapist quickly senses the emotional climate, and the quality and intensity of the appeal the members of the family extend to one another, and to him. Who wants what, from whom? Do they deny and disguise their needs or express them in an urgent, coercive way? Have they simply given up and, in a mood of resigned apathy, ceased to ask for or expect anything from anyone? Above all, the therapist notes the existing confusion, distrust, and fragmentation of family relationships.

During this initial phase of therapy, what one parent conceals, the other may reveal. What both parents conspire (consciously or unconsciously) to hide, the child may blurt out. When one member describes his experiences or reactions in a distorted manner, these distortions are often corrected by another. When certain anxiety-filled material is touched upon, the family may engage in a silent pact to avoid these areas. Sooner or later, however, such denials are broken through. Family life, by its very nature, is inimical to the guarding of personal secrets. It is the clinician's responsibility to distinguish appropriate efforts to maintain privacy from pathogenic secretiveness, and to respect the former while he supports the family's attempts to pierce the latter.

Role of the therapist. The function of the therapist is multiple and complex and calls for a flexible use of self; for the family, through all its parts, selectively interacts with, absorbs, and uses his influence in a variety of ways. Depending on the changing patterns of conflict and anxiety, one or another member identifies with, or withdraws from, the therapist. These partial joinings and separations reflect elements of transference, fantasy and reality. The therapist, in turn, must shift his influence from one member of the family to another, following the path of the core of the most destructive conflict. In this way, he is able to stimulate increased awareness of the true nature of the emotional and social disturbances which confront the family unit and, concomitantly, to stimulate the unit to engage in the progressive process of resolving related conflicts.

The family unit possesses a "body," "mind," and "spirit." It has both depth and surface expression, an inner face and an outer face. Initially, its members wear a mask, but when the mask is removed, one can glimpse the inner structure and conflict experience of the family. To do so, however, the therapist must be alert to his own emotional idiosyncracies. Only if he has achieved such self-awareness will he be able to distinguish clearly between his own private reactions to the family and his objective evaluation of their behavior. Obviously, the therapist's image of the family, as opposed to the family's image of itself, is of crucial diagnostic importance; the objective validity of that image will depend on his ability to interpret the accuracy and appropriateness of the emotional

reactions the family evokes in him within the treatment setting.

Course of therapy. Briefly stated, family therapy emphasizes the principle of emotional contagion in family process and the constrictive consequences of fear, guilt, and hostility. The therapist's efforts are guided by his awareness of the pathogenic conflict and means of coping with each other, as well as the transmission of love and positive strengths.

On the basis of these principles of transmission, family therapy clarifies the significance of multiple interactional disturbances among the members of the family group. In addition, family therapeutic techniques permit evaluation of individual adaptation as well as over-all family development. Delineation of the distortions of interactional patterns permits assessment of the relationship between the emotional functioning of the family group and the potential emotional growth of its individual members.

Of necessity, family therapy usually begins with superficial interpretations and intervention, but it can attain greater depth. In fact, the competent therapist can achieve access to any level of psychological functioning he feels must be investigated to resolve the problems of a particular family. The success with which he elicits data and explores components of the experience of the family group in depth will depend, ultimately, on the efficacy of his therapeutic techniques and the appropriateness of his therapeutic goals.

Above all, the therapist seeks to transpose intrapersonal conflict and anxiety to the level of active interpersonal exchange. To this end, it is his responsibility to stimulate interaction among the family and to effect meaningful emotional interchange. As individual members of the family begin to feel closer to the therapist, they tend to establish closer relationships with one another. In the course of his efforts, the clinician integrates and applies his knowledge of the psychodynamics of human behavior, of his therapeutic function, and, finally, of his self-awareness, in special ways. He is a participant in the family interaction, as well as an observer. His role is a dynamic one; thus, he moves directly into family conflict to engage in and influence interactional processes, withdraws to objectify his experience, and then moves in again. Weighing and balancing the healthy and sick forces, he supports relatedness and health while counteracting alienation and sickness.

Frequently, in the early phase of therapy, the family engages in a vicious cycle of attack, defense, and counterattack; some members consistently hurl accusations and blame others for their "plight"; the "martyrs" in the group express their righteous indignation. Or, conversely, there may be a shared apathy and depression. The therapist evokes increasingly candid disclosure of the currents of conflict and, concurrently, attempts to temper its destructive fea-

tures: sniping and bullying, evasions, denials, and diversionary tactics are firmly challenged. The tendency to bicker over trivial, irrelevant external issues as a form of resistance is counteracted. The therapist tries to foster empathy among family members; he invites them to make an honest effort to understand one another's needs. Step by step, as the therapist exposes and challenges denials, displacements, and rationalizations, the essential conflicts emerge in clearer perspective. And, as this occurs, the therapist elicits greater cooperation from family members in the shared search for solutions, or more appropriate compromises, to these conflicts.

Concomitantly, the therapist seeks to neutralize prejudicial assault and scapegoating. One part of the family is mobilized to attack and sacrifice another part. If he is able to expose and counteract this special defense against anxiety, the therapist can interpret the underlying conflict in terms of its place of origin in the family group; that is, the conflict can be traced back to its primary source. During this phase of therapy, one member assumes the role of punisher; another that of victim and scapegoat; a third emerges as the "healer" and peacemaker in the family war. The therapist joins forces with those family members who represent the "healing" trends. As both the family and therapist begin to distinguish between areas and forces of conflict and coping, it becomes necessary to explore in greater depth the interplay between group defenses and individual defenses against anxiety.

To this end, the therapist uses confrontation as a therapeutic tool in a variety of ways. He penetrates and undermines pathogenic defense mechanisms. He exposes certain defenses as ineffective, inappropriate, and harmful and thereby fosters the substitution of healthier means of coping with anxiety. He encourages more meaningful communication among family members by interpreting the nonverbal aspects of communication, as reflected in gesture, mood, and expression. This procedure serves to counteract the tendency to use words to conceal rather than to reveal, to substitute empty verbal expressions for genuine emotional interchange. In brief, the family is confronted with the conspicuous inconsistencies and contradictions between verbal utterance and physical expression which characterize their relationships.

The informal atmosphere of the treatment setting and the therapist's periodic attempts to inject some humor into the situation are effective means of piercing pathogenic defenses, for these factors ease tension, increase participation, and reduce resistance. On another level, however, the therapist protects the family against interpersonal danger. Through his very presence, he offers the necessary reassurance against the threat of explosions of anger, loss of control, panic, and disorganization. When it is needed, he offers acceptance, understanding, affirmation of

worth, and direct satisfaction of valid emotional needs, first to one member, then to another. As a general rule, weaker members are supported against attack from stronger members.

At still another level, the therapist provides the family with elements of emotional imagery of themselves and of others, which had been absent previously. Moreover, he continually provides family members with new opportunities to test and retest their perception of one another and of the family as a whole.

Finally, family therapy is an educational process, and the therapist serves as a personal symbol of family health. Accordingly, he attempts to shift the focus of discussion from disagreements about who is right and who is wrong, who is sick and who is well, to broader issues. Who is receptive to others; who tries to advance the further growth of both the family and its individual members? Step by step, barriers of isolation, aggression, and guilt are penetrated. The therapist encourages mutual concern among family members and is alert to expressions of affection and the desire for true closeness. When preexisting alignments have been disrupted, and "splits" repaired, the way is opened for new designs for family living which offer mutual satisfaction and a greater potential for the future growth of the family as a whole. The family members discover a new sense of loyalty which enables them to identify with and support one another's development.

Indications and Contraindications

Family therapy can be applied as the sole method of treatment, or in conjunction with other techniques, to a wide range of behavior disorders. Thus, it has proved effective in the treatment of psychosis, neurosis, and character disorders, especially the acting out type. This type of therapy fosters the understanding and resolution of emotional illness which provides secondary gains. And, as might be expected, it is uniquely effective in disorders involving marital conflict or conflict between children and parents. On still another level, it can be a useful technique for involving a disturbed and resistant family member in a therapeutic experience. In addition, it can be of value at various stages in the individual psychotherapy of a specific member of the family, in that it may help to decrease the resistance which has hampered his therapeutic progress. Finally, in this connection, family therapy may facilitate the reintegration of a patient within his family group in the final phase of his personal therapy, or following (or during) hospitalization for psychiatric illness.

Contraindications to family therapy are few, and these are relative rather than absolute. One such contraindication is evidence of an irreversible trend toward the breakup of the family. Viewed realistically, for some families, it may be too late to re-

verse the process of fragmentation. Another contraindication is the dominance within the group of an unyielding destructive motivation. If, for example, one parent is afflicted with an organized, progressive paranoid condition, is an intractable psychopath, or a confirmed criminal, family therapy may be contraindicated. It is also contraindicated if either or both parents are unable to attain a sufficient level of honesty, and if their lying and deceitfulness are deeply rooted and irreversible. Another possible contraindication is the existence of an unyielding cultural or religious prejudice against this form of treatment. Finally, organic disease or other serious disability of a progressive nature, which precludes the effective participation of one or more members, may be a contraindication to family therapy.

Suggested Cross References

For a discussion of the relationship between family factors and behavior see Section 4.3 by Fleck on the role of the family in psychiatry, in Chapter 4 on basic sociocultural sciences (Area B). The role of family factors in the etiology of psychosis (specifically, schizophrenia) is explored at length by Weiner in Section 15.3 in Chapter 15 on the functional psychosis (in Area F, on the nosology of psychiatric clinical syndromes).

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34.9 MULTIPLE THERAPISTS

JACK L. RUBINS, M.D.

Introduction

In the therapeutic situation described herein more than one individual assumes a structured, therapeutic role toward one or a group of patients.

Treatment techniques. A variety of techniques has been used. In addition to the therapist, there may be a silent observer who plays a definable, dynamic role in relation to the treatment situation but who, in fact, has no further responsibility than to take notes and report to the therapist. There may be two therapists (dual therapy), i.e., a psychiatrist and a psychologist (or social worker, nurse, or student), of either the same or opposite sex. Both therapists may be present at the same treatment sessions, or they may alternate. They may be assigned the same degree of responsibility, activity, and role, or they may assume different roles and functions. There may be three therapists (triple therapy), each with a different function. For example, one may be more active than the others; one may handle intragroup situations while the others focus on environmental problems; and one may handle material elicited in the dynamic treatment situation while the others deal with material relating to the patients' extratherapeutic existence. Finally, several psychiatrists may treat one, or several, patients, in a variation of the therapeutic team approach, each being free to function in his own way.

Just as the number of patients being treated simultaneously by several therapists may range from a single patient, to a small group, to a large group, the form and structure of the group may also vary: all the members may be the same sex, or they may be of different sexes; they may all be about the same age, or their ages may vary; they may represent similar and/or widely diverse clinical entities; the patients in the group may be related, i.e., by marriage or as members of the same family, or they may have been strangers previously.

On the other hand, the criteria used in the selection of patients for treatment by multiple therapists may apply to the type of patient or problems. Such groups would be restricted to children or adolescents with similar problems, such as delinquency, acting out, sexual, or school problems. Similarly, membership might be limited to geriatric patients, to schizophrenics, to patients with various other forms of psychosis, or to patients who share certain specific problems in common, e.g., extreme aggression or mutism. By the same token, psychoneurotics whose illnesses have taken the same form, e.g., obsessive-compulsive,

pulsives, may be assigned to the same group, as may those patients whose situations are analogous in other respects, e.g., lack of progress in individual therapy.

Rationale. The rationale for the use of multiple therapists and for the functions of therapist and co-therapist will vary, depending on the cotherapist's role in the treatment situations, e.g., as observer or equally active. In general, however, the use of several therapists is considered to serve the following purposes: (1) it may accelerate or enhance the effectiveness of therapy; (2) a cotherapist may facilitate the activity of the therapist by providing him with emotional support; and (3) it may serve as a training experience for a cotherapist. The observer-cotherapist, in turn, performs specific functions which are considered to implement these aims. (1) He adds an extra dimension to the observations and acumen of the therapist. (2) The cotherapist may keep records for therapeutic purposes, such as furnishing feedback to the group. (3) His efforts may foster research. (4) The cotherapist may be assigned to supervise the therapist. (5) Finally, the cotherapist(s) may be aware of elements in the behavior of the group which have escaped the therapist's attention and which can then be discussed after the group meetings.

Advantages. When the therapist and cotherapist assume equal responsibility in the treatment situation, their relationship produces changes in the dynamics of the therapeutic process. It is these changes which justify the use of this technique. Thus, from the Freudian viewpoint, the use of multiple therapists is considered to produce the following advantages. (1) With respect to the individual patient, transference feelings develop more quickly and are more accessible to observation and analysis. (2) Furthermore, transference feelings exhibit greater variation. The patient reacts to each therapist as a transference figure. In addition, he reacts to the two therapists as a couple. Finally, he may have transference feelings toward the other patients in the group as well. (3) Such feelings can be split. Thus when the therapists are of opposite sex, thereby reproducing the family constellation and evoking male- and female-associated attitudes, transference phenomena in patients with problems of sexual identity or in children whose family relationships have been inadequate may be particularly significant. On the other hand, when the cotherapists are of the same sex, or they participate in alternate sessions, they may be perceived as a good-bad emotional constellation, so that one therapist is seen as an ally and the other as an enemy. In such cases, hostility can be diffused and thereby diluted for easier management. (This is of special value with paranoid or depressed persons.) (4) Learning is facilitated, and communication enhanced. And, of particular importance for marital and family therapy, both patient and therapists

achieve a more complete and accurate understanding of the patient's personality. (5) Blocking and resistance are avoided or, at least, overcome more easily. (6) Finally, the termination of therapy is less "traumatic."

In addition to these dynamic effects, certain practical advantages are cited: for instance, this therapeutic method allows for vacations or illness of a therapist without interrupting therapy; more than one immediate source of help is available (e.g., for suicidal patients); attendance at alternate sessions represents a time saver, in terms of his professional commitments, for each therapist; the method furnishes emotional support for the therapist who is anxious about leading a group or fearful of making mistakes or of being attacked by patients; and, finally, it is claimed that this method provides "on-the-job" training, so to speak, for the cotherapist.

Limitations. Nevertheless, the use of multiple therapists has obvious limitations which must be considered. These include (1) the cost of the services of several therapists, as well as the additional time required and the administrative problems involved; (2) the danger of creating undesirable transference relationships, or of splitting the group through identification with one or the other therapist, or of one or the other therapist being drawn into a family conflict; (3) the problems arising from neurotic attitudes of each therapist toward the group or toward each other (e.g., conflict in role, leadership competition and rivalry, problems involving the prestige attached to senior as opposed to junior status); and (4) the danger that the anxieties of one therapist might undermine therapy.

In brief, it is generally agreed that the use of multiple therapists requires a high degree of competence, maturity, flexibility, emotional stability, and mutual trust on the part of the individuals involved.

Suggested Cross References

The reader may supplement his understanding of this treatment procedure by referring to the other sections on group psychotherapy in this chapter and, in particular, to Sections 34.8 and 34.10 on family therapy and psychodrama, respectively.

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34.10 PSYCHODRAMA

JACK L. RUBINS, M.D.

Definition. (Psychodrama is primarily a form of group psychotherapy which involves a structured, directed, and dramatized acting out of the patient's personal and emotional problems, as well as his immediate group interaction problems, using definable techniques.) Although originally promulgated by Moreno in the specific context of his psychodramatic and sociometric theories, it has since been modified by him and by others, using different psychological (Jungian, Pavlovian, hypnotic) and psychoanalytic (Freudian) theories.

Forms of psychodrama have been used with children and adolescents; with schizophrenics; with neurotics showing motor pathology, such as stuttering or ties; with individuals who have marital and family problems; with homosexuals and similar patients, as a reconditioning-behavioral technique; and with professional actors who wish to achieve greater freedom of self-expression. In itself, however, psychodrama is not acting in the theatrical sense. The goal of psychodrama is self-realization, not the development of effective facades.

Underlying principles. Psychodrama is based upon the underlying principles that action and/or dramatic psychotherapy permits greater depth and breadth of awareness than is obtainable through verbal means. It includes such procedures as catharsis, abreaction, free association in acting, and the "encounter" between persons. Interpretations may be used but are not often needed. The major goal is not insight. Rather, psychodrama seeks to promote spontaneity, total perception of unhealthy responses (both verbal and nonverbal cognitive patterns), a more accurate perception of reality, facilitated involvement with other persons, and learning through experiencing.

The Elements of Psychodrama

The group. The group (i.e., the audience and the participants) shows a certain configuration of personalities in patterns of interrelations and behavior. This group can be described by means of a sociogram (the diagram portraying the forces of attraction, repulsion, and indifference in the group), which serves as the guide for the therapeutic process in drama. The group must be moved toward acting out through a warm-up, which may take one of three forms: (1) the cluster warm-up, in which different discussion groups merge into a single predominant one; (2) the association warm-up, where a chain of ideas leads to a final theme; and (3) the directed warm-up, in which an already familiar topic is introduced for portrayal.

The protagonist. The acting subject (the patient), who is described as the protagonist, must be motivated by some need, such as relief from anxiety or frustration in a real-life situation; desire for mastery; or the wish for self-realization. Resistances to participation may be due to private fears, social or ethnic conflicts, or symbolic problem areas, and they must be overcome by specific techniques.

The director. The director, or therapist, leads the production in accordance with clues provided by the patient, instructing all the performers as to their roles. Moreover, his own role will vary with the dramatic situation; more specifically, he must constantly change his role so that the patient's maladaptive patterns can be brought out and corrected. The relationship between the patient and therapist is described not only as transference, but also as telic; that is, the patient has a direct, primary, intuitive feeling about the immediate behavior of the therapist.

Auxiliary egos. Auxiliary egos are other persons in the group who act out the roles assigned to them by the director, in order to intensify the impact or clarify the meaning of the therapeutic situation. These persons represent the patient's perceptions of the significant people in his environment. The drama may focus on a special area of functioning such as a delusion or hallucination, a dream, a family or community situation, a symbolic role, an unconscious attitude (e.g., oedipal), or an imagined future situation.

Techniques. Finally, the fifth element of psychodrama is the use of various techniques to advance therapeutic progress, productivity, and creativity. Important among these are the soliloquy (a recital of hidden thoughts and feelings, together with overt ones), role reversal (the exchange by the patient of his role for the role of a significant other persons), the double (an auxiliary ego acts like the patient), the multiple double (several egos act as the patient did on different occasions), and the mirror technique (an ego imitates the patient and speaks for him when he cannot act for himself). Other modifying techniques include the use of hypnosis (hypnodrama), thiopental sodium (Pentothal sodium), alcohol, insulin, or pentylenetetrazol (Metrazol) to modify the acting behavior in various ways.

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Chapter 35

Organic Therapies

35.1 TRANQUILIZERS IN PSYCHIATRY

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Introduction

Historical background. A paper presented by Delay, Deniker, and Harl at the centenary meeting of the Société Médico-Psychologique in Paris, on May 26, 1952, entitled, "The Therapeutic Use of a Phenothiazine with Selective Central Action (RP 4560)," began a new era in the treatment of psychiatric disorders. Although Hamon and his co-workers had used chlorpromazine previously in conjunction with barbiturates for manic excitement, their relatively mediocre results did not anticipate the potential of this series of compounds. A short time afterward, in 1954, Kline introduced rauwolfia for the treatment of psychiatric disorders. Since then, the use of pharmacological agents in psychiatry has been the subject of several national and international conferences.

The Neuroleptic Drugs

Definition. While these compounds have been collectively labeled "tranquilizers" (or "major tranquilizers"), perhaps as a result of initial observations of their effect on extremely disturbed patients, it should be borne in mind that this misnomer obscures their real activity. The term "neuroleptic" would seem to be more appropriate, based on the following criteria: (1) marked sedation, without sleep; (2) effectiveness in the most intensely agitated and excited patient; (3) progressive disappearance of symptoms in acute and chronic psychoses; (4) extrapyramidal reaction; and (5) subcortical site of action.

Action. The neuroleptic drugs not only relieve anxiety and calm the psychotic patient, but more specifically influence the acute or chronic psychotic process. These antianxiety and antipsychotic effects are not necessarily synchronous in action, although this is possible. It is equally possible to observe one without the other. Whether or not this is a transitory

or a permanent effect is not the issue. Treatment with therapeutically active doses over a period of time results in the gradual recession of various symptoms in a majority of patients.

General considerations. Pharmacotherapy in psychiatry cannot be considered in a vacuum, in the context of "one pill—one patient." Innumerable variables enter into the total field surrounding selection, prescription, administration, and psychodynamic meaning to the patient, as influenced by the family and environmental pressures. Secondary anxiety may develop in response to side effects, which, if misinterpreted, may be seen as a clinical aggravation and lead to increased dosage. This, in turn, can increase anxiety, eventuating in a panic state. The homosexual patient may view chlorpromazine as a drug that will sedate him to the point where "his defenses are down." Some will feel that the extrapyramidal reaction is equivalent to paralysis, which they imagine as being permanent, even leading to death. The nursing staff, or relatives, must be indoctrinated into the nature and reasons for chemotherapy; otherwise, in compassion for the patient's apparent "suffering," they may "forget" one dose or more, if not all of the medication. Finally, the unconscious dynamics of the treating psychiatrist become important, since he will prescribe as a function of his feelings about drugs and psychiatric treatment. If wholly psychoanalytically oriented, and forced by the pressure of circumstances to order chemotherapy, ineffective doses will be used; this will tend to prove that "drugs are not good." If the opposite orientation is true, the psychodynamics of a particular drug reaction will not be understood and appropriate treatment will also be without effect.

Drugs must be used in effective doses, based upon previous clinical investigations and personal experience. Small amounts should not be given because the psychiatrist is "afraid of side effects." It would be more advisable, perhaps, for the psychiatrist to become aware of his own feelings regarding treatment in general. The prescription of drugs for psychiatric disorders must be made by a qualified medical practitioner only and requires continuous clinical observation. This cannot be delegated to or be done on

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behalf of a third party. Dosage must be regulated frequently, at times on a daily basis, and toxic effects must be treated immediately in order to avoid any serious consequences.

Young and old patients must be treated differently. Children require higher than average dosage. Older patients will require lower amounts, but careful follow-up is necessary at all times with drug-treated senile patients.

Classification

Chemical structure distinguishes various groups of neuroleptics and other drugs most commonly used in practice today (Table I). Group I comprises the non-halogenated phenothiazines, and Group II the halogenated phenothiazines. Group III contains the largest number of compounds and is distinguished by a piperazine side chain. The compounds in Group IV have a side chain component on the aliphatic chain attached to the nitrogen of the phenothiazine nucleus. Group V consists of the methylpiperidine derivatives, and Group VI the thioxanthines. Group VII are the butyrophenones, which are used widely in Europe but still considered experimental in the United States. Group VIII includes the diphenyl derivatives. Finally, Group IX comprises the rauwolfia compounds.

The different drugs may be distinguished on the basis of clinical activity and side effects. While there is some evidence that particular drugs may affect specific symptoms or diagnostic entities, much work must still be done to clarify this matter.

Indications for Neuroleptic Drug Therapy

Acute schizophrenia; manic, involutional, and senile psychoses; agitated states (associated with toxic-confusional syndromes); agitated depression (particularly in the involutional states); acute alcoholic and epileptic psychoses, as well as psychoses due to mental deficiency where psychomotor disturbances are predominant; psychoses due to organic brain disorder (e.g., arteriosclerotic brain disease, chronic brain syndrome); Parkinson's disease; Huntington's chorea; the acting out phase of psychoses associated with psychopathic personality; and the chronic psychoses are major indications for neuroleptic therapy. Reserpine is particularly indicated in acute manic excitement.

These drugs are equally indicated in the borderline states—those patients with extremely weak ego strength and fragile reality adaptation, whose defenses crumble under minimal pressure, precipitating an acute psychosis. The childhood schizophrenias and adolescent character disorders with a marked emotional component represent other areas of application. The evidence is less clear for the psychoneuroses. While good results have been obtained in the severe obsessive-compulsive neuroses, chronic anxiety states, hysterias, etc., the results are less certain for the milder

states. While it has been claimed that depression represents a contraindication to the use of neuroleptics, this has not been borne out clinically. Previous and present studies indicate the contrary. However, rauwolfia should not be used, for it can aggravate preexisting depression.

Treatment may be directed to the following symptoms, regardless of diagnosis: tension, anxiety, hyperactivity, agitation, restlessness, impulsiveness, aggressiveness, assaultive and destructive behavior, and auditory or visual hallucinations. Neuroleptics are particularly effective against the paranoid and hallucinatory episodes in all psychotic behavior. Neuroleptic medication may be necessary, and should be used, in psychotic disorders which occur following surgery or are associated with myocardial failure or infarction, ulcerative colitis, and pre- or postpartum psychoses.

Treatment Procedures

The psychiatrist faced with the problem of treating an acute or chronic psychiatric patient must ask several questions.

Which drug would best fit this symptom complex? It has not been possible to predict the nature of the patient's response to a specific drug. The choice of one drug over another has been empirical and, curiously enough, some patients have been treated with a series of compounds before finally responding. Nevertheless, some general principles can be formulated:

If the patient is an acutely disturbed, hallucinating schizophrenic, then chlorpromazine, trifluorpromazine, or thioridazine would be the choice. If the patient is an apathetic, retarded, withdrawn catatonic, a piperazine phenothiazine would be indicated. A chronic psychiatric patient would require more potent drugs (that is, theoretically more potent, on a dosage basis), such as prochlorperazine, trifluoperazine, fluphenazine, or perphenazine, etc.

Mepazine, promazine, and chlorprothixene are considerably inferior in potency to the other compounds. Azacyclonal and hydroxyzine are available but are considerably less effective. The use of rauwolfia has decreased markedly since its introduction.

Of all the neuroleptic drugs, chlorpromazine is easily the most widely used; it has a good safety margin, and is applicable in both acute and chronic psychoses. In fact, however, the National Institute of Mental Health-Psychopharmacology Service Center Collaborative Study in 1964 showed that there were no significant differences among chlorpromazine, thioridazine, and fluphenazine, on any of their "25 measures of clinical activity." The results seemed to support the hypothesis that the other two drugs were "generally as effective clinically as chlorpromazine." A comparative study by Lasky et al. of chlorpromazine, chlorprothixene, fluphenazine, reserpine, thioridazine, and trifluorpromazine showed that none of the

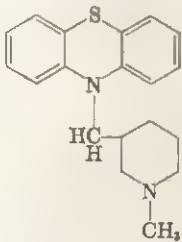
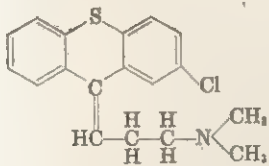
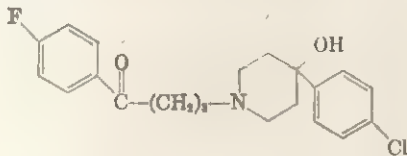
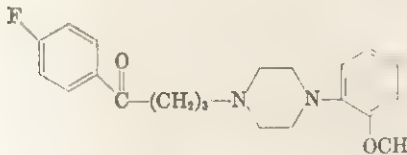
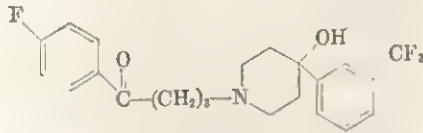
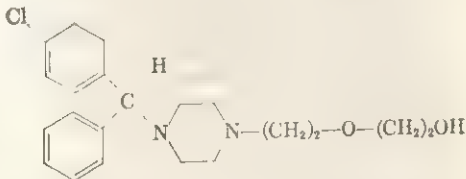
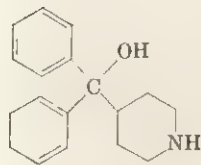
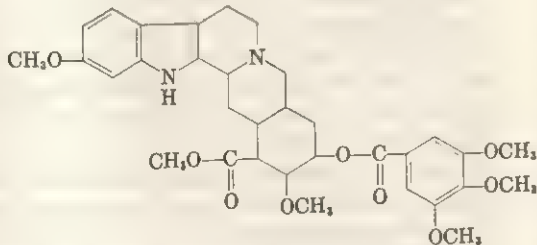
TABLE I
Chemical Structure of the Neuroleptic Drugs

Group	Chemical Structure	Generic Name	Trade Name
I		Promazine	Sparine
II		Chlorpromazine	Thorazine
		Trifluromazine	Vesprin
III		Acetophenazine	Tindal
		Fluphenazine	Permitil, Prolixin
		Perphenazine	Trilafon
		Prochlorperazine	Compazine
		Carphenazine	Proketazine

TABLE I—Continued

Group	Chemical Structure	Generic Name	Trade Name
IV		Thiopropazate	Dartal
		Trifluoperazine	Stelazine
		Thioproperazine	Majeptil ^a
		Butaperazine	Repolse ^a
		Methotrimeprazine, levomepromazine	Nozinan ^a
		Trimeprazine, alimemazine	Tenaril ^b
V		Thioridazine	Mellaril

TABLE I—Continued

Group	Chemical Structure	Generic Name	Trade Name
		Mepazine	Pacatal
VI		Chlorprothixene	Taractan
VII		Haloperidol	— ^a
		Haloanisone	— ^a
		Triperidol	— ^a
VIII		Hydroxyzine	Atarax
		Azacyclonol	Frenquel
IX ^c		Reserpine	Serpasil

^a Not available in the United States.^b Not used as a tranquilizer in the United States.^c Rauwolfia compound.

TABLE II
Neuroleptic Drugs in Current Psychiatric Use
in the United States

Generic Name	Trade Name	Dosage Range (mg./day)
Acetophenazine.....	Tindal	40-80
Carphenazine.....	Proketazone	25-400
Chlorpromazine.....	Thorazine	75-1,000
Chlorprothixene.....	Taractan	30-600
Fluphenazine.....	Permitil, Prolixin	5-30
Mepazine.....	Pacatal	75-600
Perphenazine.....	Trilafon	16-64
Prochlorperazine.....	Compazine	30-150
Promazine.....	Sparine	150-800
Thiopropazate.....	Dartal	10-100
Thioridazine.....	Mellaril	300-800
Trifluoperazine.....	Stelazine	15-40
Triflupromazine.....	Vesprin	30-150
Rauwolfia compounds		
Deserpidine.....	Harmonyl	0.1-5
Rauwolfia serpentina.....	Raudixin	50-300
Reserpine.....	Serpasil	0.5-20

differences among the six drugs were significant. Reserpine, if anything, was the least effective.

Although these drugs all seemed to be equipotent, many patients in clinical practice respond to one and not another. The reasons for this finding are still obscure. The conclusions would then seem that if each clinician selects one, two, or three drugs and becomes thoroughly familiar with their activity, he should be able to use chemotherapy effectively in a wide range of psychiatric disorders.

What dosage should be used? Table II lists the neuroleptic drugs in psychiatric use in the United States at the present time and the dosage range recommended for each. These suggested dosages are suitable for the majority of patients, but each case must be considered separately before a decision is reached. Some patients require much less medication, while others may require more than the maximum dosage suggested. As a general rule, the more acute the illness, the higher the dose. (Intramuscular administration of the medication would be recommended under these circumstances.) Usually the more chronic conditions also require a higher dosage. However, as soon as the medication has become effective, dosage should be reduced, if possible. Although there is no dose-weight relationship in prescribing neuroleptics, experience has shown that extremely thin patients should begin with lower doses, since they seem exceedingly prone to the extrapyramidal effect (described below).

How should dosage be increased? Should one (1) begin with a low dose and increase it slowly; (2) use a step-wise progression, with fixed increases at stated intervals; or (3) use a high initial dose, with rapid build-up to tolerance? There has been much de-

bate, but the problem is still unresolved. General experience would seem to favor the step-wise progression.

Because of the frequency with which it is used, a brief description of the technique used in the administration of chlorpromazine therapy is indicated. The intramuscular route may be used for initial treatment in early acute cases, with a dosage ranging from 300 to 400 mg. daily, and changed to the oral form in about 5 days. The oral dose may be increased to 1,000 mg. daily for the chronic psychotic patient. While dosages as high as 4,000 to 10,000 mg. daily have been used in such instances, there is nothing to show that these amounts give results superior to the lower dosage. As a matter of fact, increasing toxicity may be expected (see side effects, below). The treatment should be continued for at least 15 to 30 days for acute patients and 90 days for chronic patients, at which time the case should be reviewed to consider whether treatment ought to be continued or changed.

How long should treatment continue? Careful clinical observation will be the determining factor. If the patient improves on a given dosage after 30 to 60 days of treatment, the drug should be reduced gradually to about one half that amount before consideration is given to separation from the hospital. If there is a recrudescence of symptoms, further treatment is obviously required. The drug should be changed if 30 days of treatment at adequate dosage (as indicated in Table II) yields little result. On the other hand, treatment of a chronic patient (by definition, one who has been ill for more than 2 years) should be continued for at least 90 to 120 days at adequate dosage before reconsideration of the case.

How often are laboratory tests required, and which should be done? A pretreatment complete blood count, alkaline phosphatase, bilirubin, serum glutamic-pyruvic transaminase, serum glutamic-oxalacetic transaminase, as well as isocitric dehydrogenase and urine examinations are recommended. Electrocardiograms and electroencephalograms are of investigational interest but should definitely be done on patients with previous history of cardiac abnormalities or central nervous system disorders. The blood and liver studies should be repeated weekly during the 1st month of treatment, every 2 weeks during the 2nd month, and monthly thereafter until the 6th month. It would not seem probable that drug-induced abnormalities would occur after that time, and, if so, the percentage is so small that it can hardly warrant doing laboratory studies on all patients during the period of treatment and follow-up care.

Will the patient require follow-up medication and, if so, for how long, and at what dose? A flexible approach is recommended:

First psychotic episode with rapid remission within 60 to 90 days. No further medication is required.

Hospitalization for 6 to 12 months. Follow care-

fully for 90 to 120 days with drug treatment at one half the in-hospital dose.

Hospitalization for 1 to 2 years. Follow carefully for at least 1 year with chemotherapy at one half the in-hospital dosage.

Hospitalization for more than 2 years. Indefinite chemotherapy is recommended, during which time one should take pains to ascertain, among other things, whether the medication is being taken regularly.

Patients receiving prolonged treatment should have ophthalmological examinations every 6 months (with slit lamp study), to determine whether any lens or corneal abnormalities (opacities) have appeared, particularly when the dosage exceeds the usual levels.

Is it possible to reduce or discontinue chemotherapy in chronic psychotic patients? The reports are variable. The Veterans Administration Study in 1964 showed that such a treatment policy could not be recommended, although further research would be necessary. Clinical observations indicate that this is a highly individualized matter and cannot be generalized.

Treatment of specific patient categories

In-patients (acute). Use the intramuscular route for rapid control and change to oral medication after 5 to 7 days. Continue treatment at effective levels, reducing dosage to one half about 2 weeks before the patient is discharged.

In-patients (chronic). Administer medication orally at progressively increasing doses until an effective level is reached. (If the patient does not appear to be swallowing the medication, intramuscular medication should be used.) Side effects should be treated whenever necessary (e.g., anti-Parkinson drugs for extrapyramidal reactions), but dosage should be reduced only if the patient does not respond to these corrective agents.

Out-patients. Use one half the in-hospital dose. If the patient works, halogenated phenothiazines may not be indicated, and preference can then be given to the Group III drugs or to thioridazine (Group V) and, eventually, to chlorprothixene (Group VI). The dose may be divided on a b.i.d. schedule, if the patient continues to complain of drowsiness. Eventually, if the dosage is low (e.g., 100 mg. of chlorpromazine daily), it may be taken once at bedtime and thereby help the patient to sleep at the same time. If there is an exacerbation of the illness while the patient is seen in the out-patient service, dosage should be increased rapidly at 3- to 4-day intervals in order to prevent relapse. If this seems imminent, rehospitalization for a brief period with intensive intramuscular medication will abort an incipient psychosis in a majority of patients.

Combined treatment. Psychotherapy, whether group or individual, is strongly indicated when drugs are used. Since psychiatric illness is a global disorder, treatment should be directed toward correcting both the underlying organic substratum and environmental

relationships. A favorable physician-patient relationship will be of inestimable help in long term drug therapy. If any unusual effects develop during treatment, these should be considered in terms of their meaning for the patient.

Different neuroleptics are currently used in combination (e.g., chlorpromazine and trifluoperazine), although the available evidence does not support a practice based on the idea that "if one doesn't work, then two will." Neuroleptics are also being used in combination with "minor tranquilizers." Pharmacologically, the most effective of these "minor tranquilizers" are the muscle relaxant drugs, and they control excessive anxiety which may be part of the illness or may be induced by medication. Occasionally, psychotic anxiety is not effectively reduced by the neuroleptic drugs, and addition of a "minor tranquilizer" can be of considerable help.

Finally, when neuroleptics were introduced, there was much discussion concerning their use in combination with electroconvulsive or insulin coma treatment. Now that insulin coma has been virtually eliminated as a treatment modality, and the use of electroconvulsive treatment has diminished, the problem is virtually nonexistent. However, combined electroconvulsive and neuroleptic therapy may prove useful in the treatment of seriously disturbed refractory patients. Some workers who have adopted this approach omit the drug on the morning of the electric convulsive treatment; others continue dosage throughout the treatment period. For the most part, this procedure is considered safe. Occasional fatalities have been reported, but even here the relationship to drug treatment was not clear.

Contraindications and Precautions

In general, patients who developed prolonged apnea following electric convulsive therapy or protracted coma with insulin coma treatment may also show serious side reactions to the neuroleptics. There are relatively few specific contraindications to the use of neuroleptic drug therapy. These include senile deterioration, with concomitant organic disorder (cardiovascular or pulmonary), depression of the central nervous system, coma, and, of course, previous serious toxic reactions to the neuroleptics. Similarly, precautions are necessary in relatively few cases. A history of hepatic disorder (cirrhosis) is not a contraindication, but liver function tests should be followed carefully by appropriate laboratory examinations (alkaline phosphatase, serum glutamic-oxalacetic transaminase, serum glutamic-pyruvic transaminase, bilirubin, and isocitric dehydrogenase), and dosage guided by the clinical symptomatology. A history of allergy (particularly of the cutaneous variety) requires caution in the administration of neuroleptic drugs, and the patient's exposure to the sun should be limited.

Emphasis must be placed on the relationship of toxicity (e.g., skin pigmentation and lens opacities)

to high dosages of neuroleptic medication over long periods of time. The use of excessive amounts of drugs (e.g., more than 1,000 mg. of chlorpromazine daily; more than 250 mg. of prochlorperazine) over extended periods of time is not advisable. As indicated earlier, prescription of a neuroleptic must be followed by a daily, then weekly, and monthly follow-up over a period of time. While high doses may be used to produce a favorable response within a relatively brief time, the treatment should then be continued with lesser amounts, if this is possible. If the lower dosage is not effective, the drug should be changed.

A history of blood dyscrasia also warrants caution. Serious infectious disorders and severe hypertension represent relative contraindications, and the use of neuroleptics should be determined by the clinical symptomatology. Extreme prudence is advisable in these instances.

With respect to specific drugs, the use of rauwolfia derivatives is contraindicated where there is a history of peptic ulcer, convulsive disorder, or Parkinson's disease.

Side Effects

All unfavorable activity of neuroleptics may be viewed as side effects, being equated with toxicity. Yet, it would seem more constructive to consider them as either physiological or toxic. However, since this can give rise to interminable discussion, the classification proposed herein will refer to organ systems. This would seem more appropriate when one thinks of their pharmacological activity.

Central nervous system findings

Extrapyramidal syndrome. Much debate has centered around whether the extrapyramidal syndrome should be produced or avoided. Earlier studies held that an extrapyramidal reaction was necessary for a favorable clinical result. This was a natural conclusion, based on observations of occasional significant clinical improvement occurring with a neurological syndrome that immobilized the patient. Parenthetically, the psychodynamics of this reaction and possible therapeutic relationships have also been considered. The dilemma is still unsolved, although the present tendency is to view both as dissimilar phenomena, not necessarily related. Yet, the fact remains that only those agents capable of producing an extrapyramidal syndrome are clinically effective, although it is clearly not necessary to produce this effect in each patient.

Symptoms. The extrapyramidal syndrome is comprised of the following symptoms: rigidity, tremor, loss of associated movements, restlessness, cogwheel rigidity, drooling, flexion of the forearms, masklike facies, shuffling gait, and poverty of movement. A neurological syndrome is noted, comprised of dystonia, dyskinesia, oculogyric crises, myoclonic twitching, protrusion of the tongue, opisthotonos, torticollis,

visual disturbances (blurred vision), dysarthria, akathisia, chewing movements of the mouth, and peribuccal tremor.

The incidence of these symptoms varies with the drug used (they are more frequent with the piperazine phenothiazines); the dosage and duration of treatment (more frequent when higher doses are administered for longer periods of time); and the sex of the patient (more frequent in females than males). The neurological symptoms may resemble hysteria in many ways. Torticollis, protrusion of the tongue, and oculogyric crises can be temporarily attenuated by strong positive suggestion.

One syndrome must be recognized immediately to avert a fatal issue. The patient with a severe extrapyramidal reaction begins to perspire profusely, drools, and has respiratory difficulties (dyspnea and cyanosis). The temperature rises, and tachycardia is noted as blood pressure fluctuates. Anxiety increases. Unless treatment is discontinued immediately, the temperature may continue to rise and convulsive seizures will occur. There have been some deaths with a syndrome of this type where treatment was not stopped.

Treatment. The extrapyramidal syndrome may be treated by (1) decreasing the dosage; (2) continuing the same dosage and adding an anti-Parkinson drug; (3) decreasing the dosage and adding an anti-Parkinson drug; or (4) discontinuing the medication (when the reaction appears excessive and does not respond to anti-Parkinson medication).

For serious reactions, use intramuscular medication (e.g., 2 mg. of biperiden methanesulfonate). In order to avoid the potentially annoying effects of anticholinergic compounds, the prescription should provide medication for only 5 days (to be renewed if necessary). However, since some ambulatory patients receiving neuroleptic therapy will require such medication, it would be wise to prescribe the lowest effective dosage. The compounds which are currently available for this purpose are listed in Table III. Of those, biperiden, biperiden methanesulfonate, and procyclidine are considered to be most effective. However, it should be mentioned that some extrapyramidal neurological reactions do not recede rapidly, even when anti-Parkinson medication is used. This has been known to occur in older patients.

Convulsive seizures. These are usually of the grand mal type and are observed early in treatment. In one series, they occurred in a total of 1.1 per cent of the patients treated. Their frequency in epileptic patients showed little or no variation from their incidence prior to neuroleptic medication. There is some evidence, however, that seizures do increase when chlorpromazine is used in patients with a prior history of convulsive disorders.

Treatment. If the patient has a first seizure after beginning neuroleptic medication, an anticonvulsant drug (e.g., diphenylhydantoin, gr. 1.5 t.i.d.) should be

added. If seizures continue, it may be helpful to add chlorthalidopoxide (10 mg., t.i.d.). And, eventually, chlorthalidopoxide can be used to replace diphenylhydantoin. If the seizures do not stop, neuroleptic medication should be discontinued and neurological consultation sought.

If the patient is a known epileptic and seizures become more prevalent with neuroleptic therapy, anticonvulsant medication should be increased, and neuroleptic dosage decreased. Patients who receive piperazine phenothiazines have shown an extremely low incidence of drug-induced seizures, and these drugs may be used, when warranted, to replace the halogenated phenothiazines. The patient should be followed with serial electroencephalograms, although the clinical symptoms should determine the course of action.

Cutaneous disorders. These are more frequent with halogenated phenothiazines, usually appearing as maculopapular-prurigenous reactions on the hands, face, or generalized over areas of the body. However, they may take other forms as well. They are more frequent in females (70 per cent) than in males (30 per cent). The areas which have been exposed to the sun appear to be most vulnerable.

Recently, a cutaneous reaction to high dosage, long term treatment with chlorpromazine and other neuroleptics has been described in which the skin takes a slate grey bluish color, which is sometimes purplish as well. However, in a recent survey of 1,614 patients at Manhattan State Hospital (New York) receiving various neuroleptic drugs over a considerable period of time, this observation was not made. The reaction seems to be almost unknown outside of North America.

Treatment. Usually, the rash can be eliminated by antihistamines, such as tripeleminamine hydrochloride (Pyribenzamine), 25 mg., t.i.d., or steroids, such as hydrocortisone, 5 mg., t.i.d. for 5 days. Contact dermatitis in hospital personnel is best treated by precautionary measures. As indicated below (with reference to the ophthalmological-cutaneous syndrome), the treatment of toxic reactions due to long term medication is still uncertain.

Hepatic findings

Icterus. The incidence is variable in different hospitals, but a generalized survey showed 1.4 per cent. The etiology is still unknown, although allergy has been mentioned. The difference between American (1.4 per cent) and European (0.003 per cent) statistics has never been explained.

Symptoms. The neuroleptics (phenothiazines) can produce a cholangiolitic type of jaundice with biliary obstruction, accompanied by the usual symptoms of such a disorder (nausea, fever, anorexia, abdominal discomfort, malaise, chill, etc.) without evidence of parenchymal involvement.

Treatment. Cessation of neuroleptic medication

TABLE III
Drugs Currently Available for Treatment of
Extrapyramidal Syndrome

Generic Name	Trade Name	Recommended Dosage
		mg., t.i.d.
Benztropine methanesulfonate.....	Cogentin	2
Biperiden.....	Akineton	2
Diphenhydramine.....	Benadryl	25
Ethopropazine.....	Parsidol	50-100
Orphenadrine.....	Disipal	100
Procyclidine.....	Kemadrin	2
Trihexyphenidyl.....	Artane	2

and institution of supportive measures (fluids, adrenocorticotrophic hormone, etc.) is recommended. Prognosis for the immediate illness is good.

Hematological findings

Agranulocytosis. The most serious toxic effect of neuroleptic medication occurs more frequently in females than in males, with a variable incidence of 0.0 per cent to 0.3 per cent with chlorpromazine. There is a lower incidence in Europe. It is extremely infrequent with piperazine side chain compounds but has been noted with promazine, thioridazine, and mepazine.

Symptoms. Agranulocytosis occurs most often during the first 2 months of treatment, unrelated to dosage. The onset is heralded by fever, sore throat, malaise, and weakness. While regular blood counts may demonstrate a progressive leukopenia, the abrupt disappearance of granulocytes can take place within 24 to 48 hours, conceivably, in the interval between two blood counts. Close clinical observation of all patients must be the guide. When patients on neuroleptic therapy develop a fever and complain of sore throat, it is wise to discontinue neuroleptic medication temporarily and, as a precautionary measure, to do a blood count.

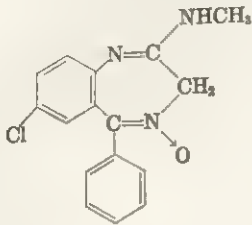
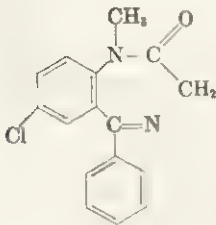
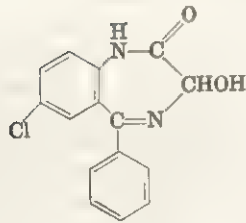
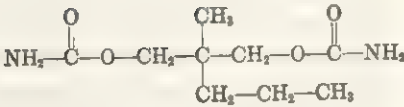
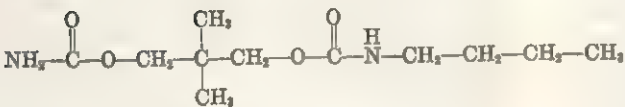
Treatment. A diagnosis of agranulocytosis calls for immediate discontinuation of neuroleptic therapy, medical consultation, and treatment (fluids, transfusions, steroids, and antibiotics).

Ophthalmological findings

Ophthalmological-cutaneous syndrome. Following the description by Greiner and Berry in 1964 of a peculiar slate grey pigmentation found in patients on neuroleptic therapy, concurrent with lens and corneal opacities, additional studies have been published. This syndrome may be found with any of the neuroleptics currently in use in the United States. However, these lesions seem particularly prevalent among patients who have been treated with excessively high doses of different neuroleptics for long periods of time.

Symptoms. The skin has a color which has been variously described as ranging from brown to bronze, grey, purplish grey, or an admixture of grey and brown. Eye examination with a slit lamp showed lens

TABLE IV
Chemical Structure of Non-neuroleptic Drugs

Chemical Structure	Generic Name	Trade Name
	Chlordiazepoxide	Librium
	Diazepam	Valium
	Oxazepam	Serax
	Meprobamate	Miltown, Equanil
	Tybamate	Solacen

and corneal opacities, although visual acuity was unimpaired.

Treatment. Treatment is primarily preventive. In cases where the clinical condition requires long term treatment, dosage must be reviewed constantly and kept to a minimum. The possibility of intermittent medication should also be considered. Since, as mentioned above, the lesions can be produced by any of the available drugs, it would be pointless to change from one compound to another. Perhaps Brill et al. have stated the case most succinctly: "The tenor of all expert advice—whether from ophthalmologists or psychiatrists—is that treatment should be continued when it is psychiatrically indicated." The use of chelating agents has been suggested, but the number of patients so treated is still too small to form an opinion.

Side effects in out-patients. The great majority

of physiological or toxic effects described above usually do not occur in nonhospitalized patients to any significant extent, for two reasons. First, this patient population receives relatively low dosages of neuroleptic drugs. Second, they have usually been hospitalized for varying periods of time when these symptoms would have occurred.

Certain recommended procedures which were outlined earlier in connection with the medical evaluation of patients on neuroleptic therapy warrant repetition in this context. Should repeated blood counts and liver studies be done on nonhospitalized patients? Unless there is a medical reason (history of blood dyscrasia, etc.), this would not seem necessary. May a patient with a history of alcoholism or cirrhosis be treated with neuroleptics on an out-patient basis? Yes, provided the dosage is kept within reasonable limits. However, liver function should be determined

approximately every 3 months and include an alkaline phosphatase, isocitric dehydrogenase, and serum glutamic-oxalacetic and -pyruvic transaminase. Finally, a question which is raised consistently concerning the long term use of neuroleptics, either within the hospital or on an out-patient basis, concerns their addictive qualities. These phenomena can be considered almost nonexistent.

Non-neuroleptic Drugs

These drugs, which are also called "minor tranquilizers," are distinguished from the neuroleptics by their chemical structure (Table IV), pharmacology, indications, and side effects. They are used primarily in office psychiatric practice and as an adjunct to neuroleptic medication in the hospital. However, it should be emphasized that it is *not* probable that "patients who respond to treatment with the minor tranquilizers also will usually respond to properly selected doses of the classic sedatives" (*New Drugs*, 1965). Clinical study has shown that the muscle-relaxing effects of the chlordiazepoxide-diazepam-meprobamate group are not a property of barbiturates, and the kind of relaxation these newer drugs offer for the extremely anxious psychoneurotic is not apparent with the classic sedatives.

The drugs in this group should be used judiciously, in appropriate doses, with concomitant psychotherapy. By reducing anxiety, they can facilitate the psychotherapeutic process. The addiction-prone individual should be treated with circumspection, for, in contrast to the neuroleptics, some of the "minor tranquilizers" do have addicting qualities, *on extremely rare occasions*. Although these agents are used primarily in the treatment of neuroses, their effectiveness has not been demonstrated. At best, they sedate the patient; they have no effect on the psychotic symptoms.

Indications. The non-neuroleptic drugs have been recommended for the treatment of tension; anxiety; reactive depression; psychosomatic disorders; insomnia (by itself or concomitant with other symptoms); agitation, restlessness, and excitability; marked irritability; senile agitated states; chronic brain syndrome (when used in conjunction with the neuroleptics); acute alcoholism; convulsive disorders (chlordiazepoxide); acute muscle spasm; and musculo-skeletal disorders.

Treatment procedure. Non-neuroleptic drugs in current psychiatric use in the United States and their recommended average daily dose are listed in Table V. Of this group, chlordiazepoxide, diazepam, and meprobamate are the most widely used and the most effective. However, the evidence for tybamate is promising, and further studies on oxazepam are required before any definite statements can be made. (The latter compound will undoubtedly prove effective, since it is so similar in structure to the chlordiazepoxide-diazepam group.)

Specific procedures. The specific procedure rec-

TABLE V
Non-neuroleptic Drugs in Current Psychiatric Use

Generic Name	Trade Name	Dosage per os.
		mg., t.i.d.
Benactyzine.....	Suavitil	3-10
Bucizine.....	Softan	50-150
Chlordiazepoxide.....	Librium	5-25
Chlormezanone.....	Trancopal	300-800
Diazepam.....	Valium	2-10
Ectylurea.....	Levanil, Nostyn	450-900
Emylcamate.....	Striatran	20-800
Hydroxyphenamate.....	Listica	600-800
Mephenoaloxone.....	Levetran, Trepidone	400-1,000
Meprobamate.....	Miltown, Equanil	600-1,200
Oxanamide.....	Quiactin	800-1,600
Oxazepam.....	Serax	30-60
Phenaglycodol.....	Ultran	800-1,200
Pipethanate.....	Sycotrol	9-18
Tybamate.....	Solacen	700-1,400

ommended in the administration of the non-neuroleptic drugs which are used most widely (i.e., chlordiazepoxide, diazepam, and meprobamate) is outlined below.

Chlordiazepoxide. Begin treatment with 5 mg., t.i.d., and increase by 5-mg. increments. After reaching total effective levels (about 30 mg.), establish a lower maintenance dose.

Diazepam. Begin treatment with 2 to 5 mg., t.i.d. After reaching total maximum dosage (about 30 mg.), decrease for maintenance.

Meprobamate. Begin treatment with 400 mg., t.i.d., or q.i.d., for 1 week. Increase by 400-mg. increments per week until clinical effect is noted or bothersome side effects appear.

Contraindications and precautions

General considerations. There are no absolute contraindications for the use of the "minor tranquilizers," except for patients with a known history of adverse reactions. However, caution should be exercised in certain instances. (1) Drowsiness or ataxia which may affect job performance or other activities, e.g., driving an automobile, may be avoided by close clinical supervision and slow increase of dosage. (2) *Great care should be exercised in prescribing for addiction-prone patients.* Those with a history of alcoholism should be followed closely. If the dose is high and the period of treatment long, withdrawal from medication should be gradual in the latter group. (3) Patients with a history of allergies or hepatic disorder should be followed closely.

Specific side effects. Apart from drowsiness and hypotension, most of the reactions attributed to the non-neuroleptic drugs are undoubtedly toxic in nature. The following have been reported: drowsiness, apathy, ataxia, giddiness, lethargy, syncope, hypotension, skin rash, nausea, headache, paradoxical anxiety and rage (in disturbed schizophrenic pa-

tients), vomiting, rash, chills, fever, rare blood dyscrasias, withdrawal reaction with convulsions following abrupt termination (associated with chlordiazepoxide and meprobamate), jaundice, and agranulocytosis.

Treatment. Most of the reactions can be handled by judicious attention to dosage. Drowsiness, apathy, ataxia, giddiness, lethargy, and syncope require a reduction in dose. If paradoxical anxiety and rage develop, in all likelihood the drug cannot be given further. The same applies to blood dyscrasias, jaundice, and agranulocytosis as well, although these reactions are *extremely rare* in any case. Withdrawal phenomena should be anticipated in addiction-prone patients and/or those who have received very high dosages. In such cases, the dose should always be decreased by the same increment and over the same period of time that was used for the build-up.

General comments. The use of compounds in this group has received an inordinate amount of attention, with far too much emphasis upon their toxic effects. This would appear unwarranted, in view of the benefits derived by patients. There is nothing to indicate that they decrease anxiety and induce euphoria to a point of producing an artificial "nirvana." In the usual dosage range, chlordiazepoxide and meprobamate do not produce addiction. It is the unusual patient, with a history of drug dependency, who is most prone to this reaction. If one considers the small number of such cases in the literature in relation to the tremendous number of patients taking these compounds throughout the world, addiction can be considered truly a rare possibility. Interestingly, European authors have given this problem very little attention.

In brief, careful selection of one of these non-neuroleptic drugs; accurate dosage; careful attention to complaints of a physiological or toxic nature; interpretation of such complaints within a proper frame of reference; and, when necessary, discontinuation of the medication will enable the patient to achieve maximum benefit from treatment.

Suggested Cross References

For a comparison of pharmacotherapy with other forms of organic treatment, see Kalinowsky's sections on the organic therapies (Sections 35.6, 35.7, and 35.8). For a discussion of fundamental concepts of psychopharmacology see Section 2.3 by Harold Himwich, in Area B on basic sciences. In addition, the chapters on the various specific clinical syndromes contain references to the use of psychotropic drugs in the treatment of these conditions.

Treatment Summary

Neuroleptic Drugs (Major Tranquilizers) in Current Psychiatric Use in the United States (The reader is referred to Table II for a list of these drugs.)

Indications. Acute and chronic psychoses (schizophrenic, manic, involutional, and senile); agitated depression; acute al-

coholic and episodic psychoses; organic brain disorder and psychoses due to mental deficiency; "borderline states"; childhood schizophrenia.

Contraindications. Cardiovascular or pulmonary disorders (the seriousness of the psychiatric disorder must be weighed against the organic disease), coma, active hepatic parenchymal inflammation, blood dyscrasia, severe hypertension or hypotension, previous severe reaction to neuroleptics.

Side effects of neuroleptic drugs

Psychological. Paradoxical anxiety, marked passivity and asthenia, insomnia, depersonalization, increased dreaming and/or nightmares, confusional states, aggravation of the psychosis.

Central nervous system. Extrapyramidal syndrome: tremor, rigidity, cogwheel phenomena, disturbance in associated movements, disturbance of gait, akathisia, akinesia, hyperkinesia; dyskinesia, hypotonia, myoclonic twitching, oculogyric crises, perioral spasms, protrusion of the tongue, restlessness, apathy, weakness, convulsive seizures, opisthotonos, and diplopia.

Cardiovascular. Hypotension, hypertension, tachycardia, syncope, thromboses, peripheral edema.

Hematological. Leukopenia, leukocytosis, agranulocytosis, thrombocytopenia, purpura, eosinophilia, anemia.

Hepatic. Jaundice (cholelithic).

Gastrointestinal. Dryness of the mouth, drooling, pyrosis, nausea, vomiting, diarrhea, constipation, increased appetite.

Skin. Erythema, urticaria, eczema, contact dermatitis, toxic-allergic reaction, petechia, abnormal pigmentation.

Endocrinological. Changes in menstrual cycle (amenorrhea, menorrhagia), lactation, breast engorgement, weight gain, altered libidinal drive (inhibition of ejaculation, impotence).

Ophthalmological. Lenticular and/or corneal opacities, conjunctivitis, retinitis pigmentosa, blurred vision.

Rauwolfia compounds (The reader is referred to Table II for a list of these drugs.)

Indications. Acute schizophrenic or manic psychoses, chronic schizophrenia, delirium tremens, senile agitated states.

Contraindications. Gastric or duodenal ulcer, depression, history of attempted suicide, epilepsy, organic confusional states, asthenia, fatigue, Parkinson's disease or extrapyramidal reaction, and postencephalitic disorders.

Side effects. Extrapyramidal reaction, convulsions, drooling, nasal congestion, peripheral edema, bradycardia, hypotension, increased appetite, weight gain, gastric hyperacidity, diarrhea, lactation, menstrual disturbances, incontinence, depression, cutaneous flushing, rash, and purpura.

Non-neuroleptic Drugs (Minor Tranquilizers) in Current Psychiatric Use in the United States (The reader is referred to Table V for a list of these drugs.)

Indications. Tension, anxiety, acute alcoholism, hysteria, or panic states, insomnia, agitation, restlessness, marked irritability, senile agitation, chronic brain syndrome, acute muscle spasm or musculoskeletal disorders, psychosomatic disorders, convulsive disorders. (These drugs are also useful as an adjunct to psychotherapy or in combination with neuroleptic therapy.)

Side effects

Psychological. Addiction, apathy, paradoxical rage, euphoria.

Central nervous system. Headache, slurred speech, ataxia, drowsiness, lethargy, somnolence, giddiness, muscular incoordination and/or tremor, withdrawal reaction with convulsions.

Cardiovascular. Hypotension, syncope.

Hematological. Thrombocytopenic purpura, anemia, leukopenia, agranulocytosis.

Gastrointestinal. Nausea, vomiting, constipation, or diarrhea.

Hepatic. Jaundice.

Skin. Rash, urticaria.

Endocrinological. Menstrual irregularities, altered libido.

Miscellaneous. Chills, fever, angioneurotic edema.

Precautions. Precaution should be exercised with patients who show drowsiness or ataxia following medication; who are addicts or "addiction-prone"; or who have a history of alcoholism, epilepsy, allergy, hepatic disorder, or blood dyscrasia.

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amine oxidase inhibitors—in the late 1950's and their subsequent therapeutic use justify a careful and thoughtful appraisal of the various clinical studies available to date on the effectiveness of these drugs.

History. The way the antidepressant drugs were discovered has important implications for the practitioner. Imipramine was developed in the course of a search for a better chlorpromazine-like drug. More specifically, Kuhn (a Swiss clinical investigator), in evaluating the antipsychotic activity of imipramine, found that, while it was ineffective in schizophrenics, it did benefit depressed patients. Iproniazid, the first of the monoamine oxidase (MAO) inhibitors, was used initially in the treatment of tuberculosis and was found to cause euphoria, and even elation, in tubercular patients. Subsequently, it was also used successfully to reverse reserpine-induced sedation in animals. Both Crane and Kline, working independently, administered the drug to depressed patients with favorable results.

Pharmacological activity. Once these two active antidepressant drugs had been developed, the pharmaceutical industry proceeded, on the basis of various animal tests, to develop several additional drugs, which resemble either imipramine or iproniazid in their pharmacological properties. However, relationships between chemical structure and pharmacological activity which have evolved from animal test systems do not necessarily parallel structural correlates of antidepressant activity in man. It was for this reason, perhaps, that the antipsychotic property of the phenothiazines was not predicted by basic pharmacological research, but was observed first by clinicians. The history of the development of both the antidepressant and the antipsychotic drugs points up the fact that major scientific discoveries can, on occasion, evolve as a concomitant of clinical practice or investigation, rather than as deductions from basic animal research.

In addition, it is important to note that the fact that the antidepressant drugs often do not influence the normal organism (in a base line state) does not preclude their ability to correct an abnormal condition. For example, aspirin reduces "abnormal" hyperpyrexia but does not lower temperature in the normal organism. Amphetamine is a euphoriant and a stimulant, but it is not an antidepressant, in the precise sense of the word. In contrast, the imipramine-type drugs and the MAO inhibitors are antidepressants, not general euphoriants or stimulants. Thus, while imipramine has a marked antidepressant action on depressed psychiatric patients, there is good evidence that it has little euphoriant action on normals. The evidence is less clear with the MAO inhibitors, since the reaction of normals to these drugs has not been well studied. It is known, however, that when the MAO inhibitors are used for the treatment of hypertension, most patients do not note any marked mental effect, although a few are sedated and others experi-

35.2 ANTIDEPRESSANT DRUGS

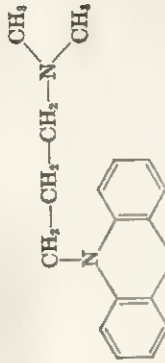
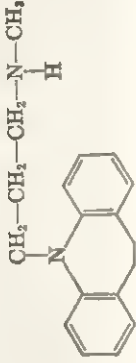
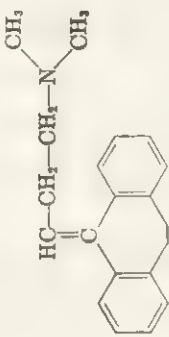
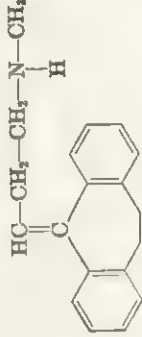
JONATHAN O. COLE, M.D.

JOHN M. DAVIS, M.D.

Introduction

The discovery of two classes of antidepressant drugs—the imipramine-type drugs and the mono-

TABLE I
Antidepressant Drugs^a

A. IMPRAMINE-TYPE DRUGS (iminodibenzyl derivatives, tricyclic antidepressants, dibenzazepines)	Generic Name	Trade Name	Formula	Usual Dose Range mg./day
<p>Action and indications</p> <p>Mood elevation in endogenous depression, enuresis, phobic anxiety states</p> <p>Side effects</p> <ol style="list-style-type: none"> 1. Central nervous system. Drowsiness, weakness, fatigue, dizziness, headache, parkinsonism, muscle tremor, seizures, peripheral neuropathy, confusion, muscle incoordination, hypomania, mania, activation of schizophrenic psychosis, hallucinations, delusions, insomnia, dysarthria, paresthesia, ataxia 2. Autonomic. Dry mouth, blurred vision, perspiration 3. Cardiovascular. Tachycardia, palpitations, arrhythmias, orthostatic hypotension, ankle edema 4. Gastrointestinal. Constipation, epigastric distress, nausea, cramps, jaundice (obstructive type) 5. Hematologic. Agranulocytosis, eosinophilia, purpura 6. Skin. Rash, itching, flushing, photosensitivity 7. Miscellaneous. Urinary retention or frequency, impotence, galactorrhea, bad taste, tinnitus, weight gain or loss, orbital edema, aggravation of glaucoma <p>Contraindications and precautions</p> <ol style="list-style-type: none"> 1. Wait 2-3 weeks after medication with MAO inhibitors 2. Benign prostatic hypertrophy 3. Glaucoma 4. Quiescent schizophrenia 5. Recent myocardial infarction 6. Chronic brain syndrome 7. Anti-parkinsonian agents and anticholinergic drugs may produce syndrome characterized by agitation, convulsion, hyperpyrexia, death 	Imipramine	Tofranil		150-25
	Desipramine, desmethylimipramine	Norpramin Pertofrane		100-250
	Amitriptyline	Elavil		150-250
	Nortriptyline	Aventyl		100-250

B. MONOAMINE OXIDASE INHIBITORS


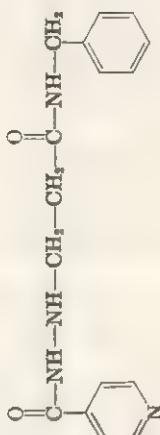
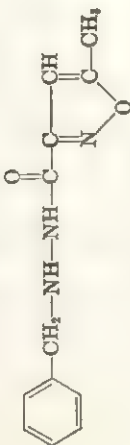
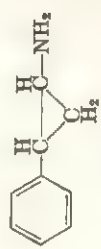
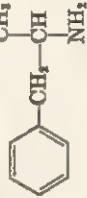
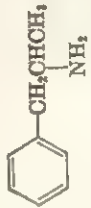
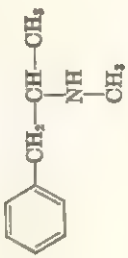
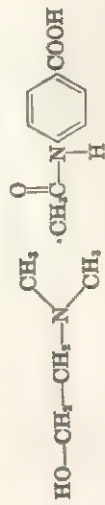
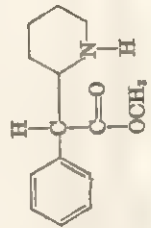
<p>Action</p> <p>Mood elevation in depressed patients</p>	<p>Indications</p> <p>Endogenous depression, phobic anxiety states</p>	Nardil		45-75
<p>Side effects</p> <ol style="list-style-type: none"> 1. Central nervous system. Stimulation (insomnia, tremor, hyper-reflexia, convulsions), hypomania, mania, drowsiness, dizziness, weakness, fatigue, headache, vertigo, ataxia, schizophrenic psychotic symptoms (anxiety, agitation, hallucinations), peripheral neuropathy 2. Autonomic. Perspiration, dry mouth, blurred vision 3. Cardiovascular. Hypotension, orthostatic hypotension, tachycardia, palpitations, peripheral edema, hypertensive crises (following ingestion of tyramine-rich foods, such as certain cheeses); symptoms include headache, neck stiffness, sweating, fever, photophobia, dilated pupils (may lead to intracranial bleeding and death) 4. Gastrointestinal. Hepatocellular damage, constipation, nausea, diarrhea, abdominal pain, anorexia 5. Miscellaneous. Leukopenia, inhibition of ejaculation, impotence, rashes, edema of glottis, hyperpyrexia, urinary difficulties, photosensitivity 	Phenelzine ^b	Niamid		150-225
<p>Contraindications and precautions</p> <ol style="list-style-type: none"> 1. Wait 2-3 days after medicating with imipramine-like drugs; use of both drugs simultaneously or without an interval may result in a syndrome characterized by headache, dizziness, sweating, nausea and vomiting, agitation, tremulousness, muscle twitching, convulsions, coma, uncontrollable hyperpyrexia, and death 2. Cerebrovascular defects 3. Cardiovascular disease 4. Liver disease 5. Pheochromocytoma 6. Sympathomimetic amines, central nervous system depressants, anti-parkinsonian agents, diuretics, foods with high amine content 7. Quiescent schizophrenia 	Isocarboxazid ^b	Marplan		10-30
	Tranylcypromine ^b	Parnate		20-40

TABLE I—Concluded

	Generic Name	Trade Name	Formula	Usual Dose Range mg./day
C. PSYCHOMOTOR STIMULANTS Action Mood elevation, appetite depression, combat effects of fatigue and sedatives Indications Mild psychic depression, hyperactivity syndrome in children, anorexic agent, narcolepsy Side effects Agitation, cardiovascular effects, insomnia, may aggravate or even produce psychotic states in large doses	Amphetamine	Benzedrene		5-30
	Dextroamphetamine	Dexedrine		5-30
	Methamphetamine	Desoxyn & others		5-15
	Deanol	Deaner		80-300
	Methylphenidate	Ritalin		20-60

^a Table adapted from E. L. Lowenkopf, M.D.^b Hydrazine MAO inhibitors.^c Nonhydrazine MAO inhibitor.

ence a euphoriant effect with insomnia. The latter reaction may not be identical with the antidepressant effect, but definitive evidence is not yet available on this point.

This section will discuss the specific attributes of the drugs in these classes which are currently in general prescription use, as listed in Table I. In addition, however, since new compounds with radically different properties may be discovered by chance or design in the near future, some general principles of drug therapy and clinical pharmacology will be stressed as well.

General considerations. Inevitably, selecting the most effective antidepressant drug for the treatment of the individual patient and supervising its subsequent clinical administration will raise a number of questions.

Indications. In what kinds of depressive conditions is the drug particularly useful? Since antidepressant drugs are currently used to treat affective depression occurring in almost any clinical context, it is important to make the following distinction. Is the drug to be administered to patients who are depressed over a medical illness; to patients with permanent personality disorders and transient depressive symptoms; to those in acute reactive depression; to persons in agitated or retarded endogenous depression; to schizophrenics in order to counteract depression; or to patients with anergia, excessive fatigue, or hypochondriasis in the hope that these symptoms may be "depressive equivalents"?

Side effects. What side effects are typically associated with the normal use of the drug? Should the patient be warned about these beforehand? Does the drug adversely affect existing medical conditions? Under what conditions should it be administered in combination with other drugs? Does it cause unusual or severe side effects when combined intentionally, or unintentionally, with other drugs or foods? Should the patient be warned to avoid certain drugs or foods? Could the patient commit suicide successfully with the drug? What is the prescribed treatment in the event of an overdose?

Clinical effects. Is the drug short-acting (making frequent administration important), or long-acting? Are there cumulative effects? Does effective administration require high, loading doses, followed by lower maintenance doses? How can drug treatment best be combined with psychotherapy?

How rapidly does the drug produce clinical change? Both the MAO inhibitors and the imipramine-like drugs may produce some change in the patient within the 1st week; but improvement may be delayed for 2 weeks or more, and it may take a month before the patient derives full benefits from the drug. Such factors have obvious clinical implications: they will determine what the patient should be told, how frequently he should be seen, and the point at which the psychiatrist decides that a certain patient is not

going to respond to a particular drug. Finally, the psychiatrist is understandably concerned with the effectiveness of the specific antidepressant drug he has selected in comparison with inert placebo or nondrug treatment, another antidepressant drug, or electroconvulsive therapy, in terms of speed of action, overall efficacy, and safety.

This section will attempt to answer some of these questions. In addition, appropriate ways of operating in situations where only partial knowledge is available will be suggested. In general, however, the questions which are asked with regard to "new" treatment procedures should be raised in relation to "old" treatment methods as well.

Over-all evaluation of antidepressant therapy

Methodological issues. A key issue in any study of the efficacy of a new antidepressant drug is the general efficacy of the drug in comparison with other treatment methods. Here, controlled clinical trials comparing the new drug with the effects of inert placebo, electroconvulsive therapy (ECT), or a well studied antidepressant, such as imipramine, are usually most revealing. For example, in a recently reported study, approximately 30 per cent of the depressed patients who received placebos showed substantial spontaneous improvement. This figure encompasses, in unknown proportions, patients who improved spontaneously for various internal or external reasons; patients who responded to the nondrug aspects of their treatment; as well as an unknown proportion of true placebo responders, i.e., those patients who get better only because they are receiving a dummy tablet from a physician.

Uncontrolled studies of new psychoactive drugs almost always yield a much higher reported improvement rate than do controlled studies. In part, this may be a result of the bias of the clinical investigator, who sees more improvement than is really there because of his strong wish to find a good new drug. Since current drugs often take 1 to 3 weeks to act, a new antidepressant which acts in 1 or 2 days would be an important addition to drug therapy, even if its over-all efficacy were no greater than that of existing drugs. On the other hand, it should also be pointed out that the highly skeptical approach which characterizes some controlled double blind studies may reduce the actual rate of improvement occurring in the patients under investigation.

Experimental group. Probably the most crucial factors in studies of the efficacy of the antidepressant drugs are the composition of the patient sample treated and identification of the type of patient who responds to a given drug. For understandable reasons, controlled studies which not only report global judgments of degree of improvement but also describe in detail changes in various aspects of the depressive psychopathology of the patients studied (e.g., retarda-

tion, agitation, guilt, and anxiety) are particularly useful.

Again, since some types of patients (e.g., schizophrenics, patients with chronic character disorders, or paranoid patients with depression) may not respond dramatically to antidepressant drugs alone, the ineffectiveness of a drug in a reported controlled study may be a function of the proportion of such poor responders in the patient sample. Similarly, indication of the proportion of patients, if any, who are made worse by use of the drug has important clinical and research implications. Clinical studies must also allow for patients who are receiving combined drug treatment; since other agents, such as the phenothiazines, may themselves have some efficacy in relieving symptoms in depression, the results obtained from studies of such patient groups cannot be interpreted as fully supporting the value of the antidepressant drug.

Control group. A similar problem arises when an active drug (amphetamine or atropine, for example) is used as the comparison treatment in a controlled study. Such an agent may either make depressed patients worse or better; therefore, it provides a different basis for comparison than does an inert placebo or a standard antidepressant drug.

Evaluation of side effects. Identification of the side effects caused by antidepressant drugs constitutes another methodological problem in the evaluation of these agents. In fact, many of the common side effects listed for almost all the antidepressant drugs (e.g., fatigue, dry mouth, dizziness, constipation, profuse sweating, tremor, nausea and vomiting, drowsiness, insomnia, and sexual impotence) are fairly typical symptoms of the depression itself. Some, or all, of these symptoms may have been present prior to treatment with the drug, and others may emerge spontaneously during treatment without actually being caused by the drug. The use of control groups receiving placebos is, therefore, every bit as important in interpreting the possible relationship of side effects to antidepressant medication as it is in evaluating the relationship between the use of the drug and observed clinical improvement.

In addition, a reference standard may facilitate interpretation of the degree of risk attributable to antidepressant drugs which may be associated with rare, but severe, side effects. More specifically, unless definitive evidence is available, it is necessary to show that the frequency with which a given side effect occurs in conjunction with administration of the drug is greater than its base rate occurrence in a comparable untreated population. Unfortunately, however, in the absence of sound data, the clinician will frequently have to evaluate the degree of risk himself. Theoretically, the Food and Drug Administration has the responsibility for reviewing information of this sort and deciding whether a drug should be removed from the market or its label changed, but in the case of a

moderately effective drug which produces severe side effects only rarely the clinician will often be asked to use his own judgment as to whether the possibility that the drug may benefit a given patient outweighs the possibility of a serious toxic effect. In any event, the current and future literature on antidepressant drugs should be read carefully with these methodological issues in mind.

Imipramine-Type Drugs

Definition. Imipramine (iminodibenzyl) derivatives and amitriptyline (cycloheptadiene) derivatives are similar to the phenothiazine derivatives in structure. The desmethyl derivatives of imipramine and amitriptyline, specifically, desmethylimipramine (desipramine) and desmethyلامitriptyline (nortriptyline), appear to be active antidepressants. These drugs are readily absorbed from the gastrointestinal tract. In humans, imipramine and amitriptyline are partially metabolized to their desmethyl derivative. Amitriptyline is said to be more sedative than imipramine; the desmethyl derivatives are said to be less sedative.

Clinical effects. In normal individuals, imipramine and amitriptyline produce little effect other than slight sedation. However, in severely depressed psychotic patients they produce a striking improvement in behavior and a marked lessening of depression, generally within 3 to 10 days after the onset of treatment. Consequently, patients who do not respond after receiving an adequate dose of these drugs for a 3-week period probably will not respond at all. Furthermore, the degree of response in the first 3 weeks of treatment predicts the ultimate therapeutic response.

Imipramine

Results of treatment. Table II lists the number of double blind studies in which imipramine was shown to be more effective than placebos, as opposed to the number of studies in which imipramine was equal to placebos in therapeutic effectiveness. These statistics indicate that most of the studies reported demonstrated the therapeutic effectiveness of imipramine. However, for the most part, those studies which failed to show a positive effect either used a small patient sample, or small doses of the drug. On the other hand, however, two of the studies which did not show a clear cut imipramine effect did use reasonably large samples. Perhaps the relative ineffectiveness of imipramine in these studies may be attributed to the clinical characteristics of the patient sample, which included a fair number of schizoaffective patients, elderly patients, and patients with compensation neuroses.

More specifically, Klerman and Cole, who compiled the statistics for the therapeutic success (versus the relative lack of success) of imipramine, found that 65 per cent of the 550 patients treated with imipramine

improved, while only 31 per cent of the 459 patients who received placebos improved. Furthermore, the percentage of patients who responded to placebo differed in different treatment settings, so that the response was greater among the population seen on acute in-patient services (46 per cent), than on either the chronic in-patient services (16 per cent) or the out-patient services (21 per cent). However, the percentage of patients responding to imipramine was greater in all three settings. Although these data clearly indicate that imipramine is superior to placebo, they have other important implications as well: one-third of the patients treated with imipramine did not show even moderate improvement, which certainly indicates the need for an improvement in treatment methods.

Only a few recent studies make any real claim to have identified a group of patients for whom imipramine has proven particularly effective. Kiloh performed a discriminant function analysis in patients treated with imipramine and concluded that the variables which were associated with a good drug response were those indicative of endogenous depression, e.g., depression different in quality from normal states of sadness; feelings of severe guilt and unworthiness, and severe retardation or agitation; and depressions accompanied by such symptoms as early morning awakening and weight loss. On the other hand, patients with neurotic depressions, whose premorbid personalities showed hysterical, irritable, and hypochondriacal features, along with self-pity, did not demonstrate a clear cut favorable response to the drug. On another level, Klerman and Cole's review of the literature suggests that studies of imipramine carried out in out-patient treatment settings show a more striking drug-placebo difference in improvement rates (50 per cent) than do studies carried out on newly admitted in-patients (16 per cent). Thus, there may be several subpopulations of drug responders.

Donald Klein recently described a quite different group of patients who respond uniquely both to imipramine and to MAO inhibitors. These patients are not depressed but show phobic symptoms associated with recurrent severe anxiety attacks. These symptoms are unresponsive to any of the existing tranquilizers but respond dramatically to imipramine. Since these patients respond to antidepressant drug treatment, some investigators would regard these as cases of "masked" or atypical depression. However, it is equally possible that these patients have a non-depressive psychiatric condition, which, nevertheless, is uniquely responsive to "antidepressant" drugs.

Paranoid patients often do poorly with imipramine and, to a lesser extent, with amitriptyline. Wittenborn has found, too, that premenopausal patients, with a self-critical premorbid personality, tend not to do well with imipramine. However, in general, attempts to identify drug-susceptible populations, as

TABLE II
Comparative Evaluation of Various Forms of Organic Therapy
Used in the Treatment of Depression

Treatment	No. of Studies of Antidepressant Drugs in Which	
	Drug more effective than placebo	Drug equal to or less effective than placebo
Imipramine (Tofranil).....	19	6
Amitriptyline (Elavil).....	4	1 ^a
Iproniazid (Marsilid).....	2	1
Nialamide (Niamid).....	1	2
Phenelzine (Nardil).....	3	3
Isocarboxazid (Marplan).....	3	2
Tranylepromine (Parnate).....	4	0
Nortriptyline (Aventyl).....	2	1
Desmethylinipramine (desipramine) (Pertofrane).....	1	1
Amphetamine (Benzedrine).....	0	3
Chlorpromazine (Thorazine).....	2	1

Treatment	No. of Studies of Other Treatment Methods in Which		
	Treatment more effective than imipramine	Treatment equal to imipramine	Treatment less effective than imipramine
ECT.....	3	3	0
Amitriptyline.....	3	2	0
Desmethylinipramine.....	0	3	1
Phenelzine.....	0	3	2
Isocarboxazid.....	0	1	2
Tranylepromine.....	0	2	0
Thioridazine.....	0	1 ^a	0
Chlorpromazine.....	0	1 ^a	0

^a See the text.

opposed to those populations whose response is negligible, have not been sufficiently exhaustive. Nor have the studies described above been cross-validated. Thus, it is apparent that the matching of clinical subtypes of depression to effective treatment by a specific drug must await further research.

Dosage. Dosage is a particularly important variable in the treatment of depression with drugs. As mentioned earlier, some of the trials which showed less striking results undoubtedly reflected the low doses used. Many psychiatrists favor dose levels of 200 to 250 mg. of imipramine-type drugs a day, a level which should be obtained gradually over a period of several days. Other investigators feel that the ideal therapeutic dose lies between 150 and 350 mg. per day. However, clinical evidence would seem to indicate that, with many patients, increasing the dose above 250 mg. does not produce greater improvement, although it does produce more intense side effects.

Furthermore, as indicated above, while the drug may have an effect within 3 days after the onset of

treatment, it may take as long as 3 weeks before there is any evidence of improvement. Therefore, if the patient receives a low dosage of imipramine for 20 days and then, on the 21st day, receives a higher dosage, this could not be considered an adequate therapeutic trial. Since the higher dose was administered for only 1 day, he may not have received a therapeutic dosage over a long enough period of time to benefit from the antidepressant effects of the drug. As is true of most areas of psychopharmacology, unfortunately, dose-response curves for the antidepressant drugs have not yet been determined in human beings, although it is hoped that future research will remedy this defect. In the meantime, one such study has been conducted in which the investigators concluded that there was little therapeutic effect with doses of approximately 150 mg., but that higher doses, such as 240 mg. a day, did evoke a therapeutic effect.

Amitriptyline

Results of treatment. It can be seen from Table II that amitriptyline is equal to, or perhaps slightly more effective than, imipramine in antidepressant activity. However, since two of the three studies which demonstrate the greater effectiveness of amitriptyline were done by the same authors, the superiority of this antidepressant drug requires confirmation by other investigators. Nevertheless, on the basis of studies done to date, amitriptyline has proven more effective, more often, in the treatment of more severely depressed patients, particularly older women. In a single study, amitriptyline also proved slightly faster-acting than imipramine, although this finding also requires further confirmation.

Dosage. The effective dose for amitriptyline is comparable to that for imipramine (150 to 250 mg. per day).

Desmethyl derivatives

Definition. The desmethyl derivatives of imipramine and amitriptyline, namely, desipramine and nortriptyline, are similar in many pharmacological parameters to the parent compounds but appear to be more stimulating and may aggravate anxiety and tension. Their optimal dosage ranges have not yet been definitely established. Although these compounds were both more potent (less drug being required to obtain the same effect) and faster-acting in animals, in humans the required dose and the speed of action appear to be quite similar to those of imipramine and amitriptyline.

Results of treatment. Preliminary clinical evidence indicates that the desmethyl derivatives are more effective in the treatment of retarded depression. On the other hand, desipramine showed no superiority over placebo in a study of depressed Veterans Administration patients, a group which might be expected to include schizo-affective psychoses and compensation neuroses with depression. In one trial comparing imi-

pramine with desipramine, both were found to have an equal therapeutic effect. However, in another trial, desipramine was found to be less effective than imipramine. Nortriptyline has appeared to be an effective antidepressant in preliminary studies, which included samples of chronically ill geriatric patients.

Side Effects of Imipramine and Amitriptyline

Autonomic effects. The side effects of amitriptyline and imipramine are practically identical. Both drugs can cause the typical autonomic effects expected as a result of their anticholinergic pharmacological properties, such as dry mouth, palpitations, tachycardia, loss of accommodation, postural hypotension, fainting, dizziness, vomiting, constipation, edema, and aggravation of glaucoma. In rare instances, urinary retention and paralytic ileus have also been observed. Both of these side effects, however infrequent, can lead to serious or even fatal complications, particularly if imipramine or amitriptyline has been combined with other drugs having similar anticholinergic effects, e.g., a phenothiazine with an anti-parkinsonian drug. Other rare side effects include galactorrhea, edema, and profuse sweating. In general, dry mouth is the most noteworthy of the autonomic side effects, and patients should be warned that it may occur. Postural hypotension is not usually a problem. In those rare instances where it is troublesome, some authors advise the use of α -fluorohydrocortisone (0.025 to 0.05 mg. b.i.d.). (In summary, on the whole, autonomic side effects are very mild and tend to become even less troublesome after the first few weeks of treatment; in any event, they can be controlled by adjusting the dosage of the drug.)

Allergic and hypersensitivity effects. Skin reactions are noted early in therapy and often subside with reduced dosage. Jaundice, which occurs rarely, is of the cholestatic type, similar to that attributed to chlorpromazine. With desipramine, imipramine, and amitriptyline, jaundice usually occurs in the first few months of treatment, following inconstant prodromal symptoms of abdominal pain, fever, and anorexia. However, it generally recedes rapidly after treatment is discontinued. (Liver function tests show no clear cut alteration with imipramine treatment.) Agranulocytosis is a rare complication of imipramine and has been reported in approximately 12 cases, which included 3 fatalities. Agranulocytosis has also been reported to be associated with amitriptyline treatment in one instance. Finally, rare cases of leukocytosis, leukopenia, and eosinophilia have been observed with imipramine and amitriptyline.

Cardiovascular effects. When administered in usual therapeutic doses, both imipramine and amitriptyline may cause flattened T waves, prolonged QT intervals, and depressed S-T segments in the electrocardiogram. Cardiovascular incidents have occurred in the elderly. However, once again, it should be emphasized that sometimes it is difficult to separate

a side effect which is causally related to a drug from a cardiovascular incident which is precipitated by other factors but, by chance, coincides with drug therapy. This is particularly true with elderly people. Since cardiovascular disease is common among this segment of the patient population, it is difficult to ascertain whether such incidents should be attributed to drug treatment.

Central nervous system effects. Imipramine and amitriptyline may cause a persistent, fine, rapid tremor, particularly in the upper extremities, but also in the tongue. Twitching, convulsions, dysarthria, paresthesia, peroneal palsies, and ataxia may occur in rare instances. Disturbance of motor function is likely to occur in elderly patients and may have serious consequences. Insomnia has also been noted in elderly patients on occasion, but it is transitory and responds well to nightly sedation. From time to time, both amitriptyline and imipramine may cause an episode of hypomanic or schizophrenic excitement. It is important to note that such episodes usually occur in patients with schizophrenia, mental deficiency, or chronic brain syndrome, rather than neuroses, which suggests that a preexisting substrata of disease must be present for the drug to exert its psychotomimetic properties. Such symptoms usually subside within 1 or 2 days after withdrawal of the drug and can be controlled by administration of the phenothiazine derivatives. Finally, withdrawal reactions have been observed on abrupt termination of imipramine, after 2 months of treatment with 300 mg. daily. However, these reactions were mild, consisting of nausea, vomiting, and malaise. In any event, since a gradual reduction in dosage is usually carried out in preference to abrupt withdrawal, this should not pose a clinical problem.

Monoamine Oxidase Inhibitors

Definition. Iproniazid, the first widely prescribed monoamine oxidase inhibitor, produced troublesome liver toxicity. This led to the synthesis of the other hydrazine antidepressants (isocarboxazid, nialamide, and phenelzine), and the nonhydrazine monoamine oxidase inhibitors (tranylcypromine and pargyline).

Results of treatment. Table II lists the number of controlled studies showing the efficacy of these drugs versus that of a placebo. Comparisons with imipramine are also presented; since imipramine constitutes the best studied and most widely used alternate chemotherapy for depressed patients, it provides a good standard with which to compare the MAO inhibitors. It can be seen from these statistical data that the therapeutic effect of tranylcypromine is greater than that of placebo. There is evidence, in two well controlled studies, that iproniazid is also therapeutically effective.

Phenelzine was found to be slightly more effective than isocarboxazid, and tranylcypromine was found to be slightly more effective than pargyline. In terms of

over-all comparison, phenelzine and isocarboxazid were shown to be effective antidepressants in some studies; however, other studies have failed to substantiate this finding. Similarly, in general, nialamide, in usual doses, has not been found effective as an antidepressant; but it was shown to be effective in one study, in which it was used in high doses.

In general, on the basis of the evidence, one might classify the MAO inhibitors in terms of their clinical effectiveness as follows: tranylcypromine and iproniazid appear to be most effective, nialamide and isocarboxazid are least effective, and phenelzine occupies a position somewhere in the middle. Roughly speaking, reported toxicity parallels clinical effectiveness. This raises a question as to whether some MAO inhibitors are less toxic at dosages recommended by the manufacturer because these induce less monoamine oxidase inhibition and, concomitantly, whether their diminished pharmacological effect also diminishes their therapeutic effectiveness.

In fact, the therapeutic effect of the monoamine oxidase inhibitors may well be mediated through their monoamine oxidase-inhibiting property. However, very few studies of humans have established a definitive relationship of therapeutic effects to the degree of monoamine oxidase inhibition. On the whole, such studies yield mixed results: some show a relationship; others do not. In addition, dose-response studies, which might clarify the situation to some extent, have not been done with this class of drugs.

Side effects

Toxic effects. As mentioned earlier, initially a number of cases of severe hepatic necrosis with a high fatality rate (about 25 per cent) were reported with iproniazid, which led to its withdrawal from general prescription use. Currently, the incidence has been estimated as ranging from 1 in 3,000 to 1 in 10,000 patients. Generally, the illness occurs anywhere from a few days to 6 or more months after the onset of drug treatment. Hepatocellular damage has also been reported in patients treated with other hydrazine MAO inhibitor antidepressants, i.e., phenelzine, nialamide, and isocarboxazid. However, while definitive studies of the incidence of these reactions have not been made, it is felt that they occur less frequently with these MAO inhibitors than with iproniazid. Investigators have also reported that a patient placed on a second trial of MAO inhibitors can have a recurrence of jaundice, whether the same or a different MAO inhibitor is administered. Consequently, the free hydrazine, rather than the MAO-inhibiting property, is suspected as the causative agent. (Jaundice is not reported with nonhydrazine MAO inhibitors.)

Autonomic side effects. The MAO inhibitors cause autonomic (anticholinergic) side effects such as dry mouth, dizziness, orthostatic hypotension, epi-

gastric distress, constipation, delayed micturition, delayed ejaculation, and impotence.

A side effect of special importance which may result from the use of the MAO inhibitors, particularly tranylecypromine, is the hypertensive crisis which is occasionally accompanied by intracranial bleeding. Severe occipital headache, stiff neck, sweating, nausea and vomiting, and sharply elevated blood pressure are common prodromal symptoms. It has been estimated that 1 death per 100,000 has occurred following such crises in patients treated with tranylecypromine. In many instances, these reactions were observed to follow the ingestion of well ripened cheeses, such as Camembert, Liederkranz, Edam, or cheddar, which contained appreciable amounts of tyramine. Apparently, the pressor effects of tyramine are potentiated because it is protected from destruction by the MAO inhibition. Similar attacks might be triggered by alcohol, epinephrine, cocaine, broad (fava) beans, Marmite, Bovril, yogurt, amphetamine, ephedrine and other sympathomimetic agents, beers, wine, creams, histamine, and bee venom. Furthermore, the above complications can also occur with other MAO inhibitors, including phenelzine, nialamide, and pargyline. However, the possibility of such side effects as headache, hypertensive crisis, and intracranial bleeding can be reduced by careful attention to diet and by avoidance of pressor drugs or related substances. Patients should be appropriately warned. Should these side effects occur despite such precautions, they can be treated by the administration of phentolamine.

The combination of an MAO inhibitor with an imipramine-type drug can lead to a syndrome characterized by restlessness, dizziness, tremulousness, muscle twitching, sweating, convulsions, hyperpyrexia (104° to 109°), and sometimes death. These reactions can also occur when an MAO inhibitor is replaced by an imipramine-type drug. Consequently, a wash-out period of 7 to 10 days is recommended before such a substitution is made. Some clinicians have used a combination of the two types of drugs with reasonable safety by closely supervising their patients and watching and cautiously adjusting dosages where indicated, and they have claimed good results without adverse effects. However, these drugs should not be used in combination as a routine measure until their safety, efficacy, and appropriate dosage schedules have been worked out by skilled clinical investigators. The danger is most acute when high doses of an imipramine-type or amphetamine drug are given in cases where monoamine oxidase has been inhibited to a considerable degree. In fact, death has occurred following a single injection of 25 mg. of imipramine in a newly hospitalized patient whose prior MAO inhibiting treatment was not known to the hospital staff. The need to obtain a careful history of previous drug treatment on depressed patients before initiating a new course of drug therapy is clearly evident.

However, it should be pointed out that death can also occur with ECT. The death rate is estimated to be in the ratio of 1 to 3,000 cases, as compared to the estimated death rate with iproniazid of 1 in 10,000 cases and with tranylecypromine of 1 in 100,000 cases. For purposes of comparison, death rates from the surgical treatment of peptic ulcer vary from 1 in 100 to 1 in 1,000.

Finally, the MAO inhibitors potentiate a great variety of drugs, including sympathomimetic amines (such as ephedrine), opiates (e.g., meperidine), barbiturates, methyl dopa, ganglionic blocking agents, procaine, anesthetic agents, chloral hydrate, and aspirin.

Central nervous system effects. MAO inhibitors can convert a retarded depression into an agitated or anxious one and occasionally cause hypomania or an acute schizophrenic psychosis. MAO inhibitors can also produce an acute confusional reaction, with disorientation, mental clouding, and illusions. The MAO inhibitors have been associated with altered erotic desires, edema, and muscle tremor. And they can cause dizziness, generalized weakness, slurred speech, increased muscle tone, hyperreflexia, and clonus. An occasional peripheral neuropathy, similar to that occurring from pyridoxine deficiencies and observed in connection with isoniazid treatment, can also occur.

Psychomotor Stimulants

Definition. Amphetamine, dextroamphetamine, methylphenidate, deanol, and pipradol are classified as psychomotor stimulants.

Results of treatment. Although methylphenidate may be of value in treating nonpsychiatric patients with depression, as a nonspecific psychomotor stimulant, in one study of mildly to moderately depressed patients its value was found to barely exceed that of placebo.

Moreover, amphetamine was found to be less effective than placebo in the treatment of depressed outpatients by British general practitioners; and amphetamine used in combination with chlorpromazine had a less favorable effect on chronic schizophrenics than phenothiazine treatment alone. In still another British study, amphetamine also proved less effective than phenelzine, and no better than placebo, in the treatment of depression. In a Veterans Administration study, dextroamphetamine was no more effective than placebo in treating hospitalized depressed patients.

Although relatively few studies have been done on the stimulants as a group, the data accumulated on amphetamine to date suggest that, if they differ from placebo, it is in the direction of less favorable therapeutic effect. The amphetamine-type drugs can cause jitteriness, palpitation, psychoses, and other toxic effects. Psychic dependence is common with dextro-

amphetamine, and with a combination of dextroamphetamine with barbiturates—a preparation used by “goofball” addicts. Methylphenidate can produce cardiac arrhythmias.

Interestingly, however, there is excellent evidence that amphetamines are effective in the reduction and control of hyperkinetic behavior in children, a pharmacological paradox of considerable clinical significance. These stimulants are also effective in postponing the deterioration in psychomotor performance which often accompanies fatigue, a property which may be useful in carefully selected instances.

Combined Drug Treatment

Results of treatment. Clinical experience has suggested that cases of acute psychosis with features of schizophrenia and depression will sometimes respond to imipramine-type drugs, used in combination with phenothiazine derivatives, but this has not been studied extensively in double blind studies. In a Veterans Administration study of chronic schizophrenics, the addition of isocarboxazid or imipramine to chlorpromazine did not effect greater improvement than did placebo. However, in a state hospital study, amitriptyline plus perphenazine did result in differential improvement, particularly as compared to amitriptyline alone or placebo treatment.

In brief, the value of combining imipramine-type antidepressants with phenothiazines in the treatment of the chronic retarded schizophrenic or acute depressive patients with schizophrenic features remains a matter of clinical judgment until further evidence is available. However, in the treatment of the patient with schizophrenic features, it is important to remember that, as mentioned above, the psychosis is occasionally exacerbated by imipramine when given alone (in some series of studies, 25 per cent of the patients so treated showed such exacerbation). It is also a common clinical observation that many patients treated with imipramine will often be helped by the addition of a phenothiazine derivative at the point in their recovery when they begin to get “high.”

Tranquilizers

Results of treatment. A single controlled study, done at Hillside Hospital in New York, showed a chlorpromazine-procycidine combination to be as effective as imipramine, and more effective than placebo, in the treatment of depressed patients. An unpublished study carried out at the Psychopharmacology Service Center at the National Institute of Mental Health has shown a tendency for chlorpromazine, when used alone, to be superior to placebo in the treatment of severely depressed hospitalized patients. Finally, a Veterans Administration study found that, while patients with retarded depressions do better with imipramine, patients with anxious depressions do

better with thioridazine. Clearly, then, the phenothiazines may be useful in the treatment of depression.

Rickels found that Deprol (a meprobamate-benactyzine combination) was of value in treating depressed lower class medical out-patients with many functional somatic complaints, who felt the sedative action to be consistent with the feeling of being tranquilized. These patients were alarmed by the autonomic side effects of imipramine. On the other hand, psychologically oriented depressed patients from a psychiatric clinic were helped more by imipramine, presumably because they disliked the sedative effects of Deprol.

There is also evidence that chlorthalidopoxide (Librium) has some beneficial effect on anxious Veterans Administration out-patients by increasing their vigor or energy. Chlorthalidopoxide also has a major advantage in the treatment of mild depression, as compared with phenobarbital, in that large numbers of pills may be ingested without fatal results.

Choice of Treatment in Depression

Comparative evaluations. Since two types of drugs have proven effective in the treatment of depressed patients, the question arises as to which, if either, is more effective than ECT. In Table II, the efficacy of imipramine in the treatment of depression is compared with ECT and the other antidepressant medications.

In three of the six studies comparing imipramine to ECT, ECT proved more effective; in the remaining three studies ECT was equally effective. However, other factors merit consideration as well: there is considerable disagreement as to whether ECT acts faster than imipramine, a factor of importance in the treatment of the acutely suicidal patient. But few controlled studies have been conducted to date on the kinetics of human psychopharmacology. Nor is it clear which clinical subtype will respond to which treatment. Since ECT produces a temporary memory loss, postshock confusion, and, perhaps, subtle but permanent central nervous system changes, some psychiatrists prefer not to use it as a routine measure. It has also been suggested that maintenance therapy with imipramine is necessary to prevent recurrence of depression after remission with ECT. The recurrence rate of depression following ECT is high (18 to 23 per cent after 6 months). Yet, whatever its disadvantages, it is noteworthy that of the segment of depressed patients who do not respond to imipramine, amitriptyline, or phenelzine, approximately 50 per cent will respond to ECT. Clearly, it would be important to develop methods of pretreatment identification of patients who will not be helped by imipramine (or other antidepressants) but who will respond to ECT, so that they can be started on the treatment of choice without delay.

Phenelzine has been shown to be inferior to ECT in

four studies. Isocarboxazid has also been found less effective than ECT. However, a tranyleypromine and trifluoperazine combination has been reported to result in a fairly rapid antidepressant effect, and there is some evidence that this combination can be uniquely effective in a small proportion of patients. But, again, methods have not yet been developed which would make it possible to identify these patients.

With specific reference to the antidepressant drugs, if the small number of comparative studies reported here can be considered firm evidence, amitriptyline would have to be judged superior to imipramine, while tranyleypromine, and possibly desmethylinipramine and nortriptyline, would have to be judged comparable to imipramine in efficacy. Phenelzine, and particularly isocarboxazid, would both appear to be slightly inferior to imipramine. The combined data from a number of studies on the imipramine-phenelzine comparison yielded an improvement rate of 71 per cent (138/196) for imipramine versus 62 per cent for phenelzine (101/164), which is of borderline significance (0.10 level).

And, again, the value of pretreatment determination of differential response to various types of treatment in implementing treatment should be underscored. Actually, a few observations have been made which may provide clues to potential response. It has been suggested that a patient with a genetic relative who responded well to either an imipramine-type drug or a MAO inhibitor will respond more often to that type of drug than to another. It has also been suggested in two studies that imipramine responders remove imipramine from the blood stream at a different rate than do nonresponders. Similarly, it might be possible to predict response to MAO inhibitors on the basis of a biochemical test of actual MAO inhibition. It has also been suggested that a pretreatment high salivation rate or low arteriovenous glucose difference might predict the patient's future response to MAO inhibitors. Finally, it has also been suggested that cases of hysteria, with secondary depression, respond best to MAO inhibitors.

The fact that one type of antidepressant is completely ineffective in a given patient, while another drug produces a dramatic effect, is another indication that the antidepressant acts to correct a pre-existing deficit and is not a general euphoriant. It should be pointed out, however, that studies which identify a specific type of patient as responding differentially to a drug should be regarded as only tentative until they have been cross-validated. When one considers such data in relation to a large number of clinical dimensions, it becomes obvious that in some instances good responders are separated from bad responders only by chance. It will be of considerable interest to see whether future research will successfully identify a specific type of patient who re-

sponds differentially to any one of the major existing forms of treatment for depression—ECT, imipramine-type drugs, or MAO inhibitors.

In summary, imipramine-type drugs are probably slightly more effective and slightly safer than MAO inhibitors. Conclusive evidence is not yet available which would indicate that any of the three newer imipramine-like drugs is preferable to either imipramine or amitriptyline. However, there does appear to be some basis for preferring amitriptyline in the treatment of severe depression. Phenothiazine derivatives and antianxiety agents may also be of value in selected cases. In the absence of clear cut differences, it is, of course, better for the clinician to be highly familiar with the assets and liabilities of a small number of drugs than to be minimally informed and experienced in the use of a large number of drugs. At the same time, the literature on the newer antidepressants should be examined periodically to see whether newer agents have been demonstrated to have any advantages over the older drugs or whether more clear cut differential indications for the use of older drugs in specific types of depressed patients have been developed.

Indications and contraindications. As pointed out earlier, most of the side effects experienced by patients receiving antidepressant drugs are not actually drug-related. In general, the antidepressants are quite safe, and, while potentially dangerous side effects do occur, they are rare. Since they do occur, however, and these drugs are quite potent, they should only be prescribed when there are definite indications that such treatment is necessary.

Under normal circumstances, there is not medical need for weekly routine laboratory tests when either type of antidepressant is used, although appropriate investigations should be made when there is evidence of physical disease before administration of the drug. Occasionally, in a single liver function test, small transient abnormal values occur, particularly in chronic psychotic patients. These are not a contraindication to initiating drug therapy; nor are they an absolute indication that the drug should be discontinued; rather they indicate the need for further investigation and repetition of the test, to check for laboratory error.

Since patients can successfully commit suicide with antidepressant medication, their use should be closely supervised in the potentially suicidal patient.

Finally, although this section has not concerned itself with the psychotherapeutic treatment of depression, effective psychotherapy may greatly enhance the patient's response to antidepressant drugs. Moreover, depressions in patients with underlying neuroses or personality disorders may respond dramatically to psychotherapy and not respond at all to existing drugs.

The stakes are fairly high in the more serious depres-

sions. The average untreated depression often runs for 6 months or more before spontaneous remission occurs, if it does. It has been estimated that about 15 per cent of this population eventually commit suicide, and about 20 per cent have multiple recurrences. It is recommended, therefore, that the physician be familiar with an effective antidepressant drug for each type of illness (and for each type of patient) and that he administer it, when indicated, in the dosage considered to be most effective.

Suggested Cross References

For a discussion of depression, see the various clinical sections on the depressive reactions including Section 17.1 on the manic-depressive psychoses, Section 17.2 on the psychotic depressive reaction, Section 24.2 on the neurotic depressive reaction, Section 17.3 on involutional depression. For an alternative viewpoint regarding the treatment of depression, see Section 35.5 on convulsive therapies and Chapter 34 on psychotherapies. For a discussion of the use of tranquilizers in the treatment of depression, see Section 35.1 on tranquilizers.

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35.3 SEDATIVES

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History

Today, the majority of psychiatrists consider the use of sedative drugs (i.e., barbiturates, bromides, etc.) a valuable tool in the armamentarium of the psychotherapist, when such measures are dictated by valid therapeutic goals and follow a carefully planned course. This viewpoint has evolved over a period of time.

Barbiturates were introduced into medicine by E. Fischer and J. von Mering in 1903. According to Malamud, the first extensive use of drugs to induce sedation occurred shortly afterward, when the protest against the use of mechanical restraints became so vehement that hospitals were forced to curb their use. Chemical restraints were then substituted for mechanical restraints. As time went on, however, the injurious effects of chemical restraints were noted; concomitantly, psychiatrists began to realize that sedatives had a place in psychiatry and that their function need not be restricted to providing another form of restraint.

Freud wrote, in 1922 and again in 1933, of the need to use chemical agents to cope with the powerful psychological forces at work in certain psychiatric conditions, without specifying the properties of such agents. In fact, sedatives had been used for therapeutic purposes, for the first time, in the period following the First World War. And in 1922, Klaesi reported good results in the treatment of schizophrenia by continued narcosis, using Somnifen. However, the use of Somnifen for such purposes never gained full acceptance, for a variety of reasons. For one, its therapeutic value was questioned; secondly, there were reports of complications, such as the development of intercurrent infections.

In 1930, Bleckwenn reported on his experiences with the use of barbiturates in the treatment of mental disorders. Over a 10-year period, he found that the emotional state of the patients so treated had been altered by the drug to the extent that their contact with reality improved. These findings led, in turn, to the idea that such drugs might be helpful in psychotherapeutic situations where emotional contact with the patient could not be established otherwise, due to the nature of the illness.

Current Application of Sedative Drugs in Psychiatric Treatment

Rationale. The rationale for the use of sedatives in psychotherapy, as stated below, follows Kubie's formulation. The sedative acts as a psychic analgesic and in so doing allows the patient to withstand such un-

pleasant emotions as rage, anxiety, and guilt. As a result, painful areas of experience may be explored without immediate withdrawal or repression. In this way, the drug aids in the recovery of repressed and dissociated experiences which played a role in the etiology of the patient's illness. And, at the same time, interpretations which would cause psychic pain under other circumstances may be accepted, integrated, and synthesized in a healthier and more mature manner.

In general, the barbiturates are the most commonly used sedatives. Depending on the effect to be achieved, one may prescribe one of the rapid, short-acting derivatives, such as pentobarbital (Nembutal), or, on the other hand, an intermediate-acting barbiturate, such as amobarbital (Amytal), may be deemed more suitable. In still other instances, when the goal is a long-acting effect, phenobarbital may be the sedative of choice. In addition, bromides, chloral hydrate, paraldehyde, scopolamine, and, occasionally, the antihistamines may be used for sedative purposes. Nor does this represent an exhaustive list of the drugs that may be used for purposes of sedation. However, it is sufficiently inclusive to cover most situations in which the use of sedatives is deemed advisable, in conjunction with the psychotherapeutic process.

Action. In general, the basic function of the sedative drugs is to promote relaxation by decreasing restlessness and irritability. More specifically, by their depressant action on the limbic system and the hypothalamus, all the sedative drugs, and the barbiturates in particular, neutralize overly intense affective discharge from the autonomic and vegetative centers. Thus, their depressant action on the reticular formation and neocortex may induce feelings of ease, and even mild euphoria at times.

The use of the tranquilizing drugs in psychiatric treatment is described in detail elsewhere in this volume (Section 35.1). However, the specific differences between the tranquilizers and the barbiturates merit brief discussion in this context. Unlike the ataractics, the barbiturates usually do not have normalizing effects (antipsychotic action) on psychotic patients. The barbiturates also differ from the ataractics in their more marked depressant action on the cortex. These drugs are similar in their calming effects. However, in contrast to the tranquilizers, a dosage of barbiturates sufficient to induce sedation frequently causes diminished consciousness and sleepiness as well. Obviously, then, when barbiturates are used in the management of psychiatric patients, this should be borne in mind and the dosage adjusted accordingly. Otherwise, instead of inducing relaxation, the drug may cause the patient to fall asleep, thereby precipitately terminating the psychotherapeutic process. Finally, as noted above, the sedative drugs are central nervous system depressants, and, consequently, they all impair cognitive functions to some degree, depending on the dosage administered. The tranquilizing drugs, on the other hand, have the ability to modify affective

states without seriously impairing cognitive function. As a result, they have replaced the use of sedatives to a great extent, especially in the treatment of the psychoses, although on occasion both may be used in conjunction.

Indications. Sedatives serve various functions in psychiatric therapy. They may be prescribed for relatively short periods of time, during specific critical situations in the psychotherapeutic process. At other times, they may be used as emergency measures to control severely disturbed and agitated behavior. Again, mild sedation may be administered when it is anticipated that the patient may be exposed to excessive emotional stress. Finally, and most important, sedatives are helpful in the management of insomnia and other sleep disturbances which often complicate existing psychiatric conditions.

Contraindications. More prolonged use of sedatives may be indicated when the patient appears to be in a chronic state of acute anxiety or agitation, which interferes with the psychotherapeutic process. However, in situations where the prolonged use of sedation is indicated, the physician must be alert to the possible side effects of the drug. These may include insidious toxic effects which may be manifested by the appearance of an organic brain syndrome. The physician should also be alert to allergic and other idiosyncratic reactions to the use of sedative drugs, which may take the form of fever, rash, manic excitement, or even delirium. Unusual reactions to barbiturates have been reported in patients with diabetes mellitus and hyperthyroidism. Congestive heart failure should be considered a possible contraindication; other physiological contraindications to the use of sedatives are liver and cardiorenovascular disorders. Finally, extreme caution should be used in prescribing barbiturates for patients with fever, and for older or debilitated patients.

There are other contraindications as well. According to recent reports, an increasing number of patients have become addicted to the sedative drugs, especially to the barbiturates. And the barbiturates have also been used to an increasing extent in suicide attempts. These hazards clearly indicate that the use of sedatives by patients who appear to be suicidal or prone to addiction must be carefully supervised. In a broader sense, however, they also indicate the need for periodic review of any prolonged sedative regimen.

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35.4 NARCOTHERAPY

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Introduction

Definition. The term "narcotherapy" refers to the intravenous injection of drugs into the patient, as an adjunct to psychotherapy. More precisely, this procedure derives from the premise that the creation of an altered state of awareness or consciousness will facilitate the diagnosis and treatment of psychiatric illness. At one time or another, alcohol, ether, nitrous oxide, all the modern barbiturates, and the hallucinogenic drugs, have been used to this end. At present, however, the two drugs employed most commonly for this purpose are sodium Pentothal and sodium Amytal; this discussion will deal primarily with the use of sodium Pentothal.

History. Bleckwenn was the first to advocate the intravenous injection of sodium Amytal in psychiatric conditions. Subsequently, in 1926, Horsley originated the term "narcoanalysis," which involved the use of both sodium Pentothal and sodium Amytal. However, the application of these drugs was studied most extensively by Grinker, in relation to short term, emergency psychotherapy of the war neuroses. He described this procedure as "narcosynthesis."

Techniques. The use of intravenous injections of barbiturates may vary in terms of procedures involved, which, in turn, will depend on the specific treatment goals. Attempts have been made to classify existing techniques on the basis of the structure and goals of the interview. Thus they have been variously described as (1) narcosynthesis, (2) abreaction, (3) narcoanalysis, (4) narcosuggestion and hypnoanalysis, and (5) narcoplexis. In fact, these terms are often confusing, and a simpler classification seems appropriate.

Essentially, three techniques are utilized in narcotherapy which may be described as follows.

Simple catharsis. The use of the Pentothal interview simply to facilitate catharsis is the technique used least frequently. In addition, it is probably the least effective application of narcotherapy. In brief, the disturbing conflict is elicited with affect (abreaction). However, the material uncovered is not ade-

quately integrated into the total personality. Consequently, while the experience may be effective, its long term results are relatively unpredictable.

Suggestion. The therapist makes suggestions to the patient while he is under the influence of the drug, without attempting to uncover repressed material. Thus, this technique resembles supportive psychotherapy, and, as is true of all treatment procedures based on suggestion, while it may have some temporary value, the ability of the patient to maintain his therapeutic gains is questionable.

Narcoanalysis and narcosynthesis. Both of these procedures involve the subsequent application of psychotherapeutic techniques to help the patient integrate and work through the material that has been elicited through the use of the drug.

Pentothal Interview

Rationale. The Pentothal interview helps the patient to establish a relationship with the therapist, which may be the first step in altering his view of the world and his environment, so that he no longer sees these as completely hostile forces in relation to his needs and desires. More specifically, the patient's illness and symptoms have served as a protection against the breakthrough of the anxiety which surrounds his underlying conflict(s). The drug appears to lessen this anxiety so that the patient can better tolerate expression of painful psychic material. This expression, in turn, facilitates the process of exploration. In some patients, the drug seems to produce a mild euphoria and to weaken inhibiting mechanisms as well. In any event, the over-all effect of the Pentothal injection is to enable the patient to tolerate painful insights and to incorporate them into his emotional and intellectual life.

Dosage. Sodium Pentothal is marketed for intravenous use in the form of sterile powder in ampules of varying strength. Pentothal solutions are used in concentrations ranging from 2.5 to 5 per cent. Usually, the dosage required for satisfactory narcosis varies between 0.25 and 0.5 gm., although more than 1.0 gm. may be necessary for larger individuals in extreme states of agitation. As might be expected, the effect of the drug will vary, at least to some extent, with the strength of the concentration of the Pentothal solution, the dosage administered, and the rate of injection. In addition, other variables, such as the patient's age and weight, previous food intake, previous barbiturate ingestion, and his cross-tolerance to other sedatives (for example, glutethimide) will also influence the effect of the drug.

Administration. Before administering the drug, the physician should establish a positive rapport with the patient. More specifically, the patient is told that the drug will help him to relax and feel more at ease, and that it will permit him to talk more freely and comfortably about the feelings and experiences that bother him. Concomitantly, common misconceptions

that Pentothal is a magic truth serum should be dispelled.

The drug is best administered in a quiet room, with the patient in a reclining position. The injection is made into an antecubital vein. When the 5 per cent Pentothal solution is used, the injection is made at the rate of 2 cc. per minute. When the weaker solution is used, the injection is made at a more rapid rate. During the injection, the patient may complain of a peculiar taste in his mouth; in addition, in many instances, there is some initial increase in anxiety or agitation. However, as the injection continues, these symptoms tend to disappear.

At the outset, and until the physician becomes familiar with the patient's characteristic response to the drug, it is best to ask him to count backward from 100 immediately after the injection is made. Shortly after counting becomes confused, but before the patient actually falls asleep, the injection is stopped. It is at this point that psychological interaction between patient and therapist occurs. It is at this point that attempts are made to discuss significant material, to elicit repressed experiential data, or to make appropriate suggestions. The patient is then permitted to go to sleep.

Indications. The effect of Pentothal injections may, of course, be quite dramatic in cases of hysterical amnesia. However, the Pentothal interview may serve an equally important function in relation to problems more commonly encountered in clinical practice. Thus, the procedure may provide symptomatic relief for severely agitated patients. Where psychotherapeutic exploration seems blocked, it may constitute a new therapeutic approach. At other times, it may facilitate ventilation of significant life experiences which played a vital etiological role in the patient's illness.

The Pentothal interview may be used as a diagnostic and prognostic tool as well. The injection may elicit suicidal or paranoid ideas which might not be detected otherwise. It can be used in differential diagnosis to help distinguish organic disabilities from functional syndromes. And it may also be used as a test for organic brain disease, inasmuch as it provokes neurological symptoms which may not be apparent under "normal" conditions. In addition, in the course of the interview, such mental symptoms as confabulation, disorientation, and denial of illness, which may not have been apparent previously, frequently emerge in response to direct questioning.

On occasion, the drug has aided in the differential diagnosis between the catatonic stupor of schizophrenia and stuporous depressive state. Ordinarily, it is difficult to differentiate between these psychopathological entities on the basis of clinical data. The Pentothal interview has led to the formulation of spe-

cific criteria to facilitate such differentiation. In the depressed patient, an intravenous injection of barbiturate will usually result in a deepening of the stupor and/or sleep. In schizophrenic patients with catatonic stupor, such an injection often produces a temporary clearing of the stupor, during which the patient may communicate rationally with the therapist, at least briefly.

Finally, the Pentothal interview has also been used in legal investigations. However, the present consensus is that there is no certainty that the subject will "confess" under the influence of the drug, or, if he does, that his account will be accurate. Moreover, the courts have adopted a rather paradoxical attitude toward this procedure: information obtained in the course of Pentothal injections is not admitted as legal evidence, yet the psychiatric implications of such data may carry considerable weight.

Contraindications. Intravenous Pentothal injections are contraindicated in the presence of any medical illness which would contraindicate the use of barbiturates, e.g., severe cardiac impairment, porphyria, kidney dysfunction, or liver pathology. General disability, marked emaciation, or severe anemias are other reliable contraindications. Finally, for the most part, the procedure should be limited to adults.

General considerations. As is true of any other procedure which may alter the individual's state of awareness, it is advisable to obtain the patient's written consent to this form of intervention in advance. In addition, when milder doses are administered to an ambulatory patient, the patient should be permitted to rest after the interview and should not leave the physician's office unaccompanied.

As mentioned earlier, the nature of the Pentothal interview will depend on the psychiatrist's therapeutic goal, which may range from symptomatic relief to the uncovering of deeply repressed material, in order to effect the basic reintegration of personality. It should be borne in mind, however, that the Pentothal interview is not an isolated treatment experience. No matter how limited (or extensive) his treatment goals, the psychiatrist who conducts the interview must have a fundamental knowledge of the psychodynamics of his patient's emotional and mental functioning.

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35.5 THE CONVULSIVE THERAPIES

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Early Experimentation

Convulsive therapies, which continue to be a widely used modality of treatment, were introduced by von Meduna on the basis of two different observations. It had been noted for a long time by mental hospital physicians that patients would suddenly lose their symptoms when they had a spontaneous convulsion, no matter what caused it. The second line of reasoning was based on various statistics showing that epilepsy and schizophrenia hardly ever occurred in the same patient.

Metrazol treatment. In 1935 von Meduna reported systematic attempts to induce convulsions in schizophrenics. He first used camphor in oil, which he injected intramuscularly. This proved to be unreliable because it was difficult to anticipate the time the patient would have the convulsion. Some would have several convulsions, and others none at all. Von Meduna, therefore, changed to a soluble synthetic camphor preparation, pentylenetetrazol (Metrazol). This could be injected intravenously as a 10 per cent solution. In the majority of cases it produced a convulsion within 30 seconds with a dose of 5 to 10 cc, injected rapidly.

Most of the experience with convulsive therapy—its indications, contraindications, and complications—was with Metrazol treatment. This method is still preferred by some workers, but as a whole it has been replaced by the technical modification of electric convulsive therapy (ECT). Most of the facts described in this section regarding ECT are equally valid for Metrazol treatment.

Indoklon. Before ECT was introduced, other authors had experimented with different convulsive agents of a pharmacological nature. Most of them turned out to be less reliable, and some more dangerous than Metrazol. None of them is still in use at the present time with the exception of the newest of them, hexafluorodiethyl ether, known under the trade name of Indoklon.

Indoklon was found by the pharmacologist Krantz and his co-workers while studying aliphatic fluorinated ethers for the purpose of anesthesia. One of these, hexafluorodiethyl ether, was found to be a convulsant and was, therefore, called Indoklon. It was originally and mostly still is applied as an inhalant by means of a mask and a vaporizer loaded with gauze saturated with the liquid. Since it also has an anesthetic phase, the patient first loses consciousness, then has some myoclonic movements, and finally develops a tonic-clonic convulsion similar to that in any other form of convulsive therapy. Indoklon can also

be applied intravenously; then it hardly differs from Metrazol or other pharmacological agents. However, at the time of this writing, the intravenous Indoklon has not yet been approved for general use by the Food and Drug Administration, and Indoklon convulsive therapy is primarily used by inhalation.

Techniques of Electric Convulsive Treatment

Electric convulsive treatment, also called "electroshock treatment" by a misnomer, was introduced by the Italian psychiatrists Cerletti and Bini in 1933. Its application being much simpler and more reliable, it soon replaced Metrazol treatment.

A simple apparatus using alternating current was built by Bini. Most machines are still based on his original model. Other machines have been introduced over the years, and a great controversy developed over whether there are better types of current than the alternating one. Some workers use unidirectional current and claim that this produces less confusion. The same claim was made for brief stimuli techniques, in which brief stimuli replace the 60 per second stimulation of the ordinary alternating current. Other machines combine unidirectional and brief stimuli techniques. No convincing evidence has ever been given to prove that the memory impairment is actually reduced with these modified currents. The newest attempt in this respect is made by workers using unilateral stimulation of the nondominant hemisphere.

Electrodes and current. In the standard technique, electrodes are applied to both temples. Here, too, many different types of electrodes have been used for the application of the current, without any one of them proving convincingly superior to the others. Skin resistance must be decreased by a salt water solution or with the safer method of electrojelly, similar to the one used in electrocardiography.

The amount of current applied by the originators of the method was 70 to 130 volts for 0.1 to 0.5 second. Attempts have been made to measure the actual amount of current that passes through the brain, but the amounts found varied between 200 and 1600 milliamperes.

Muscle relaxants. The present day technique used by the majority of workers is modified by muscle-relaxant drugs such as curare. Such muscle relaxation is needed to prevent fractures during the convulsion. A. E. Bennett first introduced curare to paralyze the muscles. A concentrated aqueous extract of curare was later replaced by various synthesized curare-like preparations. Although an antidote for curare exists in the form of Prostigmin, which was routinely given immediately after the convulsion, fatalities occurred, probably due to some central effect of the curare. Curare was, therefore, replaced by succinylcholine, discovered by Bovet of Italy and introduced in psychiatry by Holmberg of Sweden and Arnold and Boeck-Gréissau of Austria.

Preparation. The technique used in conjunction with the anesthesiologist is as follows. The patient can feel the effect of the muscle relaxant, since succinylcholine suppresses his respiration, so he is first anesthetized with a short-acting intravenous barbiturate injection. The drip method is preferred for the introduction of the barbiturate as well as for the succinylcholine. Syringes for the barbiturate and the succinylcholine are also used. It is not advisable to mix the two preparations because the patient is apt to feel the succinylcholine acting on his respiration before he falls asleep. Psychiatrists should be able to do this themselves, although it is certainly safer to have an anesthesiologist give this premedication because he will be better prepared to handle complications if they occur.

There is no doubt that complications can occur in ECT modified by anesthesia and muscle-relaxant drugs. This is particularly true for patients with myocardial disease and for hypertensives, for whom any anesthesia with barbiturates represents a certain risk. Therefore, premedication with barbiturates in patients with cardiac complications should be avoided. This can be done by starting the treatment with succinylcholine and, before the patient feels respiratory distress, applying a small amount of current, a so-called subconvulsive stimulus, to make the patient unconscious. As soon as the patient's musculature is relaxed, the actual convulsive stimulus follows.

Manifestations. The manifestations of electrically induced convulsions resemble those of a spontaneous convulsion with certain differences. If the amount of current given is not sufficient, the patient will only lose consciousness (*petit mal* response). If somewhat more current is given, the patient may have a delayed convulsion; that is, he will lose consciousness and, after only a few seconds, will go slowly into the tonic phase followed by the clonic phase. If still more current is used, he will have an immediate convulsion in which the tonic phase starts at the moment of the stimulation.

The tonic phase lasts about 10 seconds, and the clonic phase 30 to 40 seconds. It is important that this time relationship be watched carefully. In modified convulsions with muscle-relaxant drugs, it is sometimes difficult to see any movements. However, a slight plantar flexion of the feet can be noticed as evidence of the tonic phase; after approximately 10 seconds, some toe or other movements should indicate the clonic phase. If none of these manifestations is noted, it is wise to give a second stimulus.

In pharmacological convulsive therapy, particularly with Indoklon, myoclonic movements of various kinds precede the tonic phase and are sometimes mistaken by the inexperienced for the actual convulsion. It may be added that the succinylcholine, prior to its paralyzing action, may lead to rather vivid muscular

fasciculations, which, however, cannot be easily mistaken for a convulsion.

The convulsive threshold or the amount of current necessary for a convulsion changes among individuals. Male patients usually have a lower threshold than females, and younger people a lower one than older persons. Barbiturates may, of course, raise the threshold considerably. No patient fails to convulse if an adequate amount of current or repeated electric stimuli are given.

After the convulsive movements have stopped, the patient remains in a state of apnea, which may be prolonged if muscle-relaxant drugs are used. In this case it will be necessary to apply oxygen with a rubber bag until the patient resumes respiration.

Preparing the patient. The preparation of the patient is simple. He is not to have food in his stomach; therefore, he should be treated in the morning without breakfast or in the afternoon after having a light breakfast and no food for at least 4 hours before treatment. The bladder must be voided. Dentures are usually removed, although in patients with partial dentures it is safer to leave them in because irregularly spaced teeth may break during the contraction of the jaw. Mouth gags of various types are used to protect the teeth and the tongue. Even in ECT with muscle-relaxant drugs, although most muscles are paralyzed, the jaw muscles may still contract quite strongly.

Patients regain consciousness after a few minutes but remain in a clouded state for 15 to 30 minutes. It is advisable to keep them in the treatment area for at least 1 hour.

Treatments can be given in ambulatory facilities in hospitals and in private offices, but the patient should be accompanied by someone, kept for at least 1 hour for observation, and be taken home by somebody.

Changes during ECT

Many medical observations have been made on patients under ECT, but even such simple tests as blood pressure changes and changes in heart rate show rather contradictory results. The present technique of ECT modified by anesthesia makes such observations even more difficult to evaluate. The same is true for changes in the respiratory rate. Hematological and serological changes are also quite contradictory in the reports available. Since these studies contributed nothing to the understanding of the treatment, the reader interested in these findings must be referred to special monographs on the subject.

Endocrinological changes. Endocrinological changes occurring during an ECT series are rather constant. The most frequent observation is an increase in weight, which may be due to an effect on diencephalic centers. It has also been noticed that menstrual

changes in the form of amenorrhea for 1 or 2 months occur frequently.

Neurovegetative changes. These changes are the basis for the prognostic Funkenstein test. This test tries to establish the prognosis of ECT on the basis of the response to epinephrine chloride and Mecholyl bromide. Patients have a good prognosis for ECT if they have more than a 50 mm. Hg rise in systolic blood pressure after intravenous injection of 0.5 mg of epinephrine and a fall of blood pressure after 10 mm. of Mecholyl intramuscularly with failure to return to their normal blood pressure within 25 minutes. The same is true for those who respond to Mecholyl with chills. There is some controversy about the validity of the test, but, even if the response is clear cut, the therapist should probably not exclude a patient from treatment because the test suggested a poor prognosis.

Psychopathological changes. Psychopathological changes consist primarily of amnesia for the whole treatment procedure and, after several treatments, memory impairment, which may last for one or several weeks after termination of treatment. Investigations by many groups of psychologists have shown convincingly that no lasting loss or impairment of memory occurs.

Some patients, on waking up from the treatment, misinterpret their surroundings and react with an excitement state. They should receive a barbiturate drip for 20 minutes after the convulsion. In rare cases the psychopathological changes during ECT may be complicated by various types of organic reactions, with hallucinations different from those for which the patient was treated.

Apart from the intellectual changes of memory impairment, the patients always show emotional, organic changes, such as euphoria or complete affective dullness. The intensity of the organic reaction depends on the number and the spacing of the treatments. This is best exemplified by a procedure that has been recommended and is being used by several workers in the field in order to bring the patient to the deepest possible state of organic dementia. To achieve this, they give treatments every day and even three or four treatments within 24 hours. The patient is brought to a point where he becomes incontinent of urine and feces. Such regression is considered by some a wanted accompaniment of convulsive treatment; but in the author's experience, the organic psychiatric changes do not determine the outcome of the treatment. However, these deep confusional states clear up entirely within a week or 10 days, and they do not leave any lasting memory impairment or personality changes.

The patient may have an amnesia for the entire series of treatments, not only when a deep degree of organicity has been reached. Patients in whom the sensorium remains perfectly clear may show later that they cannot remember some occurrence during the

treatment, even though they may have responded to it in an apparently normal way.

Fear of treatments. A most vexing psychopathological phenomenon is the fear the patient has of the treatment. He has one type of fear before the first treatment that is probably due to the name "shock" treatment and anything he may have heard about it. He is relieved of this fear after the first treatment, when he realizes that he did not have any discomfort during the treatment.

However, after several treatments another type of fear sets in, which does not leave the patient until he has finished the series. He remains aware of the fear, though unable to give a reason for it, and it recurs when he has to undergo treatment again at a later date. This fear seems to be a result of the unpleasant experience of waking up after the treatment and not knowing who he is and where he is. This loss of one's own identity is usually not given by the patient as the reason for his fear, but the fact that it is first realized a week or so after the first treatment, when the amnesia for the incidents surrounding the treatment have subsided, suggests that this does explain the treatment fear of almost all patients.

Neurological changes. Neurological observations are essentially identical to those made in any generalized convulsion. No reflexes can be elicited during and shortly after the convulsion. After a period of flaccidity, pyramidal signs may appear. The pupils do not react for a while, and then they may oscillate between rigidity and reflex activity. Constriction of the retinal vessels has been observed in delayed reactions prior to the onset of the actual convulsion, as is seen in epileptics, and is followed by vasodilation of the retinal vessels. Postconvulsive motor phenomena may consist of various involuntary movements and automatisms, which should not be mistaken for a second convulsion. Aphasia, agnosia, and other disturbances of cortical function can also be observed.

Electroencephalographic findings also repeat essentially those seen in spontaneous convulsions. After each convulsion there is a slow wave pattern that returns to normal after 5 to 30 minutes. After several treatments the abnormal pattern remains, and various electroencephalographic changes indicate the cerebral dysfunction during a series of electrically or pharmacologically induced convulsions. After the treatments have been discontinued, the electroencephalogram may remain abnormal for several days or weeks. After 2 or 3 months at the latest, the electroencephalogram returns to normal in all cases.

Complications and Contraindications

In convulsive therapy, these have been much discussed. It was surprising to many observers that, with the exception of fractures in unmodified ECT, complications are extremely rare. It was soon recognized that many expected complications did not occur. This

was the case in such conditions as severe hypertension, heart disease, and tuberculosis. In patients afflicted by such physical diseases, the seriousness of the mental disorder often made it necessary to take certain risks and to treat such patients because the agitated state of the patient was a danger in itself and had to be removed by means of convulsive therapy. It was then realized that the electrically induced convulsion is not different from a spontaneous one, and the extensive literature on epilepsy has amply demonstrated that no preexisting disease becomes worse when an epileptic patient has convulsions, even frequent ones. This, in accordance with the growing experience with ECT, explains why most physical ailments do not represent a contraindication to this treatment.

The same is true for such physiological conditions as pregnancy. ECT is not dangerous during the first months to mother or child, nor does it accelerate the termination of pregnancy. Many follow-ups have proved this point. It may be also mentioned that age is no contraindication to ECT: both young children and very old persons can be treated.

Fractures. The most frequent complications in convulsive therapy prior to the introduction of muscle-relaxant drugs were fractures. There were two main types of fractures. The most frequent ones were those occurring in the dorsal spine between the fourth and eighth dorsal vertebrae. They consisted of varying degrees of compression fractions in these vertebrae. They have little clinical importance. In many instances they were not accompanied by pain; in others the pain could persist for several weeks or, rarely, months. In no instance were they an indication to discontinue ECT or to institute orthopedic measures. No neurological complications were ever observed in connection with these fractures, which, as in tetanus, occur in the rigid part of the spine, although they may occur in several vertebrae in the midthoracic area.

Another type of fracture is that of the long bones, which occurred most frequently in the head of the humerus and the head of the femur. They were rare, although clinically much more serious than those of the spine. As with all fractures in convulsive therapy, they are explained by the muscular contraction. This is well demonstrated by the fractures in the region of the hip, where the sudden contraction of the adductor muscles may lead to a fracture of the head of the femur or, if this resists the impact of the muscular contraction, the entire head of the femur may be pushed into the pelvis, thus causing an extremely rare acetabular fracture.

There is no evidence that any of these fractures are caused by osteoporosis; rather, they seem to be due to some unusual configuration of the bone-muscle relationship. This may explain, for instance, why acetabular fractures (in the exceptional cases that have been described) usually occurred bilaterally and during the first treatment.

These complications are no longer a problem when muscle-relaxant drugs are given. On the other hand, there are still many hospitals where the risks of the anesthesia technique are considered too high and unmodified ECT is still given. Therefore, acquaintance with this type of complication is necessary. There has been much discussion about these fractures not occurring in spontaneous epileptic seizures. This is probably because epileptics go slowly into a convulsion, but therapeutic convulsions usually start suddenly.

Fatalities. Fatalities were extremely rare even before the introduction of anesthesia techniques in convulsive therapy. Some statistics found a death rate of up to 0.1 per cent for ECT, but they probably included cases where death occurred during a course of ECT but was obviously unrelated to the treatment. This relative safety of artificially induced convulsion is again in accordance with the experience that epileptics do not die during convulsions. In rare cases, cardiac arrest or death due to apnea has been described in unmodified ECT. There have also been individual reports on patients who had a postconvulsive excitement state, causing cardiovascular collapse.

There is the definite impression that the anesthesia technique increased the number of fatalities, although no figures are available. It is obvious that in patients with myocardial disease the repeated barbiturate anesthesia during a series of ECT is a danger in itself. In hypertensives both the barbiturate anesthesia and the convulsion may produce a sudden fall in blood pressure. In some patients coronary occlusion has been described, usually $\frac{1}{2}$ or 1 hour after the convulsion.

Contraindications. It can be stated that there are almost no absolute contraindications to ECT, as proved by the large numbers of patients with myocardial disease or recent coronaries treated successfully with ECT. However, psychiatrists must be aware of the potential danger in myocardial disease and recent coronary thrombosis and must carefully weigh the risk of the treatment against the risk of continued agitated states in a patient afflicted with those diseases. The avoidance of barbiturate anesthesia, by administering succinylcholine and replacing the barbiturate with a subconvulsive stimulus as described before, is a good way to eliminate the danger in such cases.

Brain tumors. This remains the one contraindication. Although all other neurological conditions can be treated without any damage, it appears that the sudden increase of intracerebral pressure during a convulsion represents a great danger to patients with brain tumors. Several fatalities as well as the appearance of severe neurological symptoms have been described in cases where the brain tumor had simulated a depression and ECT had been applied for this reason.

Other possible contraindications. As far as other contraindications are concerned, peptic ulcer, sub-

dural hematoma, and other conditions that might have led to hemorrhage in unmodified ECT rarely did so. Even large aortic aneurysms did not rupture in unmodified ECT. These conditions thus do not represent a contraindication when muscle relaxation is used.

A frequently asked question is whether eye diseases such as glaucoma and threatening detachment of the retina are contraindications. Actually, it has been shown that the intraocular pressure during a convulsion decreases rather than increases. Therefore, no complications in such conditions have occurred. There is, however, the danger that the muscle relaxant succinylcholine will increase intraocular pressure, and in patients with glaucoma, eserine should be given prior to the treatment.

Neuropathological changes were discussed in the literature shortly after the introduction of convulsive therapy. Some animal experiments seemed to show certain pathology, but this was not confirmed by numerous extensive studies by most workers. In those few instances where fatalities occurred in humans, no pathology of any kind was found.

In summary, it can be stated that aside from brain tumors there are *no absolute contraindications* against convulsive therapy. However, the seriousness of the physical illness and of the psychiatric disorder must always be carefully weighed against each other.

Indications and Results

Convulsive therapy was introduced as a treatment for schizophrenia. Only 4 years after its introduction, it became noticeable that the best results were obtained in depressions. Today it can be said that, contrary to the theory of antagonism between convulsion and schizophrenia, on which convulsive therapy was based, this type of therapy is useful in many different conditions. Since the introduction of drug therapy, the indications for ECT have become more restricted, and for a while it seemed that this treatment could be limited to fewer patients than before. Lately, however, the increase in the application of convulsive therapy has been considerable. Its indications have not been changed, but in many instances pharmacotherapy will be tried first and ECT left to refractory cases. In other instances the acuteness of the psychopathology requires immediate ECT.

Depression. The effect of ECT in depressions is one of the most spectacular treatments in medicine. Both retarded and agitated depressions of a psychotic nature clear up after three or four convulsive treatments. It is then advisable to give two or three more treatments in increasing intervals to stabilize the result.

Most depressions respond to ECT. This is as true for patients who change from manic to depressive states as it is for those who have only recurrent de-

pressions. Involutional melancholia of a pure nature, not complicated by schizophrenic features, also responds to a short course of six to eight ECT. This is also true in depressions of old age, as long as they are not caused by arteriosclerosis or senile brain changes. It is one of the most gratifying therapeutic experiences to examine psychiatrically so-called senile patients with agitation, to find that they actually do not suffer from senility but from affective psychoses, and then to remove their psychiatric symptoms with a few ECT.

In so-called reactive or neurotic depressions, the results are less reliable. It appears, though, that many of these cases respond extremely well, especially those patients who have true depressive episodes but are at the same time neurotic. The so-called atypical depressions, which last longer and are mixed with neurotic and often schizoid features, respond less well. These patients usually have a more superficial depressive affect and a great variety of psychosomatic complaints. In such cases the antidepressant drug, iproniazid (Marsilid), which was withdrawn in this country because of liver complications, has been reported to be effective by some English investigators. The presently available drugs have less convincing results in these atypical depressions, and one has to resort to ECT in order to achieve at least a temporary symptomatic effect.

Danger of suicide. The much discussed question of whether depressions should be treated first with antidepressant drugs or with ECT is difficult to answer. There is one all-important factor in favor of ECT: the danger of suicide. There is general agreement that in nonhospitalized patients the suicidal danger is a definite indication for immediate ECT. We have no convincing signs to indicate which patient is suicidal and which is not. Since the introduction of the antidepressant drugs, serious mistakes have been made in judging apparently mild depressions as non-suicidal and then losing the patient in a suicide. It has long been known that the patient most likely to commit suicide is not the severely retarded depressed patient, who has often lost the initiative for suicide, but rather the patient who goes into or comes out of a depression. It appears that, in patients treated with antidepressant drugs, the paralyzing depressive effect diminishes, but the depressive thought content continues, and the patient regains sufficient initiative for the suicidal act. An increasing number of such cases seem to be the main reason for the greater preference given to ECT at present.

The time factor. Time is another important consideration in favor of ECT. Patients unable to continue in their work frequently risk the loss of their jobs if the slow-acting drugs are not effective and have to be followed with ECT. In hospitalized patients, the expense of several weeks' stay for an often unsuccessful antidepressant medication also suggests an immediate course of ECT. Therefore, both medical and social

considerations explain why ECT continues to be the treatment of choice in depressions.

Convulsive therapy does not prevent subsequent depressive episodes in the same patient. There is even some feeling that the shortening of a depressive phase by convulsive therapy also shortens the intervals between episodes. In such cases, antidepressant medication can be given. Where this is unsuccessful, a monthly preventive ECT has been shown to be an effective means to forestall future episodes in many cases.

Manic episodes. The manic reactions of a manic-depressive psychosis can also be treated successfully with ECT, although results are less reliable than in depressions. Therefore, it has been recommended that these patients be given 8 or 10 ECT on subsequent days. This may improve the outcome considerably more than treatment given in the usual three times a week routine.

Schizophrenia. This is still one of the most important indications for convulsive therapy, although ECT never has been very successful in chronic cases, where it has been replaced to a large extent by the neuroleptic drugs.

Acute schizophrenia. In acute schizophrenia, it often depends on the preference of the therapist whether he administers medication first or starts immediately with ECT. No rules have ever been established as to which procedure is preferable, and the decision depends mostly on such external circumstances as the time factor, hospital expenses, and the difficulty in controlling a disturbed patient.

Where successful ECT removes acute schizophrenic symptoms with 3 or 4 treatments, it is necessary, however, to continue treatment up to 10 and possibly up to 15 or 20 treatments because in schizophrenia, contrary to depressions, termination after the first removal of all symptoms almost invariably leads to a relapse within less than a week's time.

If neuroleptic drugs are given first and prove successful in removing symptoms, a hospitalized patient should not, in the writer's opinion, be discharged without temporary withdrawal of medication. One of the reasons for this recommendation is that many patients do not continue their medication once they are discharged from the hospital. The more important reason, in the author's opinion, is that in acute schizophrenia every attempt should be made to obtain a remission rather than mere symptom removal with need for continuous medication. Very often the drugs only cover up the symptoms, and at the moment of their withdrawal the entire psychopathology reappears, even after 2 or 3 months of successful medication. If this is the case, ECT should be instituted immediately because it is known that convulsive therapy is most effective during the 1st year of illness. Therefore, every patient should be given the opportunity to receive convulsive or insulin treatment during the favorable period of the 1st or 2nd year of illness. If by then he has not obtained a remission, neuro-

leptic drugs can still be given to maintain a certain degree of improvement as long as the patient is willing to take the drugs.

Statistics show that two prognostic factors are decisive in any group of schizophrenics treated with convulsive therapy. The acute onset of illness is the most favorable prognostic factor, compared with the unfavorable insidious onset of the disease. Duration of illness of less than a year is the other favorable prognostic factor. Many other prognostic factors, such as sex, age, and psychodynamic factors, have been investigated but without showing any convincing effect on the outcome.

Of the various subtypes of schizophrenia, catatonic excitement responds best. Although this group also responds well to neuroleptic drugs, ECT has been considered less dangerous in this group, called "pernicious catatonia" in the past, because these patients are easily threatened with vasomotor collapse when treated with drugs that have a hypotensive effect in themselves. In these catatonic excitements with severe agitation and frequent febrile temperatures, two or three ECT treatments given within 24 hours often have a life-saving effect. Catatonic stupors respond well temporarily, usually after two or three treatments, but the long term results in these cases are often disappointing. Acute paranoid schizophrenia in the younger age group also responds well to ECT. Paranoids in the middle-age group, often diagnosed "involutional psychosis, paranoid type," respond symptomatically but relapse easily, even after a long series of treatments. Simple and hebephrenic schizophrenics have the poorest results.

All this corresponds to the spontaneous prognosis of untreated schizophrenics, but reliable statistics have shown convincingly that the results with shock treatments, both convulsive and insulin, double the figures of spontaneous remissions in the various schizophrenic groups.

Chronic schizophrenia. In chronic schizophrenics, where pharmacotherapy has replaced ECT to a large extent, there are still some indications for maintenance ECT, given every few weeks. One example for such indication is a patient with catatonic stupor who tends to become more withdrawn every few weeks and who, like most withdrawn schizophrenics, does not respond to drugs. There are other schizophrenic syndromes with target symptoms for which present day drugs are ineffective. Patients unwilling to take regular medication represent another group in which such maintenance ECT may be indicated. A clear-cut statement that ECT is no longer indicated in chronic schizophrenia is therefore not warranted. Each case has to be judged on its own.

Psychoneurosis. Psychoneurotics do not represent a promising indication for ECT. Attempts made in the past turned out to be quite negative. The only exceptions are neurotics with depressive symptoms and those in whom acute anxiety or panic states can be

removed with one or two ECT treatments in a purely symptomatic way. On the other hand, neurotics are apt to react to the side effects of ECT such as memory impairment or some physical complaints in an exaggerated manner and sometimes even with gross hysterical manifestations. Therefore, few real indications for ECT in neurotic patients will be found.

Other disorders. Other psychiatric disorders will occasionally present an indication for convulsive therapy. Psychiatric patients with organic conditions, epileptics, and mentally retarded patients may have psychotic episodes that respond well to a few ECT treatments. Acute organic reactions such as toxic infectious psychoses also respond well, but here pharmacotherapy is usually preferable and adequate.

Psychosomatic conditions such as neurodermatitis and ulcerative colitis have also shown occasional improvement under ECT. The same is true for anorexia nervosa in individual cases. Therapeutic attempts with ECT have also been made in acute pain conditions such as trigeminal neuralgia and painful phantom limbs, and some good results have been reported. However, none of these conditions represents a definite indication.

Personality disorders have also been treated with ECT, but no convincing results have been reported. Convulsive therapy does not change the basic personality of a patient. It has its best results in those where an acute psychotic episode occurs in a previously healthy personality. This applies primarily to schizophrenics and the episodically occurring affective psychoses. Cases of pseudoneurotic schizophrenia or certain paranoid states that develop almost unnoticed in basically paranoid or schizoid personalities do not respond to convulsive treatment. Cyclothymic personalities with mood swings do not represent a good indication for ECT.

Mechanism of action. Convulsive therapy has no influence on the basic personality. This is one of the facts that must be taken into consideration when theories on the mode of action of convulsive therapy are discussed. Many such theories have been ventilated in the past, but no convincing theory is available. Neither psychological nor organic theories have any basis in clinical or laboratory findings. Therefore, we must admit that we are very successfully treating conditions of unknown cause with treatments of an equally unknown mode of action.

Suggested Cross References

A detailed comparison of the effects of the antidepressant drugs and electroconvulsive therapy is presented in Cole and Davis' section on antidepressant drugs (Section 35.2). For further information regarding specific uses of convulsive therapy, the reader is referred to the section on organic treatment of schizophrenia by Fink and Itil (Section 15.6) and to the sections on the following psychiatric disorders, for which convulsive therapy may be indicated: involu-

tional psychotic reaction by Ford (Section 17.3), psychotic depressive reaction by Huston (Section 17.2), neurotic depressive reaction by Mendelson (Section 24.2), and manic-depressive reaction by Cohen (Section 17.1). For a discussion on the use of convulsive therapy in children, see Fish's section (Section 43.3) on organic therapy for children, in Area H, on child psychiatry.

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35.6 INSULIN COMA TREATMENT

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Introduction

History. As soon as insulin was discovered in the early 1920's, psychiatrists in various countries began to use it to improve appetite and weight of psychotic

patients. At the same time, it was noticed that insulin had a sedative effect, which was the second reason for its popularity among psychiatrists. Both for its sedative effect and for its weight-increasing effect, it was particularly useful in the treatment of morphine addiction. In a sanatorium near Berlin that dealt primarily with this type of patient, Manfred Sakel discovered what is known today as insulin coma therapy.

Sakel, like many others, applied subcoma amounts of insulin not only to morphine addicts but also to other psychiatric patients. Occasionally he saw insulin-sensitive patients go into a coma, which he at first considered an undesirable complication. It is to his credit that he recognized that some psychotics who developed such a coma came out of it in a remarkably improved mental state. This observation led him to work out a technique by which hypoglycemic coma was induced purposely. Sakel moved to Vienna and, with the help of the staff of the University Clinic there, reported on this new treatment for schizophrenia in 1933. The first report on a larger series of schizophrenics successfully treated was published in cooperation with Dussik, who, with Laqueur, is today one of the proponents of insulin treatment in the United States.

Present use. At present, insulin coma therapy is utilized in very few places throughout the world. This is very much regretted by everyone who has had experience with this treatment. It is undeniable that insulin treatment is cumbersome and not without dangers, although these have been reduced considerably in recent years. Administrators of psychiatric hospitals dislike the treatment, which is expensive and requires a large number of well trained psychiatric personnel. It was, therefore, understandable that, at the time of the introduction of convulsive therapy, insulin was temporarily neglected. When pharmacotherapy was introduced in the 1950's, insulin was abolished prematurely in many hospitals. There is a definite need for the continuation of this treatment, although perhaps one hospital in each area would be sufficient for a type of therapy for which not every hospital in the country can be fully equipped.

Technique

Early technique. Sakel's original technique consisted of the injection of increasing amounts of insulin, to the point where hypoglycemic coma would occur. In view of the possibility of an allergic reaction and, more important, hypersensitivity to insulin in individual patients, treatment is usually started with 10 or 15 units. This is increased each day by 5 or 10 units. A coma is usually obtained with 100 or 200 units. However, there are patients who show insulin resistance and need many hundreds of units to reach a hypoglycemic coma. On the other hand, there are also patients who reach coma level with very small amounts.

Patients with some insulin resistance sometimes reach a coma with smaller amounts when the zigzag method, recommended by von Braunmuehl, is used. Patients in whom 200 units do not produce a coma are given 30 units the next day and then returned to 200 units, this time achieving a deep coma. Various ways to alternate the dosage have been devised and must be left to the experience of the therapist.

Modifications. Modifications of Sakel's original technique are manifold. Two of them shall be mentioned here. At the Pennsylvania Hospital, Bond and Shurley routinely used higher doses. They began with 50 units and doubled this each day to 100, 200, 400 units. As soon as a deep coma was reached, they reduced the amount of insulin to determine the minimum coma dose. In the hands of the skilled therapist, this method apparently did not lead to untoward effects.

An opposite procedure, linked to the name of Laqueur, is the administration of multiple doses of insulin to reduce the amount necessary for a coma. He starts with 5 to 10 units and applies the daily amount in three divided doses in intervals of 15 minutes. Thus, he is able to obtain a coma in most patients with 60 or 70 units of insulin. The time required each treatment day with this technique is longer because the patient receives his insulin earlier and goes into coma later than with the other techniques.

Manifestations

Approximately 1 hour after the injection of insulin (which in Sakel's technique is given at 7 A.M.) the patient shows the first signs of hypoglycemia—feelings of tiredness and somnolence and perspiration.

During the 2nd hour, the patient's sensorium becomes clouded, and he falls asleep. Some may become restless, toss around, and yell. Others are disoriented or show hallucinations, which are often different from those due to their illness. Patients who never hallucinated before may develop hallucinations during the state of hypoglycemia. The speech becomes dysarthric. Aphasia and apraxia may be noticed. The motor phenomena during the 2nd hour consist of automatic movements, forced grasping, myoclonic twitches, and various dystonic manifestations. Different schemes have been developed to show the disintegration of brain functioning according to various levels, defining symptoms due to suppression of cortical activity, release of basal ganglia, release of the midbrain and finally of the medulla oblongata.

A not infrequent occurrence is convulsions, mostly observed during the 2nd hour of hypoglycemia. At first, they were considered a complication. Later on, they were regarded as a desirable manifestation. Actually, they are an undesirable feature, though not a complication. Patients who are inclined to have convulsions often receive anticonvulsant medication prior to the insulin injection. It is also customary to terminate the hypoglycemia when a convulsion has

occurred, although it can be questioned whether this is really necessary. Convulsions are also frequent during the later hours of hypoglycemia. At this time, status epilepticus may occur. These late convulsions are considered a danger sign and require immediate termination of hypoglycemia.

During the 3rd hour, the patient can go into a true coma. The coma stage is reached when the patient is unable to respond to stimuli of various kinds. The deepest coma is reached when the patient no longer responds to painful stimuli with a needle or to supra-orbital pressure. At this stage, spasms similar to those of decerebrate rigidity may occur, the pupils do not react to light, and the deepest or so-called midbrain stage is characterized by a change of the pupils from dilation to miosis, absence of the corneal reflex, and disappearance of tendon reflexes. It is this stage that is, on the one hand, considered most effective and also, on the other hand, a definite danger sign, one to be avoided by less experienced workers. At first the patient is usually left in coma not longer than 15 minutes; in subsequent treatments, the coma can be slowly prolonged up to 1 hour. Attempts to leave the patient in this deep coma for several hours were made in the past but remained experimental.

Termination

Hypoglycemia was originally terminated by administration of a sugar solution through nasal tube feeding. If this was unsuccessful, and the patient was not awake after 20 minutes, intravenous glucose was given. Intravenous termination received second place because the 33 or 50 per cent glucose solution easily leads to coagulation in veins that may be needed for emergency measures. Today, termination is simplified by the discovery of the hormone glucagon, which can be used in doses of 0.33 mg. to 1 mg. intravenously or intramuscularly.

Awakening usually begins after 10 or 20 minutes, after which time, if the patient does not react, the dose should be repeated. Small amounts are usually sufficient to awake the patient to a point where he is able to drink a sugar solution or other carbohydrate preparation. Laqueur also found adrenalin and thiamine to be effective in many patients for termination of hypoglycemic coma.

After-effect. A so-called after-shock may appear several hours after termination of treatment. The patient may perspire or just feel tired and lie down for an after-lunch nap. He should be watched carefully because such patients, unnoticed by the nursing personnel, may not be asleep but actually in a second hypoglycemic coma. Patients should have some sugar with them and be told to eat some at the first sign of uneasiness. They should be warned against sleeping in the afternoon of treatment days and should be engaged in group activities so that they can be watched. If a second coma develops, the usual measures of termination have to be undertaken.

Number of Comas

The number of comas is usually determined by the response of the patient in his psychiatric symptoms. Contrary to convulsive therapy, the improvement in insulin treatment occurs more slowly; therefore, treatment should be continued to the point of maximum improvement. Forty to 60 comas are considered a minimum. It should be pointed out here that only the actual number of coma days is being counted. After the patient has reached his optimal improvement, a few more comas should be given.

Recently, the insulin units in Vienna (Arnold) and in the Creedmoor State Hospital (Laqueur) have shown independently that larger numbers of comas are desirable. Both units reached figures of 100 and more comas, which means series of 4 to 5 months' duration, even if treatments are given six times a week. Most units only give five treatments a week. Although this extension of the treatment period makes insulin coma treatment even less applicable in many hospitals, it demonstrated convincingly that insulin coma is a most effective treatment if applied adequately.

Complications and Contraindications

Cardiovascular complications. Two types of complications stand out in any report on insulin coma treatment. One is that of cardiovascular complications. Changes in pulse rate are normal manifestations in hypoglycemia. Complications can be due to acute cardiac insufficiency in patients who have an unrecognized cardiac illness or due to sudden vasomotor collapses. In an individual case, it is often difficult to decide what has led to a cardiovascular complication. Proper management of the first signs of cardiac dysfunction and early recognition of such a complication are paramount.

Protracted coma. The most important and most frequent complication is the protracted coma. These protracted comas are actually not prolonged states of deep hypoglycemia but rather encephalopathies. The patient remains in coma after the hypoglycemia is eliminated by means of glucagon or repeated intravenous glucose administration and even after abnormally high blood sugar levels are obtained.

The most important treatment for this emergency consists of prevention, although, even in well organized insulin units, this complication occurs. Laqueur claims that his technique with divided doses practically eliminates protracted comas. Once it has occurred, no specific therapeutic measures are available. It is important that the vital signs of the patient be maintained, as in any other coma of whatever origin. Transfusions, vitamin injections, and many other measures have been recommended. Today it is recognized that all those techniques that anesthesiologists use in patients in deep states of unconsciousness should be applied, particularly adequate oxygenation and all measures to maintain cardiovascular activity.

Fatalities. Fatalities in insulin coma treatment were originally reported as 0.5 per cent of patients treated. This figure would be lower in highly specialized units. Considering the seriousness of the mental illness treated, this was not regarded as unduly high, and it seems that modern techniques have reduced considerably or even eliminated the number of fatalities.

Psychiatric manifestations. Psychiatric manifestations seen during insulin treatment are often difficult to interpret. An activation of the psychosis may occur, but probably more frequent are short-lasting organic reactions, which may follow protracted comas. Permanent organic brain damage may occur but is extremely rare in treatments not complicated by protracted coma. The psychotic symptoms for which the patient is being treated may disappear for a short while after the awakening of the patient. These symptom-free periods may extend to hours and finally lead to complete disappearance of symptoms in cases with favorable outcome. These periods may be used for attempts at individual psychotherapy. Such combinations of organic insulin therapy, and psychotherapy, both individual and group psychotherapy, have been frequently recommended.

Neuropathological changes. Such changes due to hypoglycemia have been found both in animal studies before and after the introduction of insulin coma treatment for schizophrenia and in patients who died under treatment. Most changes are reversible, but there are a few irreversible cell changes and areas of rarifications. The morphological alterations according to Ferraro and Jervis may be of vascular as well as cellular origin.

Contraindications. There are more contraindications in insulin coma treatment than in convulsive therapy. Any patient with cardiovascular pathology should be excluded from this treatment. It is for this reason that patients over 50 years of age are rarely accepted for insulin treatment. The same is true for patients with renal, respiratory, and other general medical diseases. Diabetes is not necessarily considered a contraindication, although this point is controversial, as Horowitz does consider diabetes to be a contraindication.

Pregnancy is a condition in which insulin should be avoided if possible. Although no damage to mother or child has ever been reported in convulsive therapy, there is some evidence that the fetus may be damaged in insulin treatment during the first months of pregnancy, although the findings are not really conclusive.

Indications and Results

Insulin coma treatment was considered by Sakel to be a new physiological treatment for schizophrenia. Although his theoretical explanations regarding its effectiveness did not withstand criticism, schizophrenia remains the main indication for this method. Large statistics have shown that the figures for spon-

taneous remissions can be doubled with the help of insulin treatment. There are many statistics that show lower or higher figures of favorable outcome, but usually methodological errors, inadequate numbers of treatments, or inadequate depth of comas can be demonstrated when figures deviate from those published by internationally known insulin centers.

In an individual case, the decision as to whether insulin or other treatments should be applied has varied with the times. In the 1940's, insulin was considered the treatment of choice in all cases of schizophrenia. In practice, however, electric convulsive therapy, being the simpler method, usually received preference. Only when electric convulsive therapy had failed was insulin, or insulin combined with convulsive therapy twice a week during the insulin comas, applied.

Insulin and Convulsive Therapy

Combined insulin and convulsive therapy has been used quite extensively and has become so much a routine in insulin units that a clear evaluation of insulin coma treatment alone has hardly ever been made since convulsive therapy became available. Both Metrazol and electrically induced convulsions are used, mostly when the patient is in deep hypoglycemic coma and shortly before he is awakened. Originally, convulsions were induced to achieve faster suppression of unpleasant schizophrenic symptoms. The slow clinical effect of insulin treatment suggested additional convulsive treatments, which later became a routine in many, though not all, insulin centers.

Summary

After the introduction of pharmacotherapy, all shock treatments, both convulsive and insulin, were neglected for a while. After it became obvious that the older treatments are indispensable, the more easily applicable electric convulsive therapy was soon reintroduced. Many insulin units were discontinued, and the unavailability of trained personnel is an inhibiting factor in the revival of more extensive use of insulin therapy.

Many of those who have had experience with all somatic treatments are deeply convinced that there is a considerable number of schizophrenic patients for whom insulin is the only treatment that leads to a true remission.

Furthermore, it has been the clinical experience of many that the quality of an insulin remission is superior to that achieved with any other treatment. It must be deeply regretted that comparative studies with matched groups of patients are not available. As long as this is the case, the clinical experiences of those familiar with all available treatments must be the guide line. Many of these feel strongly that insulin coma treatment should not be eliminated from our therapeutic armamentarium.

Suggested Cross References

See Fink and Itil's section on organic treatment of schizophrenia (Section 15.6) for a further discussion of insulin coma treatment.

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35.7 MISCELLANEOUS ORGANIC THERAPIES

LOTHAR KALINOWSKY, M.D.

Today some of the somatic treatments discussed in this section are of historical interest only. They include bloodletting, emetics, and purgatives. In more recent times, new concepts in general medicine have often been applied to psychiatry. When they have been found to be ineffective, they have been abandoned. An example is the concept of focal infection as the cause of many illnesses. It led to operations on tonsils, teeth, and other sources of infections. With the advent of serology, vaccines, autovaccines, and sera of recovered schizophrenics have been developed.

More important were efforts to apply endocrinological knowledge to the treatment of psychiatric disorders. Every step of progress made in this field led to new applications of hormones. Both thyroid deficiency and hyperthyroidism were accused of contributing to mental illness, and treatments were based on their correction. The latest attempts are experiments with the adrenal glands. Bilateral adrenalectomies have been performed in schizophrenics, with incon-

clusive results. Adrenocorticotrophic hormone and cortisone were recommended by some, but their value was disproved by others. Endocrinological studies continue on psychotics, with the hope of therapeutic usefulness.

Some organic methods have had wider application and will be discussed separately here.

Continuous Sleep Treatment

In 1922, the Swiss psychiatrist Klaesi introduced a method of prolonged sleep by means of drugs with narcotic action. Various drugs and their mixtures were used, with particular preference given to chloral hydrate, paraldehyde, and barbiturates. Patients were kept in a sleeplike state for 10 days or longer. The unconscious state was reduced only temporarily for feeding and excretion of feces and urine. At the end of the treatment period, medication was reduced slowly in order to avoid convulsions or a delirium-like psychosis, which may follow sudden withdrawal.

Results were favorable in a variety of psychiatric disorders. Klaesi stressed the psychological aspect of this treatment, emphasizing psychotherapy at the time the patient wakes up and is looking for help. Psychotherapy itself has been found to be facilitated by this treatment. Others, however, consider it a purely organic treatment.

Since the introduction of the various shock treatments, it is rarely used with psychotics, but it is still used extensively in the treatment of more acute neuroses, such as the war neuroses, for which it was particularly used in England. Based on Pavlov's concepts, sleep treatment is still being used widely in the Soviet Union, but in most other countries the introduction of neuroleptic drugs eliminated the application of sleep treatment. In some psychiatric centers the phenothiazines are combined with barbiturates for a sleep treatment of several days or weeks.

Acetylcholine Treatment

In 1937, Fiamberti recommended acetylcholine as a less drastic method of shock therapy. Its intravenous injection causes cardiac arrest for 30 to 50 seconds and unconsciousness of short duration. Injections of up to 600 mg. were used on schizophrenics. Lopez Ibor used smaller amounts of up to 200 mg. in anxiety neuroses.

In this treatment of psychoneuroses only slight respiratory difficulty, coughing, and slow pulse were noticed, and repeated intravenous injections were considered valuable by observers in various parts of the world. Both psychological and organic explanations were given for favorable results of this method in neurotics.

Carbon Dioxide Therapy

In the 1920's, carbon dioxide was used in the treatment of psychotics, but it was abandoned when the shock treatments were introduced. In 1947, Meduna started treating psychoneurotics by having them inhale

a mixture of 30 per cent CO₂ and 70 per cent O₂. Twenty to 25 respirations were recommended. By that time, the patient had usually lost consciousness. A smaller number of respirations without loss of consciousness has also been tried. The number of treatments was set at 20 or more.

Good results were obtained in patients with conversion symptoms, anxiety neurosis, personality maladjustment, and emotional instability. Stutterers represented an especially favorable group. The method proved to be ineffective in obsessive-compulsive neuroses and hypochondriasis.

There are many contraindications, such as hypertension and cardiovascular disease.

The treatment was based on the theory that psychoneurosis is due to an abnormally low threshold of stimulation with respect to normal stimuli. The treatment is intended to raise the threshold of stimulation to the normal resistance to noxious stimuli, such as carbon dioxide. Meduna emphasized the value of this method as a purely organic one, but others stressed the need for simultaneous psychotherapy.

For a while, CO₂ was widely applied by psychiatrists and even some nonpsychiatrists. However, it is unpleasant for the patient and not without danger in persons with unrecognized cardiac or pulmonary conditions. It soon lost its popularity and is seldom used today.

Lithium Therapy

Lithium salts have found a wide application in some countries (particularly England and Scandinavia) for the treatment of psychotic excitement, especially in manic patients. Lithium carbonate, 0.6 gr., t.i.d., or lithium citrate, 1.2 gr., t.i.d., are given, preferably after meals to avoid gastrointestinal disturbances, which are often a serious handicap in the proper application of lithium therapy.

Contraindications are renal conditions and decompensated heart disease.

This treatment is particularly effective in those patients with frequent manic episodes. If the patient is able to continue the medication, it seems to have a considerable preventive value for future episodes of both manic and depressive types.

Atropine and Scopolamine Therapy

Toxic doses of atropine sulfate, injected intramuscularly, were recommended by Forrer in 1951. Aside from various vegetative symptoms, restlessness and delirious states can be observed. They are followed by a coma with spontaneous awakening.

The treatment was primarily given in neuroses, but it also seemed to be effective in excitement states of various diagnostic categories. Hyperthermia was the most dreaded complication.

Recently Goldner, in the same hospital as Forrer, recommended scopolamine sleep treatment as a new nonconvulsive method leading to states of uncon-

sciousness. After a period of 4 to 6 hours of coma, the patient wakes up in a confused state, showing various organic reactions including visual hallucinations.

The doses of scopolamine range from 5 to 30 mg. initially and are increased to a maximum of 100 mg. Schizophrenic and other patients have been treated, partly in combination with psychotropic drugs.

Therapeutic Attempts Based on Metabolic Findings

Historically, the studies by Gjessing regarding nitrogen metabolism in schizophrenics with a periodic course of the disease led to the first attempts to influence nitrogen metabolism in schizophrenics for therapeutic purposes. He combined dietary measures with thyroid extract. Other attempts were made in manic-depressive psychoses in connection with observations in cholesterol metabolism. Adrenal cortex preparations were used to correct this metabolic disturbance. Others tried to explain exacerbations in schizophrenia with impairment of liver function and used a diet poor in fat and rich in carbohydrates and proteins.

All these attempts turned out to be unrewarding, but the hope for the future is based on the idea that attempts and findings in this direction will eventually explain the cause of the psychoses and consequently lead to an answer to the question of treatment. More recent findings of protein metabolites in the blood of schizophrenics may be stepping stones in this direction.

Other attempts of this nature were based on observations made in work with the shock treatments. When acidosis was found to accompany convulsive therapy, it was hoped that this might be the effective agent in this method. Acidifying drugs and dietary measures producing acidosis were tried. Delay combined ketogenic diets with acidifying drugs.

Another attempt based on the convulsive therapies was made by Cerletti. He produced electric convulsions in animals and extracted a substance, which he called acroagonine, from the brains of the animals. He hoped that this substance would contain the effective agent in electric convulsive therapy. Results remained unconvincing.

However, all such attempts to utilize various research findings should be supported, in the hope of arriving at a more effective treatment of the psychoses.

Suggested Cross References

See Cohen's section on manic-depressive reaction (Section 17.1) for further discussion on the use of lithium therapy.

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35.8 PSYCHOSURGERY

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History

In 1935, Fulton and Jacobsen demonstrated that monkeys with frontal lobe extirpations could remember old tricks, learn new ones, and accept frustration with philosophical calm. On the basis of these pioneer research studies, Moniz and Lima, in Portugal, severed frontal lobe white tissue in 20 psychotic patients and reported promising results in terms of reduced tensions and decreased psychotic disorganization. In the United States, Lyster attempted to use this technique in the treatment of involutional psychoses. However, the concept and techniques of lobotomy were not investigated intensively until 1942, when Freeman and Watts reported that mental distress, e.g., depression, worry, and agitation—and even hallucinations at times—could be greatly alleviated by sectioning frontal lobes in a coronal plane. Freeman observed a degeneration of medial, dorsal, and anterior thalamic nuclei following the operation, and he assumed that severing the connections between the thalamus and frontal cortex interrupted or reduced the intensity of the emotional charge imparted to abnormal ideation.

The treatment of chronic psychotic patients by frontal lobotomy, or leucotomy, spread throughout the world, and for a time this was the treatment of choice in such cases. As might be expected, its use has been sharply curtailed since the discovery of tranquilizers and the use of various rehabilitative measures designed to improve the patient's interpersonal relationships and his functioning in the community. Nevertheless, lobotomy is still advocated in many treatment centers for refractory chronic patients, and good results have been reported over the long term. Still lacking, however, are conclusive comparative studies on the relative effectiveness of psychosurgery, as opposed to nonsurgical modalities, in the treatment of chronic psychiatric illness.

Psychosurgical Procedures

A great variety of surgical procedures have been explored in an attempt to produce the most favorable mental changes with the smallest possible lesions,

most strategically placed. The methods described herein, which are generally considered among the more significant techniques, may be further clarified by reference to Figures 1 and 2.

Full bilateral lobotomy. Moniz used a superior approach and cut four to six cores of white matter in each frontal lobe, using a wire-looped "leukotome." Freeman and Watts, using a lateral approach, severed white matter in a plane anterior to the anterior horns of the lateral ventricles. Earlier, Lyster had used the superior approach advocated by Moniz and Lima, but he had added the element of an "open operation" (i.e., operating under direct vision). Poppen and his colleagues have used the "open operation" extensively since 1943.

Bilateral orbital lobotomy. Dax and Radley Smith have experimented with leucotomy at various levels of the frontal lobes, and they ascribe special merits to lower or orbital sections, particularly for depressed patients who are passive and apathetic. Recently, on the basis of a follow-up study of 350 patients over a 10-year period, Sykes and Tredgold have stressed the value of restricted orbital undercuttering.

Bilateral transorbital lobotomy. Introduced by Freeman, this technique is carried out without benefit of specialized surgical techniques. A pointed instrument is thrust through the orbital plate and then moved through a plane calculated to sever the anterior white fibers. For the most part, Freeman has restricted the bilateral transorbital lobotomy to patients in the early stages of schizophrenia; favorable results have been reported for this patient population.

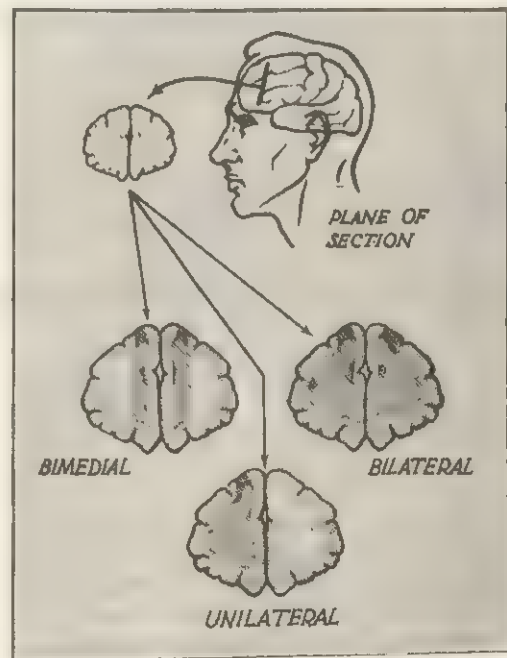


FIG. 1. Plane and extent of section of frontal tissue in bi-medial, bilateral, and unilateral lobotomy. Areas in which the tracts are severed are represented by parallel lines.

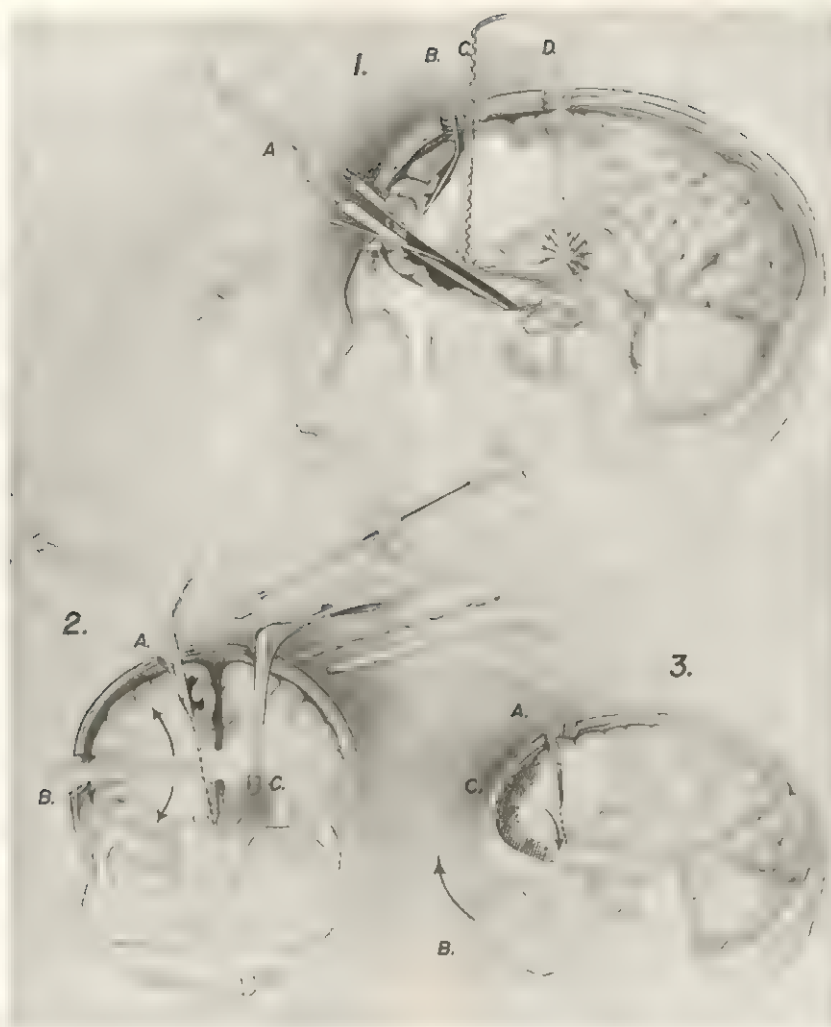


FIG. 2. American leucotomy techniques (Scoville). From *An Introduction to Physical Methods in Psychiatry* by William Sargent and Eliot Slater. Reprinted with permission of L. and S. Livingstone, Ltd. *Diagram 1*, A, Scoville's orbital undercutting; B, Scoville's undercutting of superior convexity; C, Grantham's electrocoagulation of inferior medial quadrant; D, Spiegel and Wycis's stereotaxic electrocoagulation of thalamic nucleus. *Diagram 2*, A, Scoville's cingulate gyrus undercutting; Livingston's cingulate gyrus subcortical sectioning; B, Freeman and Watts's "closed" standard lobotomy; C, medial inferior quadrant section by McKenzie's leucotomy method, Schwartz's nasal speculum method, Grantham's electrocautery method, and Poppen's direct vision suction and spatula method. *Diagram 3*, A, Poppen's "open" standard lobotomy under direct vision; B, Freeman's transorbital lobotomy; arrows indicate deep frontal cut; C, Pool's topectomy operation.

Bilateral topectomy and cortical undercutting.

In a small but well studied series of cases, the Columbia-Greystone Associates removed portions of frontal cortex of 15 to 30 gm. While the results of topectomy seemed promising initially, later follow-up study demonstrated that the improvement of the patients in the experimental group did not exceed that of the control group.

Scoville has been the principal proponent of cortical undercutting (see Figure 2), especially areas 9 and 10, leaving the cortical flap in situ. He has also undercut the cingulate gyrus in the orbital cortex, using a similar technique, and has reported results equal (if not superior) to more conventional techniques.

Bilateral thalamotomy. This technique was developed by Spiegel. Using stereotaxic methods, he co-

agulates specific thalamic areas in an effort to relieve mental distress in psychiatric illness, on the one hand, and intractable pain caused by physical illness, on the other. Unfortunately, this method may present a greater risk, as compared to other techniques.

Bilateral cingulectomy. Livingston has reported high anatomical accuracy, low surgical risk, and satisfactory therapeutic results with bilateral cingulectomy.

Bimedial lobotomy. Greenblatt and Solomon and their associates have experimented with medial frontal leucotomy, and they claim that this technique is superior in terms of preservation of personality, and limitation and reduction of "blunting." Initiative and emotional responsivity, in particular, seemed to be better preserved in patients who had bimedial lobot-

omy, as compared to those cases on whom full bilateral lobotomy was performed.

Bilateral inferior medial lobotomy. A number of surgeons favor the use of inferior medial area destruction. Grantham, in particular, has done electrocoagulation in this area, using a fine needle in order to produce minimal damage to cortex. As a result, the incidence of postoperative seizures was greatly reduced in the patient group studied, and personality remained unimpaired for the most part; at the same time, psychiatric symptoms were alleviated.

Unilateral lobotomy. Lyerly and his associates at the Boston Psychopathic Hospital have performed unilateral lobotomies (right or left). Their results indicate that, while some personality changes of a favorable nature occur, the personality changes produced are less satisfactory than those produced by bilateral procedures, and that, in general, this method is less reliable.

Sonic destruction. Finally, Lindstrom, using ultrasonic beams, produced cortical destruction with cell fallout, but without gliosis. This procedure lessened the incidence of postoperative epilepsy, as compared to conventional destructive cortical techniques.

Indications

In recent years, there has been a tendency to utilize limited surgical procedures at an earlier stage of psychiatric illness. Nevertheless, the overriding consideration for most psychiatrists is that lobotomy produces an irreversible destructive brain lesion. Consequently, it is prescribed with great caution; in fact, usually, lobotomy is not recommended until all other methods have failed. To counteract this prevalent negative attitude, it should be emphasized at the outset that, while lobotomy is a critical event in the life of the patient, it need not be the final event. After psychosurgery, other treatments, including the phenothiazines, milieu therapy, and psychotherapy, may become more effective. If all the available treatment procedures, i.e., psychotherapy, somatic therapy, pharmacotherapy, milieu therapy, have been given an adequate trial, and there has been no remission of the illness after a period of 2½ to 3 years, the psychiatrist must consider the possibility that the patient may have to be hospitalized for a very long period or even spend the rest of his life in a mental institution. Under such circumstances, a recommendation of lobotomy would certainly seem justified. Again, in the case of an affective psychosis, psychosurgery should be considered if the disorder has interfered with the patient's functioning over a period of years.

From the standpoint of symptomatology, lobotomy is indicated, in particular, for patients suffering from severe tension, which stems from fear, worry, depression, anxiety, agitation, or all of these in combination. Accordingly, schizophrenic patients who manifest such tension, which arises, in part, from their aware-

ness of, and efforts to struggle with their problem, are the best candidates for psychosurgery.

For maximum effectiveness, attention must be given not only to the selection of suitable patients, but also to the selection of an appropriate surgical technique. In addition, a cooperative family is an important criterion of eligibility for psychosurgery. Patients from families which are warm and accepting, and who maintain close ties with them, fare better than others. As for the type of operation, patients whose illness is less severe will require less extensive surgery. In fact, in general, there has been an increasing tendency to limit operations to the medial and inferior aspects of the frontal lobes.

Complications

Neurological. The risk to life is small; most recent surgical reports estimate mortality at well under 1 per cent. However, parasurgical necrosis may occur, especially if suction techniques are used. And numerous cysts may develop in, and around, the plane of section. Morbidity also includes hemorrhage and convulsive seizures. The latter have occurred in 15 to 20 per cent of the cases which involved bilateral cortical damage, and have been correlated with preexisting brain damage, extensive preoperative electric convulsive therapy, and immediate postoperative sepsis or infection at the operative site. However, seizures are usually few in number and readily responsive to anti-epileptic medication. Nevertheless, Raskin has suggested that in some cases, at least, there may be progressive pathological changes for years. Certainly, electroencephalographic changes may continue for a period ranging from months to years.

Physiological. There have been reports of incontinence and of excessive appetite, particularly in patients who have had the conventional full bilateral lobotomy.

Psychiatric. The patient's social behavior may be tactless and crude. Lack of insight and psychopathic behavior have also been reported. However, careful studies have not revealed an alarming incidence of postoperative alcoholism, sexual acting out, or criminal behavior. In any event, certainly the tendency of these patients to engage in such behavior is no greater afterward than it was before the operation.

Psychological. The psychological functioning of lobotomized patients has been studied extensively. No serious decline in I.Q. has been noted. However, some impairment of the capacity for concept formation and planning has been reported, and patients tend to make impulsive decisions without prior deliberation. These deficiencies are more marked when the operation is performed to relieve intractable pain in a patient who is relatively intact intellectually. In contrast, the thinking processes of some psychotic patients have been so crippled by their mental disorder that they often achieve a higher performance level on

intellectual tests after lobotomy, despite the very considerable brain destruction.

Results of Treatment

Anatomical sequelae. Even when the operative procedure of lobotomy remains constant, inevitably, there will be considerable variation in plane and extent of damage, concomitant with the variation in skulls, brains, and, presumably, in functional localization. A large number of tracts may be cut, including long tracts from the frontal to the posterior cortical areas, and shorter ones to the pons, hypothalamus, and temporal areas (uncinate fasciculus). Many thalamofrontal projections are severed, including, in particular, projections from the dorsal, medial, and anterior nuclei. The anterior horns and the lateral ventricles are widened. Circulation of the frontal areas is reduced.

McLardy and Meyer have postulated a definite quantitative relationship between the degree of personality change and the amount of prefrontal cortex sacrificed. More severe personality damage occurs with bilateral involvement of ventral and central segments of frontal lobes. Similarly, Yakovlev et al. have stressed the fact that widespread disorganization and subsequent reorganization of brain function necessarily follow massive frontal cutting. However, a valid anatomical explanation for this phenomenon is not yet available.

Personality changes. As mentioned above, more extensive personality change and functional loss are produced by large area destruction than small area destruction, by posterior sections than anterior sections, by bilateral than unilateral procedures. It follows, then, that procedures such as bimedial or orbitomedial lobotomy, or cingulectomy, which produce smaller lesions, may also alleviate emotional distress to a considerable extent, without adversely affecting the patient's psychological functioning. Actually, it is difficult to predict the outcome of lobotomy with any degree of accuracy. However, a survey of the findings presented in hundreds of reports might be summarized as follows.

Motivation. Drive is often reduced. Lack of initiative, laziness, and apathy are particularly evident

in the immediate postoperative period, with considerable improvement over time. Ambition and goal-directed activity may diminish. In contrast, some patients, particularly those who were less disorganized prior to surgery, e.g., those with obsessive-compulsive or anxiety states, may take up life with renewed vigor. And, in schizophrenics, a reduction of the "drive" attached to hallucinations and other abnormal ideation may be therapeutically beneficial.

Self-concern. Anxious self-preoccupation, depression, and self-consciousness are predictably relieved after lobotomy.

Social behavior. The patient becomes more aware of his environment, is able to interact socially with his peers, particularly if he is encouraged to do so, and even seems to seek out and enjoy the company of others. In brief, the patient becomes more of an extrovert; unfortunately, however, as mentioned earlier, his behavior is often characterized by tactlessness and lack of refinement, particularly if the operation produced extensive lesions.

On the other hand, there is better integration of ego functions, and the patient's contact with reality is strengthened. Finally, he is less distracted by hallucinations, delusions, and suspicions which, in fact, may disappear entirely in time.

Affect. Perhaps because the patient's depression, anxiety, and agitation are greatly relieved, his feelings have less depth. Thus, while they may seem to be emotionally charged, they cannot be sustained. To illustrate, the patient may suddenly flare up in anger, but his anger will be forgotten just as quickly.

Prognosis. Patients whose illness is of shorter duration respond better than do those with an illness of long duration. Rapid onset of illness is a more favorable prognostic sign than insidious onset. Adults respond better than do children. (In fact, the operation is contraindicated in children.) Patients with some life achievement, e.g., job, education, marriage, children, do better than do those who have never attained these goals. Patients with a "healthier" preoperative personality organization are better prospects than those whose personality is less integrated. Patients with tension (as opposed to those who are apathetic), emotional responsiveness, insight, friendliness, and a tendency to verbalize, do better than patients without these qualities. Patients with a diagnosis of psychoneurosis, hypochondriasis, or obsessive-compulsive disorder, and those with severe depression and anxiety states fare better than patients with a diagnosis of schizophrenia (unless considerable tension can be detected, despite the patient's disorganized state) or chronic mania. Finally, as mentioned earlier, patients whose families are interested in their welfare, who are eager to cooperate, and who wish to make a place for them have a better prognosis than patients whose families have excluded them.

Long term follow-up. The literature has repeat-

TABLE I^a

Follow-up Study of the Work Adjustment of Chronic Psychotic Patients after Bimedial Lobotomy

	Preoperative	1 Year Postoperative	5 Years Postoperative ^b
"Good" work adjustment...	2 (6%)	12 (34%)	19 (54%) ++
"Fair" work adjustment...	8 (23%)	12 (34%)	4 (12%)
"Poor" work adjustment...	24 (68%)	11 (32%)	12 (34%) +

^a Table adapted from Paul, N. L., Fitzgerald, E., and Greenblatt, M. Five year follow-up of patients subjected to three different lobotomy procedures. *J. A. M. A.*, 181: 815, 1956.

^b Each plus indicates one deceased patient.

edly stressed the fact that good postoperative results may be sustained for many years; moreover, although improvement is slow, sometimes it is progressive over years. This is important because current reports indicate that improvement is not well sustained in other organic modalities, such as insulin coma treatment and electric shock. However, long term studies on comparable patient samples treated by comparable methods are not yet available.

Table I indicates the results of a long term follow-up study of the work adjustment of a group of chronic psychotic patients (mainly schizophrenic) who had a bimedial lobotomy. Only 2 per cent of the patients studied had a good preoperative work adjustment; that is, were working full time and productively; but 1 year after the operation 34 per cent were considered to have a good work adjustment. The number of patients with poor work adjustment decreased postoperatively but then remained essentially unchanged for 1 to 5 years.

Contributions of Psychosurgery to Psychiatry

First and foremost, lobotomy has demonstrated that chronically ill psychiatric patients have considerable residual potential for improvement. This, in turn, has challenged psychiatrists to reexplore vigorously other means of helping such individuals and to develop new therapeutic methods.

Second, the "lobotomy era" has added new impetus to research efforts to localize function in the brain and the frontal lobes. Indeed, current research involving electrode implantations and stimulation of limited zones has greatly enhanced our understanding of the role of the brain in health and disease. The neurological approach to psychiatric disorders has thus been strengthened. Admittedly, no single unitary theoretical conceptualization has received universal acceptance. However, many theoretical formulations have been proposed, and most of the old hypotheses concerning frontal lobe functioning have been rigorously scrutinized.

Finally, psychosurgery has greatly augmented the hope that, one day, our accumulated knowledge of the relationship between brain, personality, and mental disorder will constitute an exact science.

Suggested Cross References

See also Sections 2.5 to 2.9 on neurophysiological and neuroanatomical correlates of behavior.

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Chapter 36

Milieu Therapy

36.1 THE HOSPITAL AS A THERAPEUTIC COMMUNITY

EDWARD STAINBROOK, Ph.D., M.D.

Introduction

Several years ago, the President's Commission on Chronic Illness suggested that it might be useful to consider the theory and practice of medicine as a branch of the larger, more inclusive science of human ecology. This recommendation is particularly relevant to the understanding and treatment of behavioral disorders and of behavioral impairment in general. More precisely, the older medical model of physical illness as the symptomatic manifestation of the malfunctioning of a specific organic system cannot be fruitfully applied to the etiology of impaired behavior. A good deal of distressed human behavior—whether episodic, recurrent, or chronic—is the result of faulty social learning which has interfered with the individual's adaptive capacity and his ability to cope with life's vicissitudes. Much impairment is a reaction to distortions in the individual's present relationship to persons, ideas, and things; and some present impairment is a consequence of his perception, distorted or accurate, of the future. Hence, the use of the social system and culture of the hospital for the restitution of previously acquired learning and resources and the facilitation of new social learning constitutes a way of treating such impairment.

Definition. The designations milieu therapy and therapeutic community are used, therefore, in psychiatric hospital practice to refer to those aspects of the society and culture of the ward or hospital which may be influential in reducing the behavioral disturbances of patients. Behavior may improve because the environment is structured to provide human relationships which satisfy emotional needs, to reduce psychological conflict and deprivation, and to strengthen impaired ego functions.

Theoretical Orientation

When a patient enters a hospital, he adapts to and is integrated into the social structure and operation, both formal and informal, of that specific institution. And events within the hospital society, even though remote from that particular patient, may affect not only his psychological functioning, but his biological functioning as well.

A simple formula proposed by Theodore Sarbin may help to clarify the nature of the transactions between the patient and the hospital community. Behavior equals the characteristic self, plus the social role the individual is enacting at any given time. More precisely, every behavioral event is governed, in part, by the expectations, values, intellectual adequacy, and executive resources which characterize particular social role enactments. It follows, then, that a clear differentiation between self-action and role-determined action is crucial to the understanding of the individual's total behavior. Otherwise, as is so often the case, particularly in psychiatric hospitals, attempts are made to explain the patient's behavior entirely in terms of his self-dynamics. In that event, the significance of environmental factors, i.e., the conditions imposed by the hospital's social system, as an equally important determinant of behavior, is overlooked.

Therapeutic Principles

General considerations. Two basic considerations, therefore, are of primary concern in the administration of the psychiatric hospital. First, there must be an awareness of the fact that the social structure and process of the hospital may exert an unfavorable influence on the behavior of its patients, and on the relationships among staff members, which, in turn, will affect the administrative and therapeutic transactions of the organization. Second, on the basis of this realization, social action within the hospital must be structured so that the needs of both patients and staff are fulfilled; so that individual capacities for perceiving, differentiating, and interpreting a wide range of "constructive" experiences are stimulated, enhanced, and

developed. Finally, the structure of the hospital's individual and group therapy programs and its milieu therapy program, in particular, must derive from the concepts of developmental sociology. And concomitantly, these various therapeutic programs will focus on the restoration and development of each patient's unique potentialities.

Staff. In view of these concerns, it will be recognized that the therapy of the milieu is considerably more inclusive than the prescriptive direction of the ward personnel by a team leader, whatever professional role such a leader may occupy.

In relation to each individual patient, everyone in contact with him should ideally be able to answer clearly for himself the question, "What sort of human experience does this patient need with me now?" This is the final common pathway for the helping impulses of the therapeutic community. But some important determinants of this transmission may reside in the more comprehensive social system in which the ward transactions are embedded, such as, for example, the parallel administrative structure in a hospital of nursing services and medical staff. This may be a parallelism which may prevent effectively the operating autonomy of the ward as a socially articulate, unambiguous, coherent, and therapeutically dedicated unit. And this may be so even though the nurses and doctors in the ward group have committed themselves locally to each other as a team.

Patients. In more specific terms, the structuring and moderation of the social role the patient will enact and experience during his stay in the hospital society is the fundamental task of milieu therapy. The Cummings, in their recent book *Ego and Milieu*, have delineated the various therapeutic benefits which may derive from this approach. First, once the psychologically impaired patient has adopted a specific social role and it is reinforced by the complementary role action of the staff, these transactions serve to provide the patient with a stable, lucid environment. Second, the patient's own behavior is mirrored back to him. Third, the patient is offered responsible participant involvement in the human relations and administrative decisions of the ward community. By having delegated to him many of the tasks involved in communal living, he is provided the opportunity for the repair of performance, social adequacy, self-esteem, and human interaction and for the development of new behavioral resources.

Environment. As mentioned above, the provision and maintenance of a lucid environment will depend primarily on the nature of informational and communicative transactions within the hospital. More specifically, however, the psychological determinants of a lucid environment are the patient's awareness of self, of others, and of the reality which surrounds. This requires the integration and balancing of information which has already been internalized, on the

one hand, and, on the other hand, information which derives from perceptions of the external world, whether such information has been sought out or is volunteered. Inevitably, the individual's perceptual-cognitive construct of self and of others will, in turn, dictate his responses to self and others.

As might be expected, distortions in "perceptual-cognitive functioning are typically encountered in psychiatric patients. In many instances, these distortions may be attributed to two specific psychological phenomena. First, the individual may have developed an impairment in perceptual-cognitive functioning at an earlier stage of development, in the service of anxiety reduction and conflict resolution. Subsequently, this impairment is further complicated by motivational factors of equal urgency: the individual must regress to the use of primitive thought processes in order to diminish the acute anxiety arising from the current inadequacy of his integrative and adaptive capacities.

Therapeutic objectives. It is essential for such patients that the hospital minimize ambiguity, that every attempt be made to strengthen their confidence in the predictability of the behavior of others in the surrounding environment—and of the self as well. These goals can best be achieved by repeated enunciation, definition, and clarification of the patient's behavior in relation to others, and of the behavior of others in relation to the patient. The panic and acute anxiety which are associated with the psychotic episode, in particular, will then diminish. And at this point the patient, although still disturbed, can begin to make increasing use of the other resources the hospital has provided to alleviate his distress.

With particular reference to the acute psychotic reactions, it is unfortunately still too common that such acute behavioral disorganization is frequently treated in hospitals where the fragmentation of the helping relationship both through time and in the same situation is pronounced. Unlike other medical emergencies, the acute psychotic reactions are often treated perfunctorily and expectantly in receiving hospitals until the patient can be moved to a formal psychiatric hospital for definitive care. In the meantime, the patient is left to use his already learned and preferred behavior, now altered by regression and disorganization, not only to reduce the anxiety associated with his faltering adaptational struggle but also to master, mostly alone, the reactive panic of experiencing himself as psychotic.

The objectives of the organized milieu, as stated earlier with reference to long term psychiatric patients, are equally applicable to acute psychotic reactions. In brief, each member of the staff who comes into contact with the patient must attempt to minimize the ambiguity of the external reality which he represents directly as another self and symbolizes indirectly. Inevitably, each staff member will identify himself and specify his role for the edification of the

patient. The patient's impressions will derive from what the psychiatrist says and does to him, from what he is seen doing (and overheard saying) to other patients, and finally, from the role he has assumed, wittingly or unwittingly, in the total social context of the ward and hospital.

It is, therefore, essential that every psychiatrist on the staff be clear and confident about his own role action and about the role actions of his colleagues (including ancillary personnel). Otherwise, the anxiety, the resentment, the inter-role defensive maneuvers, and the ambiguity of action may severely diminish the ego-supporting benefits the patient may derive from his relationship to the ward personnel, however brief. Certainly, it is not necessary to underscore the therapeutic disadvantages of exposing the patient to many ill-defined, unspecified, and casual contacts (which by implication are rejecting) with various staff personnel who are either assigned to or just passing through the ward. To the patient who is already overwhelmed by a plethora of anxiety-induced, confusing information, such contacts can only impose an additional burden.

In any event, the goal of "conceptual closure," and the associated certainty of knowing cannot be achieved if the external situation is, in fact, unclear and ambiguous. By the same token, the patient sometimes asks persistently and provocatively for information about the hospital in relation to himself. These requests should also be responded to in the conscious modality of verbal communication, even if the psychiatrist also understands and responds to the patient's implicit need. This must be stressed, for under the aegis of trying to understand the patient's unconscious motivations, the hospital staff may fail to supply the direct, conscious anxiety-reducing answer and, instead, may "hedge" its responses to facilitate understanding of the unconscious significance of the patient's demand. There is a time to answer the patient directly; a time to draw certain inferences from his question and to answer him accordingly; and a time for interpretation. Those in the well organized therapeutic milieu can distinguish among them.

Similarly, it is obvious with respect to acute psychotic reactions, in particular, that when the ward personnel are prepared to answer questions clearly and authoritatively, and when orientation, dependency, assurance, self-esteem, and identity needs are adequately met by the milieu, bedlam is replaced by a well organized group of patients who, hopefully, will remain impaired only temporarily.

Structure and Organization of the Therapeutic Community

Physical plant. The geographical location and physical characteristics of the building which houses the psychiatric ward and its decor will also influence the effectiveness of the therapeutic milieu. Formerly,

the geographical placement of the hospital carried a possible connotation of isolation and rejection by the community; the size of the building and its age were correlated with massiveness, venerability, and chronicity; and the "accessories" which, ostensibly, were constructed to provide maximum security, suggested crime, rather than illness, and prisoner, rather than patient. Fortunately, within the past several years these physical characteristics have become the exception, rather than the rule. Thus, today, whenever feasible, the patient is returned to his local community for treatment, e.g., to the general hospital setting. Even the formal psychiatric hospital is becoming an open hospital to an increasing extent, and admissions are more frequently based on the voluntary decision of the patient, rather than legally coercive directives from others. Finally, in contrast to the earlier belief that the psychiatric hospital should be used as much as possible, psychiatrists now make every effort to limit the hospital stay of their patients. This, in turn, has changed the cue value of the psychiatric hospital, so that it is no longer equated with despair-engendering long term institutionalization, but with brief, helpful treatment.

Within the larger hospital complex, buildings which are specifically designated for the treatment of acute reactions, convalescent patients, or continued care cases, may have significant implications for the patient and, in fact, may further increase his psychological burden by adding impairing information about his inevitable fate as a patient, and the way he is perceived and valued by the hospital decision makers.

In contrast, the interior spatial design of the psychiatric hospital may or may not be congruous with the prevailing theories of behavior and of treatment. Certain principles should be borne in mind, however. For one, the goals of the therapeutic community seem to be achieved most effectively when patients can organize themselves into small groups which facilitate face-to-face interaction. Therefore, ward design should make it possible to form and maintain such groupings easily. Secondly, patients also need to be able to get away from the group at times, to retreat to some area where they can be securely and privately alone. The adequate fulfillment of this need requires a sensitive, flexible, secure therapeutic staff, as well as an arrangement of hospital space to ensure such privacy.

The interior "decor" of the hospital can also cue the patient as to the kind of behavior expected of him in specific hospital situations. For example, security hardware, crude furnishings, bare walls, seatless toilets, and open toilet stalls convey to the distressed and disordered patient that the hospital thinks it must protect itself against him. And that prophecy of further regression and loss of control may be fulfilled, in large measure, because of the increased anxiety, despair, and anger evoked in him

by this built-in hospital environment, and what it says to him.

Management of the therapeutic milieu. This reference to the self-fulfilling prophecy of the patient's behavior as a response to the physical environment of the hospital leads to consideration of the expectations which are communicated implicitly by the social environment and, more specifically, by the people who inhabit that environment, i.e., other patients as well as hospital personnel. Perhaps this is best illustrated by the frequently dramatic effects of a covert communication to the patient by a nurse or a psychiatrist of their bias about the prognostic implications of a diagnosis. The feeling of hope, or of hopelessness, which is thereby imparted is one of the most subtle, but most significant, aspects of the management of the therapeutic milieu.

The newly admitted patient must learn as rapidly and as effectively as he can how to be a successful patient in a particular hospital. To a great extent, the "culture" of the ward group will be conveyed to him by other patients. And every social group demonstrates an overt knowledge and communication of "the way we behave and do things here," and, by the same token, there is a covert and often conflicting system of the way things are actually done. The more inadequate the functioning of the hospital organization, the greater the difference between the overt and the covert systems among the staff as well as the patient group.

Daily meetings of all the members of the ward, patients and staff, to discuss and resolve the general problems involving human relations and administrative policy which stem from living in a collective society is the best insurance against too great a gap between the therapeutically desirable operation of the ward and its actual mode of operation.

In a very real sense, the newly admitted patient participates in an already functioning therapeutic community. Therefore, one must be concerned not only with the creation of a therapeutic social organization for the patient, but with the psychologically healthy and productive social organization of the staff responsible for the therapeutic community. The hospital's formal organizational chart sometimes provides a helpful index of potential areas of task deviance. This indication of potential deviance may be due to the fact that the individual's position and functions in the organizational structure have not been clearly defined, or because his position and functions reflect administratively determined stress and conflict. Invariably, the response of ward personnel to conflict which is precipitated by top level administrative policy or procedure will take the form of altered motivational states with the consequent employment of characteristic coping strategies by psychiatrists, social workers, nurses, and other personnel. And these individual psychodynamic reactions

to "the system" almost always influence, in some measure, the efficient performance of therapeutic tasks and role action in general. In the case of the psychiatric hospital, these adverse reactions may be particularly evident in the staff's formal (e.g., psychotherapeutic) and informal contact with patients in their care.

To illustrate, conflicting directives to a nurse in charge of a psychiatric ward from two or more different administrative sources may evoke her anxiety or anger, or more often a mixture of both emotions, which will then take the form of resentment. Unless this resentment is very superficial, it will affect her motivation and will be manifested in her task performance and overt behavior. Admittedly, such changes may be situationally specific and of brief duration. But if such episodes occur frequently, to the point where they have been incorporated, albeit unwittingly, into the structure of superior-subordinate relationships within the hospital, then more permanent and more generalized coping preferences may result. Most nonprofit organizations, but hospitals especially, provide an opportunity not only for the resourceful execution of responsibility, but for the enjoyment of irresponsibility as well. Consequently, chronic resentment may ultimately take the form of a dehumanized "don't care" attitude; or it may be manifested in the subtle sabotage of the organization's tasks and goals or, as happens so frequently, in a rejection (by resignation) of the specific conditions of work imposed by the organization.

Since the nursing staff has had, in many psychiatric hospitals, to assume much of the day and night responsibility for the hospital society, the nursing service has implicitly assumed administrative power commensurate with their responsibility. This has led to an understandable reliance on their own hierarchical organization within the hospital. In such a circumstance the doctor in charge of a ward unit in a larger hospital may be in frequent conflict not so much directly with his charge nurse as indirectly because of the positions of both of them in the administrative structure.

In summary, then, the social structure of an organization continually influences the motivational state of the staff responsible for its effective operation. If motivation is altered, action may be altered as well. Action involves transactions with other personnel and may influence the motivation of these personnel. Hence, organizational stress which affects one individual's position initially may be communicated subsequently, either directly or indirectly, to many others in the organization. Organizationally induced negative tensions may then combine to divert the "final common pathway" of the therapeutic transaction and effectively nullify the helping intent or, even worse, transform it so that the patient's recovery may actually be impeded.

Obviously, the status of the patient in the hospital

community is an important concern in the creation of a milieu which will provide comprehensive and resourceful psychiatric treatment. By definition, status is a loose measure of one's power in a social system, and in many organizations it is determined more specifically by one's ability to influence the operation of that organization. Since, at best, the patient is perceived as a buyer of services, and at worst, as a beggar of services, it takes some flexibility to understand that, whatever his socioeconomic classification, the patient comes to the hospital to work too. Furthermore, his participation (i.e., task performance) in the organization is, in fact, a prerequisite for his therapeutic progress. Clearly, then, he must be permitted to collaborate in the joint enterprise of organizing and implementing the treatment process.

Specific therapeutic techniques. More specifically, the therapeutic community delegates administrative responsibility to patients, in keeping with its stated goal of restoring previously acquired adaptive capacities and developing new ones as a concomitant of exposure to the structured hospital environment. This delegation of administration can take many forms and need not be confined to participation in the formal patient government of the ward. This procedure does have certain advantages, however. For one, the patient's administrative participation is visible and therefore easily observed. And this may be the best way to give patients total responsibility in administrative and human relations areas.

Whatever the form of participant involvement of patients in the decision-making activities of the hospital, the essential requirement is that such power delegation be honest and be binding on the hospital administration. The therapeutic community is no place for "preplanned" decision making or for administrative role playing by patients.

Not only should all of the therapeutic resources of the hospital be seen as being employed for the patient, but as much as possible, and with the increasing reduction of impairment, such resources should be employed by patients in the service of their own recovery and further growth in resourcefulness.

Occupational, recreational, and general activities and other opportunities for action in the hospital should arise as far as possible out of the self-determined and self-decided needs of patients and not be impressed upon them by the staff. It is quite clear now that the simulated work concept of occupational therapy actually damaged the work behavior of the patients who had learned outside the hospital to give a full day's work for a full day's pay. And in these days of short hospital stay, vocational rehabilitation and retraining outside the hospital is the more rational way to skill or reskill our patients vocationally.

Finally, if much of the human distress which psychiatry tries to alleviate is directly or indirectly the result of failures of successful and resourceful individuation, then we need to be directed in our

therapeutic tasks not only by conceptions of developmental biology and of developmental psychology. The modern meaning of the hospital milieu is that it is an application of developmental sociology.

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36.2 DAY CARE: A PHASE OF PARTIAL HOSPITALIZATION

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Introduction

The development of day and night hospitals stems from two major concepts in psychiatry. First, workers have become increasingly aware that even seriously ill psychiatric patients do not necessarily require full time hospitalization. On the contrary, in the natural course of many, if not most, psychiatric disorders, the patient's need for constant supervision waxes and wanes. Furthermore, today, the prospects for recovery are viewed with vastly greater optimism than ever before. Thus, many patients who in the past would have been institutionalized for life are now thought to be eligible for day care or some other form of partial hospitalization at some point in the course of treatment.

Second, the concept of the mental hospital has been modified. It is no longer conceived of merely as an institution which offers "room and board" and custodial care. Rather, it is a force which is capable of exercising a positive influence through its therapeutic at-

mosphere, or, conversely, of exerting a negative influence because of unfavorable iatrogenic factors. Moreover, even under the most ideal conditions, hospitalization for protracted periods of time frequently tends to act against the patient's best interests, because it separates him from the community with which he must ultimately come to terms. Partial hospitalization, therefore, offers an alternative whereby the patient may reap the benefits of concentrated psychiatric care and at the same time maintain his ties with family and community.

Because of the essential validity of these basic premises, it is not surprising that day care has grown in popularity in the past several years. By the late 1950's, the number of day hospitals in operation in Great Britain and the United States had increased substantially. In this country, this growth has been reflected in federal regulations emanating from the Department of Health, Education, and Welfare, under the Community Mental Health Centers Act of 1963. In order to qualify for federal aid, a community mental health center must include in its program provision for partial hospitalization. As a result, at present, almost every state provides some kind of day care facilities for its mentally ill.

Day care is, in fact, now firmly established on a world-wide scale as a significant psychiatric facility. In the Soviet Union, as in the United States, the concept has been written into law. And in such countries as Nigeria, Yugoslavia, Greece, and Thailand, day care units are emerging to help solve problems arising from the shortage of trained psychiatric personnel and facilities.

History. The first modern psychiatric day hospital was organized by Dzhagarov in Moscow in 1933. In the West, the first major day hospital for severely ill psychiatric patients was established by D. Ewen Cameron in 1947 at the Allan Memorial Institute of Psychiatry in Montreal. The first such hospital in England was established by Bierer in 1948 at the Institute of Social Psychiatry. In the United States, day care units were created at the Yale Psychiatric Clinic in 1948, and at the Menninger Clinic a year later.

Organization of the Day Care Units

Although day care units may be organized in a variety of ways, three main patterns emerge.

Intramural facilities. The great majority of day care units are linked with a parent facility, such as a large state hospital or the psychiatric department of a general hospital.

Free standing units. These facilities, which are comparatively few in number, are independent of mental or general hospitals and operate as completely separate treatment centers.

Community facilities. Day care units may also be associated with mental health centers. These centers serve a variety of community needs and are being

established in increasing number as a result of the Federal Community Mental Health Centers Act.

Operational issues. Whatever its structure, certain issues are of universal concern in the operation of the day care unit, albeit to varying degrees. These include short term versus long term care; the degree of administrative control over admissions; staff initiative versus patient initiative; and, finally, the collaboration between the staff of the day care unit and the psychiatric in-patient service in the hospital with which it is affiliated (or the in-patient service of some other hospital in its health area, if it is an independent unit). The unit's approach to these issues will give shape to its program and determine its function in the community.

Short term versus long term care. Sooner or later, each unit must decide what balance it wishes to maintain regarding length of stay. Should it concentrate on providing intensive treatment for short stays, thus making its facilities available for larger numbers of patients? Should it respond to the long term needs of chronically ill patients? Or should it attend equally to both types of patients? The final decision will determine the type or types of patient admitted and the unit's treatment orientation.

Administrative control. The day care unit which exerts a measure of control over admissions, is, of course, in a better position to regulate the number and type of patient on its rolls. Without such control, there is the danger of an imbalance in the patient census and a concomitant threat to the unit's effectiveness. Pressures for admission are great. Nevertheless, each unit should be guided by one overriding criterion—acceptance of those patients who will best enable it to maintain its therapeutic atmosphere.

Staff initiative versus patient initiative. The therapeutic atmosphere will also be influenced by the attitude of the staff toward the patient. Each unit will decide whether it wishes to stress patient initiative, staff initiative, or a balance of both, in its policy concerning patient motivation. Should the staff take the initiative in motivating patients to improved levels of activity? Or should the staff adopt a permissive role and accept patient initiative as a governing factor? Those units which decide to stress patient initiative must take into consideration potential difficulties emanating from severely disturbed patients. On the other hand, staff initiative may be emphasized at the expense of therapeutic progress.

Collaboration with a psychiatric in-patient service. Finally, the day care unit must find an appropriate solution to the problem posed by those patients whose condition or behavior makes continued day care untenable. The most common solution is to arrange for the transfer of such patients to a psychiatric in-patient facility. Hospital admission may be expedited if the unit has a direct organizational tie with a state or general hospital or has established a formal or informal affiliation with such

an institution. In any event, a critical requirement for the successful operation of a day hospital is quick and easy access to an in-patient bed when the need for it arises.

Treatment Techniques

Specific and nonspecific therapies. Specific therapies may be executed in the day care setting as they would be on an in-patient service. In addition, however, the atmosphere and activities of the day hospital exert an independent therapeutic effect. Patients arrive in the morning, with or without a companion, and leave in the afternoon after a day of varied activities. Some work in the hospital; others engage in occupational or recreational therapy; still others, without specific assignments, interact with patients and staff. In some units, ward meetings serve as arenas within which patients may improve their interpersonal relationships. Whatever the particular schedule of activities may be, the primary task of the day care unit is to create a therapeutic milieu so that the environment itself may be of benefit to the patient.

Indications and Contraindications

Patients are frequently eligible for day care following a protracted period of full time hospitalization. In large state hospitals, in particular, day care is used as a means of facilitating transition from hospital to community and may even prevent a relapse when the patient's adjustment to the community appears in jeopardy. In addition, direct admission to a day hospital may preclude the need for full time hospitalization. Finally, the day hospital offers a significant potential solution to the shortage of mental health resources, which represents a national problem.

Experience indicates that day care appears to be suitable for patients in almost all diagnostic categories, and with illnesses of varying severity. Age, sex, and other background characteristics do not appear to be barriers to this form of treatment. Experience has also shown, however, that patients who are clearly suicidal and acting out patients may present serious difficulties in management. As a result, some units have excluded these patients. Certainly, administrators should be cautious about admitting such cases and make careful arrangements for their care and management.

Results of Treatment

Several attempts have been made to assess the effectiveness of day care. Nevertheless, no definitive evidence has been marshalled to date to prove that, for certain cases, partial hospitalization is more effective than full time hospitalization. The most valid conclusion would seem to be that day care is no less effective than traditional methods of patient care.

At the same time, however, the value to the patient of maintaining community and family ties would appear to offer a *prima facie* reason for suggesting that partial hospitalization, in general, and day care in particular, are vital elements in the armamentarium of comprehensive community-oriented psychiatry.

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36.3 OCCUPATIONAL THERAPY

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History

Occupational therapy as "moral treatment."

When Pinel and those who followed him "took the chains off mental patients," it became apparent that this was only a first step in the more civilized, more humane, and more scientific treatment of the mentally ill. It pointed up the fact that psychiatric patients wanted and needed to have their time occupied; that, not unlike normal people, they too became restless when they had too much free time on their hands. Accordingly, various crafts programs were introduced into mental institutions, in the hope that they might have a curative effect upon the patients. In the United States such programs were part of what was then called "moral treatment," and they included walks, games, and religious services, in addition to crafts and farming.

It soon became apparent, however, that many patients were too negativistic and withdrawn to participate in such programs. In fact, frequently, depressed, phobic, and paranoid patients were even unable to leave the ward. In response to the need to involve these patients in such activities, occupational

therapy as an ancillary aid to psychiatric treatment began to emerge as a new profession. It received its greatest impetus, particularly in the United States and Canada, from World War I, when it became evident that occupational therapy was an essential part of the rehabilitation of men who sustained wartime injuries, whether physical or mental.

"Occupational therapy prescription." Art as an important medium of expression was added to the armamentarium of occupational therapy, in the form of painting, sculpture, and dancing. Reading and discussion groups were also formed. In general, an attempt was made to fit the task to the needs of the individual. This orientation was termed "occupational therapy prescription." More specifically, the psychiatrist was expected to be able to determine the particular type of activity best suited to a specific psychopathological phase or diagnostic category.

A classic example of this approach would be assigning a task which involved hammering to a depressed patient who could not externalize his aggression.

Current Techniques

"Free choice" approach. With the accumulation of clinical experience and the greater influence of psychoanalytic psychology within psychiatry, therapists moved away from the concept of specific "occupational therapy prescriptions," to the "free choice" approach. According to this approach, patients newly admitted to an institution are told about the available arts, crafts, and other occupational therapy facilities, such as kitchens and sewing machines, but they are not urged to use them, based on the premise that the majority of patients will participate in these activities sooner or later during their hospital stay. Such unstructured work situations are much more instructive to the therapist than were previous attempts to fit patients into a prescribed mold. When utilized in this manner, occupational therapy supplies data not unlike those elicited from projective tests.

Occupational therapy in the general hospital. On the basis of observations made in occupational therapy at Mount Sinai Hospital, Linn, Weinroth, and Shamah were able to distinguish four phases in the evolution of acute psychiatric illness in general hospital patients.

Phase I. Acute psychiatric patients are admitted to a general hospital because they are not able to function in the community. Some acute crisis in their lives has precipitated, or exacerbated, the illness. Upon admission, they are generally too confused, or too agitated and disturbed to be able to do anything at all in occupational therapy. However, after a varying period of time they quiet down sufficiently to become aware of their surroundings. It is at this point

that they are likely to begin to take advantage of occupational therapy facilities and recreational activities. During this initial phase they are likely to paint or sculpt all sorts of symbols and unstructured blotches of color which reflect their central fantasies.

Phase II. As their contact with reality increases, they enter the second phase of hospitalization. Concurrently, they begin to produce more conventional things, such as pocketbooks and ashtrays, and to paint more conventional canvasses.

Phase III. When the time comes for the patient to leave the hospital, his work becomes much less structured once again, as part of a predischARGE symptom flare-up. This third phase lasts for as long as it takes him to accept the idea of leaving the hospital.

Phase IV. The separation from the hospital and the therapist, i.e., the weaning reaction, constitutes the fourth phase. In the course of this phase the patient may want the occupational therapist and/or his psychotherapist to keep one or another item he produced during his hospital stay. If he leaves the hospital before he is quite ready to do so, he may leave behind a painting or a piece of sculpture. Then, at some future time, when he is better prepared to function independently, or if he forms another meaningful relationship in the interim, he may return for the article.

Long term implications. Patients should be encouraged to continue their interest in occupational therapy, to the extent that facilities permit, after discharge from the hospital. They may continue to visit the hospital, if this is possible, or engage in such activities in a community facility which is not affiliated with the hospital. Thus, occupational therapy can perform a liaison function between the patient and the hospital, on the one hand, and the patient and the community, on the other. Furthermore, occupational therapy activities may even help the patient develop a new interest or point to a new professional orientation.

Therapeutic Applications

Many psychiatrists make extensive use of occupational therapy and, in particular, of artistic productions, to gain greater insight into their patients' psychological functioning. Patients are encouraged to associate to, or explain their paintings or sculpture; the therapist then offers interpretations based on the content, form, or color of the artistic productions. Other therapists feel that utilizing certain color tensions will help patients to abandon more regressive states and strengthen the integrative functions of the ego.

It is often possible to learn how a patient feels about himself and others through the medium of occupational therapy. The distortions which character-

ized his primary object relationships are often reflected in his productions; and concomitantly, he is able to indicate his present feelings toward his family. Similarly, the hospitalized patient's attitude toward his fellow patients and the hospital staff are demonstrated in his art and in his other activities. Moreover, his feelings toward his therapist, i.e., transference and counter-transference phenomena, are often expressed in occupational therapy.

Not only conscious attitudes, but much that is unconscious is often bared in this manner. Ego and superego attitudes, both conscious and unconscious, are reflected in the occupational therapy productions. Thus, from a structural point of view, it is often possible to see what the predominant drive may be during a particular phase of the illness.

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Chapter 37

Evaluation of Psychiatric Treatment

37.1 • • •

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Clinical experience clearly indicates that some patients are helped considerably by psychiatric treatment. Information is sparse and inconclusive, however, as to the relative effectiveness of different types of therapy in different types of psychiatric illness. This section will present a brief review of the major issues involved, in an attempt to shed further light on this question.

For proper evaluation of a particular form of therapy, the changes it produces in a homogeneous sample of patients should be compared with those occurring in a control group which does not receive such treatment but is matched with the experimental sample in respect to all other relevant variables. Moreover, the treatment itself should be described in terms that will permit its replication. Finally, the criteria of improvement should be defined objectively.

The psychiatrist engaged in such an investigation will find it difficult to meet these conditions: psychiatric illness is the manifestation of a complex interplay between personal vulnerabilities and environmental stresses. Moreover, these stresses characteristically involve the individual's personal interpretation of his experience, rather than threats to his biological integrity which can be evaluated objectively. Psychiatric treatment introduces new, and presumably beneficial, variables into this system which interact with many other, less predictable variables. The specific effects of the psychotherapies at the psychological level, and of the organic therapies at the biological level, have not been clearly defined.

To illustrate, the effects of the organic therapies on hospitalized patients are easiest to evaluate, because the treatment agent can be defined quantitatively and the environment can be controlled. Nevertheless, even with these therapies, the interplay between organic and psychosocial factors must be taken into account. Thus, the subjective effects of lysergic acid

diethylamide (LSD) may be very different, depending on whether the psychological setting is supportive or threatening; and much of the initial beneficial effect of the phenothiazines may have been due to the increased optimism of the treatment staff.

The evaluation of out-patient psychotherapy presents the greatest difficulties, however. For one, the therapeutic agent is an interpersonal relationship which defies precise definition. Secondly, the patient is exposed to treatment for only a short period of his waking life. The patient's experiences between sessions may be more important in determining the outcome of treatment, and therapy may influence these in subtle and uncontrollable ways. For example, the knowledge that the patient is undergoing psychiatric treatment may lead other people in his environment to think of him as "sick" and affect their behavior toward him. If the patient's interpersonal behavior changes in the course of treatment, this will inevitably produce concomitant changes in the behavior of his family which may enhance or impede his future progress. Similarly, the patient's progress may be impeded when the illness has maintained the emotional equilibrium of a family, so that his improvement is perceived as a threat by the other members.

Space limitations preclude discussion of the statistical and experimental methods which are presently being used to evaluate specific therapeutic techniques. Two brief examples may be cited. The nature of the therapeutic relationship has been explored by means of correlational techniques, in studies of large numbers of different types of patients and their therapists. These studies revealed that patients who receive a high degree of warmth and empathy from their therapists tend to improve; on the other hand, when patients fail to perceive these qualities in their therapists, they tend to get worse. A study using the method of experimental manipulation found that, on the average, psychiatric out-patients who had been prepared for psychotherapy by a special "role induction interview" showed greater improvement after 4 months of treatment than did an unprepared control group.

Basic to all attempts to evaluate psychiatric treatment is the description of criteria of improvement.

The remainder of this section will consider some of the major issues surrounding this area of investigation.

Criteria of Improvement: General Issues

Intuitive versus operationally defined criteria.

It is plausible to maintain that success in achieving the goals of certain forms of psychotherapy (e.g., helping the patient achieve a more integrated personality, or greater self-realization) can never be determined objectively. We must recognize that, while such aims may often be appropriate, they may always elude operational definition. At the same time, however, we must either assume that at least some significant criteria of improvement can be reduced to operational terms or abandon the scientific study of psychiatric treatment. Fortunately, in fact, the goals of many forms of treatment are more circumscribed, and the extent to which they have been achieved in a given patient can be specified.

Over-all versus specific measures. Because psychiatric illness reflects complex, multiple disturbances, at various levels of adaptation, improvement is seldom unitary. A patient's subjective symptoms and his interpersonal behavior may vary independently, or there may even be an inverse relationship between the two. For example, a patient's headaches may occur less frequently when he begins to express his anger openly. He may recover from one symptom only to substitute another, and various aspects of his behavior may change to varying degrees. Furthermore, different forms of treatment focus on different aspects of personality functioning. The behavior therapies, for example, concentrate on the amelioration of specific behavior disorders, whereas the insight therapies try to correct certain distorted perceptions. Obviously, when the criteria of improvement are defined in more specific terms, it becomes easier to evaluate the effectiveness of treatment.

Nevertheless, considering our present state of ignorance, an estimate of the patient's over-all improvement cannot be dispensed with. Depending on the individual case, such an estimate permits the rater to assign appropriate weights, on an intuitive basis, to improvement in particular facets of the patient's behavior. Accordingly, the over-all rating, "much improved," might be based on the disappearance of headaches in one patient, on a second patient's improved relationship with his wife, and on some combination of both of these factors in a third.

The estimate of over-all improvement is also a criterion against which more specific criteria can be validated. If, for instance, a patient shows improvement in regard to a particular complaint or pattern of behavior but nevertheless rates himself as unimproved on the whole, this suggests that, in itself, this particular symptom or disturbance in behavior did not motivate his decision to seek treatment; that

is, he did not regard it as a target complaint, referred to below. Furthermore, even if the nature of the improvement remains unspecified, the finding that one form of therapeutic intervention leads to greater improvement than another may be an important lead. In the long run, however, although they may be of some value, ratings of the patient's over-all improvement cannot make a significant contribution to our knowledge, because the data on which they are based cannot be made explicit.

Face validity versus construct validity. All criteria of improvement ultimately reflect implicit value judgments of the patient, the people important to him, and the therapist. Certain of these values are so widely shared, however, that any measure of improvement into which they have been integrated will receive universal acceptance; they are said to have "face validity." These would include subjective comfort; the capacity to establish mutually rewarding relationships with other individuals within and outside the family; the ability to do one's job adequately and to derive some satisfaction from working; and the possession of certain social skills.

As mentioned earlier, in a broad sense, these measures are universally accepted as the central objectives of all psychiatric treatment. Nevertheless, to demonstrate that a particular form of therapy produces improvement in these areas would not lead us very far toward our goal. Such a demonstration would not facilitate our understanding of various treatment processes or the validity of the theories which underly these modalities. In other words, treatment techniques must be evaluated in terms of improvement measures derived from the specific theories on which therapy is based. More specifically, the congruence between the patient's actual and ideal self would be the crucial measure of improvement for the client-centered therapies; the psychoanalytically oriented therapies would be evaluated on the basis of the patient's awareness of his inner needs, conflicts, etc.; and improvement in specific behaviors would determine the effectiveness of the behavior therapies. These measures then, would be said to have "construct validity." Because such measures are so closely bound to the theories from which they derive, however, they do not permit comparison of therapies based on different views. (Obviously, it would make no sense to evaluate a behavior therapy in terms of congruence between the patient's concept of his actual and ideal self.)

Moreover, all measures with construct validity are justified implicitly by the fact that they are closely related to measures with face validity. There would be little point in trying to increase a patient's insight or self-congruence if such changes were not reflected in an improvement in his subjective comfort and interpersonal functioning. These measures will overlap, of course; nevertheless, the patient's im-

provement must be evaluated in terms of both types of criteria.

Issues of base line and improvement interval. The ideal criterion in the evaluation of the effectiveness of treatment would be a comparison of the patient's status at the end of therapy and his "normal" state or even his potentially "best" state. The only practical alternative for such a base line, however, is the patient's state at the moment he seeks treatment, since only then can be observed directly. On the other hand, most patients come for help when the interplay of environmental stress and internal vulnerability has reduced their well-being to an abnormally low state; in brief, they are either in the throes of an emotional crisis, or at the bottom of a physiological swing. It follows that such a group of patients will be more distressed and incapacitated when they come to psychotherapy than they were a few months before, or will be a few months later—regardless of the effects of psychotherapy. And, in many instances, the patient's acute symptoms would disappear without therapy, as the effects of the crisis wore off or he entered a more favorable phase in his physiological rhythm.

The presence of large numbers of such patients in a test of the efficacy of any given treatment technique would yield a spuriously high improvement rate. Conversely, in a controlled study, in which such patients were represented in the control as well as the experimental group, the high rate of recovery in the control group might obscure the effectiveness of treatment.

An important statistical pitfall in comparing test scores in the evaluation of patients before and after therapy is that the degree of change manifested may be a function of the height of the initial score—the law of initial values. Those patients who are judged to be "sickest" initially, on the basis of certain criteria, will tend to show the most improvement in time, no matter what is done, and this may be erroneously credited to the treatment. This relationship may not apply for all diagnostic criteria, but it does in so many instances that any evaluation of patient improvement based on the differences between initial and subsequent test scores must allow for such errors.

The choice of the proper time interval for evaluating improvement presents related problems. The widespread view that the purpose of psychotherapy is to promote personality growth, together with the traditional medical 5-year follow-up, have combined to foster the conception of long term improvement as the ultimate test of therapeutic efficacy. Before the advent of the phenothiazines, no form of psychiatric treatment could be shown to produce a higher 5-year improvement rate than any other. And the 5-year improvement rate for subjects who had received any kind of psychiatric treatment was no higher than the rate for those who had received no specific treatment

at all. Typically, the treated group of neurotics and schizophrenics improves more rapidly than the control group and maintains its improvement, but the controls catch up eventually.

Obviously, long term follow-up results are necessary for a deeper understanding of the course of treated and untreated mental illness. However, the results of short term treatment should not be discounted. The production of temporary relief is a worthwhile goal, even if it does not affect the likelihood of recurrence. The treatment of a depression, for example, may be life-saving, if it shortens an isolated attack and prevents suicide, even though the next episode has not been postponed.

In any event, since the passage of time, in itself, may have certain therapeutic effects, the intervals over which improvement is measured must be equated in comparing different forms of treatment.

Types of Measures and Raters

In this subsection, the three major classes of criteria—subjective, behavioral, and physiological—will be considered briefly.

Self-reports. In evaluating psychiatric treatment, the court of final appeal must be the patient himself. Only he knows how troubled he was when he applied for treatment, and whether or not treatment has brought relief. Unstructured self-reports, solicited by the therapist, are subject to important sources of error, however. For one, the patient may lack the insight and sensitivity required for a good self-observation. Secondly, even when he does possess these qualities, his judgments are apt to be affected by his fears, hopes, disappointments, and colored by his wish to impress his therapist favorably. Self-reports by patients with a severely distorted grasp of reality or a disturbed communication system may be valueless. Finally, each patient's criteria for improvement are idiosyncratic, just as no two patients are identical constitutionally or psychologically. Consequently, it becomes difficult to compare self-reports of different patients. The construction of rating scales of symptoms, mood, self-concepts, etc., which enable patients to describe their status in these areas in comparable terms represents a partial solution to this problem.

The Q-sort. This method, in which the subject is asked to arrange a large number of cards describing different psychiatric complaints, permits a wide variety of statistical analyses. More specifically, the subject arranges these cards on the basis of their personal applicability: those which are most applicable are placed at one end of the scale; those least applicable at the other; and the rest in between. The number of cards to be placed at each scale point is specified, so that they form a normal distribution. In other words, very few cards are placed at either ex-

treme of the scale, and their number increases as one moves toward the middle categories.

Symptom check lists. This is another type of self-report in common use which can be analyzed to yield mean distress scores, as well as scores based on categories of symptoms. In neurotics, for example, the degree of over-all distress seems to be determined primarily by the severity of symptoms related to anxiety and depression. Since these may change markedly in the course of a single interview (particularly if treatment provides for the adjunct use of psychopharmacological agents), mean distress scores are too labile to distinguish the relative effectiveness of different types of treatment.

Analysis of target complaints. These are defined either as symptoms which are mutually acknowledged by patient and therapist, or as the patient's presenting complaints which he cites as his reasons for seeking treatment. They are considerably more stable than mean distress scores over a short time span and therefore permit comparison of different forms of treatment. To date, the analysis of target complaints has proven particularly useful in the evaluation of drug therapies; however, many workers believe that they can perform a similar function in the evaluation of the psychotherapies. This belief gains support from an experiment showing that brief desensitization therapy more effectively relieves performance anxiety than insight therapy.

Despite these optimistic reports, inevitably, the analysis of target complaints presents certain methodological difficulties. While these are not so great as to negate the potential value of this procedure, they merit brief discussion. For various reasons, the patient's initial target complaints may change as therapy progresses. As he develops confidence in his therapist, the patient may reveal problems he had concealed at the outset. Again, the insight he gains in the course of treatment may lead him to reformulate his initial complaints, so that they no longer resemble the version in which they were originally presented. Finally, the comparison of one patient's complaints with another's presents obvious problems.

Minnesota Multiphasic Personality Inventory. The distorting effects of a patient's motivations on his self-report can be reduced by measures which are not obvious to the patient. This test solicits information on a large number of complaints, feelings, and behaviors. The significance of the individual patient's answers emerges after they have been compared statistically with the responses of other patients.

Semantic Differential test. This test has a similar goal and has become increasingly popular. The test consists of a set of scales, which consists of such ratings as sharp-dull, clean-dirty, etc. Through statistical analysis of the patient's scores, each concept can be assigned to a three-dimensional "meaning

space," whose axes are good-bad, strong-weak, and active-passive. Apart from its potential value as a tool to facilitate the evaluation of the over-all effects of treatment, this test shows considerable promise as a means of demonstrating changes in the patient during treatment in relation to specific concepts.

Projective tests. The Rorschach test and the Thematic Apperception test are most widely used. These tests are designed to facilitate the expression of fantasies and other aspects of the patient's psychic life, the significance of which is not apparent to the patient (and which, in fact, might not be accessible to the therapist otherwise). Unfortunately, although the validity of these tests as an index of the presence of pathology has been established, they have proved disappointing as criteria of improvement during treatment, probably because the qualities of personality functioning they elicit are not easily modified.

Ratings of behavior. While, theoretically, behavioral ratings may be assigned to out-patients as well as in-patients, behavior observations are particularly applicable to in-patients for obvious reasons. Moreover, since, by definition, the behavior of hospitalized patients is so disturbed that they cannot function outside the institution, even crude measures of behavioral change are useful. Typically, this procedure involves the observation (and rating) of the patient's behavior at regular time intervals around the clock, and a subsequent check of the reliability of these observations by a comparison of the ratings made by various members of the treatment staff.

As mentioned above, ratings of behavioral change in this patient population are typically based on crude indices, which, however, may have complex determinants. To illustrate, while discharge from the hospital would logically be considered an indication of significant improvement in the patient's behavior, in fact, it is far from a simple function of clinical progress. The decision to discharge the patient may be strongly influenced by hospital policies, the availability of facilities for the patient's care in the community, and the attitudes of those to whom he will return.

With regard to out-patients, except for home visits which are made rarely (albeit for understandable reasons), ratings of changes in the patient's behavior which occur outside the therapeutic hour must be based on the patient's or relatives' reports, with all the sources of error this implies. A possible solution to this problem may lie in the microscopic analyses of specific aspects of the patient's behavior such as his patterns of interaction with the therapist, and structural characteristics of his speech, during the therapeutic session. These aspects of the patient's behavior may ultimately prove to be the most valid criteria of the patient's therapeutic course.

Physiological indices. Measures of autonomic activity have been used widely as indices of psychic stress, and therefore they would appear to have con-

siderable potential value for the objective evaluation of the effectiveness of improvement. These physiological symptoms which are considered to be psychologically determined include changes in heart rate, skin resistance, skin temperature, etc., as well as changes in the blood and urine levels of catecholamines, steroids, and other metabolic products. For example, clinical estimates of severity of depression correlate closely with urinary levels of 17-hydroxycorticosteroids.

Future Trends

Clearly, autonomic measures have the advantage of objectivity and scientific precision, and they have thrown increasing light on the role played by physiological processes in the etiology of mental illness. Their determinants have proved to be exceedingly complex, however, and the interpretation of findings presents corresponding difficulties. Recent improvements in instrumentation and methods of statistical analysis have brought a rapid surge forward, but the relationship of physiological measures to more direct indices of improvement as a result of psychiatric treatment still requires considerable clarification.

Despite the growing amount of reliable information concerning the effects of psychiatric treatment, much ignorance and uncertainty remain. It is helpful, under the circumstances, to remember that a lack of evidence to support the validity of a given proposition need not be interpreted as conclusive proof that it is false. More precisely, the past inability of psychiatrists to demonstrate differences in the effectiveness of various forms of psychiatric treatment does not prove that such differences do not exist. It merely points to the need for further research. With increasing sophistication in methods of defining and measuring criteria of improvement, and improved methods

of data analysis, rapid progress in this difficult field is occurring.

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CHILD PSYCHIATRY

Two aspects of child psychiatry are especially relevant for readers of this textbook. The first of these concerns the status of child psychiatry within the broader framework of psychiatry in general. As a subspecialty which addresses itself to the developmental and behavioral problems of children, clearly child psychiatry has an important substantive role in psychiatry, and, in fact, childhood experiences have long been considered of crucial significance in the genesis of adult psychopathology. Yet, only recently has this subspecialty emerged as a field worthy of independent study and investigation. Some of the factors which may explain this lag are discussed by Kanner in his account of the history of child psychiatry.

The second aspect of child psychiatry which is of particular interest to readers of this volume concerns the problems of training. Until very recently theoretical concepts regarding the development and behavior of children derived from clinical data on adult psychopathology, rather than from the direct, intensive observation of children. Psychiatrists have just begun to realize that they must understand normal as well as atypical reactions in childhood, if they are to comprehend fully the pathogenesis of adult deviations. Concomitantly, there has been an increasing awareness of the importance of training in child psychiatry for all students of medicine and for all trainees in psychiatry, whatever their particular area of interest. Thus the study of child psychiatry is not the exclusive province of the specialist, but part of a sound education in general medicine, neurology, and the behavioral sciences, including psychiatry.

Because awareness of the criteria of "healthy" development is a *sine qua non* of child psychiatry, a section on normal child development precedes consideration of psychiatric evaluation, clinical descriptions,

and treatment. Thereafter, in keeping with the eclectic approach of this text, this area on child psychiatry addresses itself to the three basic levels of organization in the child—the psychological, the social or interpersonal, and the physiological. In childhood, more than at any other stage of development, all three levels mesh and intertwine. Of equal importance in the consideration of childhood is the awareness of the constant change which is taking place within the matrix of the child's relationship to his family and society: both the child and his external world are in a continual state of flux. It follows, then, that the psychiatric evaluation of the child will include an assessment of his total functioning, including his level of physical and psychological development, in any given situation, as well as the degree to which his functioning reflects the impact of his environment.

The fact that certain variables are idiosyncratic of childhood has particular significance for the classification of behavioral disorders in childhood. It has long been recognized, in this connection, that the classification of psychiatric disorders in childhood and adolescence, as provided in the *Standard Nomenclature of Diseases and Operations* of the American Medical Association (which is identical with the *Diagnostic and Statistical Manual: Mental Disorders* of the American Psychiatric Association) is unsatisfactory. This was officially noted by the Committee on Child Psychiatry of the Group for the Advancement of Psychiatry (GAP) (Report No. 62, Vol. 6). The Committee pointed out that the *Standard Nomenclature* "leaves untouched many of the developmental gradients of psychopathology in childhood and adolescence. The need remains for a separate classification dealing with childhood and adolescence . . . despite some overlap between the problems of the latter age group and

those of adults." Accordingly, the GAP proposed a new classification of psychopathological disorders in childhood as of 1966.

This classification is based upon three basic propositions which form a theoretical framework. These include: (1) the psychosomatic concept of the unity of mind and body, and the interrelatedness of psychological and somatic processes; (2) the developmental dimension central to the study of the child; and (3) the psychosocial aspects of the child's existence in the family and society. These propositions support the concept of multiple etiological factors, of a predisposing, contributory, precipitating, and perpetuating nature, which are involved in disease states. Portions of the GAP monograph are summarized below; other passages are summarized in various sections throughout this area. However, in view of the importance of this contribution, the reader is urged to refer to the detailed presentation provided in the original report.

The GAP classification, while utilizing many of the nosological definitions included in the *Standard Nomenclature*, has introduced the concepts listed below for the first time in any major classification system:

1. The category "healthy responses" permits "the identification of healthy patterns of response" and reduces "the traditional tendency to magnify minor problems and fit the child into a pathological category or diagnose the absence of disease." This category emphasizes "the need for the assessment of positive strengths in the child wherever possible and [avoids] so far as possible the diagnosis of healthy states by the exclusion of pathology." Criteria covering intellectual, social, emotional, personal, and adaptive functioning, as well as stage-appropriate psychosocial functioning, are given. Included in this category are developmental crises (such as the "identity crisis" in adolescence) and transient situational crises (as, for example, the "work of mourning" in the healthy grief reaction).

2. "Developmental deviations pertain to overall deviations in maturational rate or sequence or to different aspects of personality development." This category "delineates those deviations in personality development which may be considered beyond the range of normal variation in that they occur at a time, in a sequence, or in a degree not expected for a given age level or stage of development." These may include deviations in maturational patterns or in specific areas

of development, such as motor, sensory, speech, cognition, social, psychosexual, affective, or integrative development. Such deviations may either be resolved with the passage of time or lead to a more structured disorder. Healthy responses and developmental deviations in infancy and childhood and in adolescence are discussed by Chess and Hornick, respectively, in this text.

3. Another innovation in the GAP classification is the detailed "Symptom List," specifically applicable to children. The GAP list is similar to the symptom list designed primarily for adults which is included in the *Standard Nomenclature*.

4. "Reactive disorder" replaces the term "transient situational personality disorder," in the GAP report. Examples would be the reactions to hospitalization and illness discussed by Prugh in Section 40.3, below.

5. The "Special symptom reactions" in the *Standard Nomenclature*, such as learning, speech disturbances, and enuresis, are included in the GAP "Symptom List" to be used under different nosological headings in relation to a primary clinical diagnosis. To quote from the GAP report:

Thus, enuresis may be shown as an age-appropriate phenomenon in a young pre-school child, under the heading, *healthy response*; as a symptom of a regressive nature in a *reactive disorder*; as a continuing feature of a *developmental deviation*; as part of a neurotic picture involving *conversion mechanisms*; or as one symptom in a *chronic personality disorder* or a *psychosis*. . . Only in this way can data be organized systematically in relation to the evolution and shifting of symptom patterns or part reactions and their associations with differing personality pictures.

The GAP report classification includes, as does the *Standard Nomenclature*, psychoneurotic personality, psychotic, psychophysiological (psychosomatic) and brain disorders, and mental retardation.

The editors have retained the *Standard Nomenclature* where applicable in this textbook and utilized as supplementary data some of the newer headings included in the GAP report, which are omitted in the *Standard Nomenclature*. They recognize that the *Standard Nomenclature* in general, and particularly as it pertains to child psychiatry, is in need of revision. The GAP classification is presented as a possible alternate model which, while not official or time-tested, is worthy of consideration.

Chapter 38

Introduction to Child Psychiatry

38.1 HISTORY OF CHILD PSYCHIATRY

LEO KANNER, M.D.

The concept of child psychiatry as a distinct specialty did not arise—and could not have arisen—before the 20th century. The story until then is not a narrative of a practiced discipline but rather an account of the building stones that eventually formed the foundations of the present day structure. The time is not too far in the past when children were a part of the household chattel, when Dickens' *Oliver Twist* was fiction based on stark reality, when unrestricted child labor sucked health and spirit out of impecunious youngsters, when the Prussian police denounced the first kindergartens as hotbeds of socialism.

Eighteenth Century

There is no evidence of any organized concern with child development and child behavior in antiquity or in the Middle Ages. It was not until the era immediately preceding the French and American revolutions that the new gospel of the rights of man had in its wake a spurt of reforms extended to the hitherto neglected or oppressed. Shackles began to be removed from psychotic persons. Voices were raised *against* slave trade and *for* humane treatment of prison inmates. Handicapped children became the recipients of constructive attention. Pereire proved that it was possible to teach deaf-mutes to communicate with those around them. In 1784, Haüy founded in Paris the first school for the education of the blind.

Nineteenth Century

Itard, while trying to civilize the "savage boy of Aveyron," introduced methods designed to help severely retarded children. In 1841, Guggenbühl opened, on the Abendberg in Switzerland, the first residential center for young mental defectives. This was so startling an innovation that princes, physicians, and clergymen came to admire and to learn. Within a

short time, similar institutions were set up in several European countries and, as a result of the efforts of Samuel Gridley Howe, have been set up in this country as well since 1848.

Meanwhile, inspired especially by Rousseau's *Emile*, published in 1762, and the writings of Locke, a few scientists became curious about the stages of infantile development. They observed their own offspring and recorded the day-by-day unfolding of their functions. They followed the example of the Swiss educator Pestalozzi, whose diary of his son, however, still carried a ballast of mysticism and pious idealism. Darwin, Preyer, and others were subsequently able to strip their observations of unwarranted generalizations. In the 1880's, Stanley Hall analyzed the responses obtained from questionnaires sent out to thousands of parents and presented data in terms of percentage calculations. A new body of research emerged that, as developmental psychology, made up in the span of one generation for much that had been neglected throughout the ages.

Sporadic contributions to the knowledge of children's deviant behavior began to come from the fields of neurology, pediatrics, and psychiatry. These interests existed alongside each other, with only tenuously maintained areas of mutual contact. Toward the end of the 19th century, several texts were published on "psychic disorders," "mental diseases," or "insanity" of children. Behavioral deviations interested Emminghaus, Moreau de Tours, Ireland, and Manheimer, chiefly as they seemed to fit diagnoses according to classifications devised for adults. These treatises represented a first step toward the unified consideration of early life neuroses and psychoses. But, on the whole, psychiatrists still kept themselves aloof—children were neither heard nor seen by most of them professionally.

Twentieth Century

First decade. In 1900, the Swedish sociologist Key, having waged a successful battle for the emancipation of women, predicted that the 20th century was destined to be "the century of the child." A number of things happened that tended to confirm her prophecy.

In 1899, Illinois and Colorado had passed statutes establishing juvenile courts, in which delinquent chil-

dren were to be handled separately and differently from adult violators of the law. As juvenile courts began to spring up all over the country, some of the judges, eager to learn *why* the young offenders had been driven to their transgressions, consulted psychiatrists, who thus were obliged to occupy themselves with children's behavior and its motivations. As a result, Healy founded the Juvenile Psychopathic Institute in 1909 in connection with the Chicago Juvenile Court and published his book, *The Individual Delinquent*, in 1915, a report based on case studies instead of diffuse speculations on delinquency in the abstract.

In 1905, Binet and Simon made public their intelligence scale, introduced by Goddard in this country in 1910 and adapted in 1916 by Terman to its geographic and ethnic area. These tests afforded a concrete means of helping teachers evaluate a child's ability to grasp classroom instruction. This was the first reliable attempt to prevent educational mismanagement.

Simultaneously, adult psychiatry underwent major changes. Kraepelin's work served as a stepping stone toward the humanization of the specialty. His clear descriptions of symptoms, the *what* of mental illness, aroused curiosity about the *whence* and *why*. Freud and Meyer advocated a dynamic attitude that saw the origins of present trouble in experiences of the past. Biographic exploration became an obligatory part of history taking. Biography, if pursued consistently, leads always back to the time when each patient was a child. This search for the meaning of childhood events as precursors of later illness created an appetite for immediate acquaintance with troubled children themselves and ripened the thought of prophylactic intervention at the time of the earliest onset. This thought was taken up vigorously by Beers, who in 1909 founded the National Committee for Mental Hygiene.

Thus, between 1899 and 1909, the decks were cleared for individual work with problem children. Juvenile courts, psychometry, dynamic psychiatry, and the mental hygiene movement served as the main incentives. Educators, psychologists, and psychiatrists began to *think about* children in a practical, individually helpful manner. Previous indifference and supercilious disdain were replaced by an attitude of sympathy and a desire to understand and to be of service.

Second decade. The following decade was mainly one of legislative implementation of some of these insights, a transition from unorganized philanthropy to systematic communal endeavor. The emphasis lay on environmental cushioning of the decidedly delinquent, the noticeably retarded, and the woefully neglected. Probation officers were added to the juvenile courts. Foster home organizations were authorized to remove children from homes in which they suffered from proved parental mistreatment. Special classes in public schools helped retarded and otherwise handicapped

students to get an education commensurate with their abilities. The principal goal was protection from brutality, bad examples, malnutrition, gangdom, and scholastic competition against overwhelming odds. People no longer merely *thought about* children but were prepared to *do something to* them with the aid of adequate community facilities.

Third decade. In 1921, Thom opened the Boston Habit Clinic for the guidance of problem children; in 1922, child guidance clinics were set up in a few communities; in 1930, there were about 500 such clinics, and more than 50 countries sent delegates to the First International Congress of Mental Hygiene in Washington, D. C. These clinics were tridisciplinary teams of psychiatrists, psychologists, and social workers. They added a new dimension to the study of personality development. Until then, most theories had centered around innate, constitutional, instinctive propensities of the individual. The clinics broadened the scope beyond what was going on within a child to include the external, attitudinal forces that impinge on him. This was a departure of major importance, which saw emerging behavior as the consequence of a fusion of centrifugal and centripetal influences. Treatment therefore embraced efforts to do something *for* children by working constructively with the family and the school. The mutuality of parent-child relationship became a new topic of investigation.

In 1926, Homburger published his book on the psychopathology of childhood. This was a pioneering enterprise encompassing all that was then known about the subject and carrying together all the building stones to make them available for an integrated edifice. Anna Freud began to apply psychoanalytic principles to the treatment of disturbed children and, through the introduction of play therapy, formulated a method for including the child patient himself in the remedial arrangement by doing things *with* him as well as *to* and *for* him.

More recent events. In 1930, a children's psychiatric service was inaugurated at the pediatric department of The Johns Hopkins Hospital. Thus, it became possible to reach children, from the beginning of life to and beyond pubescence, with any kind of developmental and behavioral anomaly, with any kind of single and combined organic, intellectual, psychogenic, attitudinal, and sociological implication. The different clusters of building stones found themselves in one place and could be assembled under one roof.

On May 19, 1933, at a meeting of the Swiss Psychiatric Association, Tramer suggested for this new branch of medicine the name *Kinderpsychiatrie*, to which he gave added currency in the title of the first journal of the specialty founded by him in 1934. In 1935, Kanner used the equivalent term "child psychiatry" in the first textbook of the discipline in the English language. In 1937, at the initiative of Heuyer, a congress met in Paris under the heading of *psychiatrie infantile*. Child psychiatry acquired an acknowl-

edged identity, a name of its own, and a vigorous representation.

This recognition has led in the last 3 decades to the establishment of training centers and professorships in leading universities, specialized periodicals, national and international societies and conventions, the creation of out-patient clinics and residential units for emotionally disturbed children, and intensive research activities.

In the 1930's and 1940's, fundamental contributions were made to the study of childhood psychoses by Lutz in Switzerland, Ssuharewa in Russia, Creak in England, and Despert, Bender, Kanner (infantile autism), and Mahler (symbiotic psychosis) in this country. Goldfarb's work triggered interest in the effects of early maternal deprivation. Levy and Allen gave new directions to psychotherapeutic endeavor. A field of primary prevention has begun to include epidemiology and prenatal and paranatal factors in the scope of child psychiatry.

Child psychiatry has come of age and is here to stay. It has its roots in many areas: education, pediatrics, neurology, general psychiatry, psychology, sociology, jurisprudence, genetics, and biochemistry. It has been able to integrate all these considerations into one unified though widely ramified discipline within a short time.

Suggested Cross References

Also see Chapter 1 on the history of psychiatry, and Section 45.1 on the development of community psychiatry concepts for further information relevant to the history of child psychiatry.

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38.2 NORMAL CHILD DEVELOPMENT

LEON EISENBERG, M.D.

This section attempts to define the concept of development and to indicate its implications for the understanding of human personality. Personality is

used here to mean a set of attitudes and action tendencies—probabilities for given patterns of overt behavior in specified social fields—that characterize an individual at a particular period; it includes both affective and cognitive elements. Personality is viewed as an emergent from the interaction between individual physiological traits, personal experiential history, and social field forces. The apparent constancies of personality in an individual are commonly taken to indicate a crystallized set of mental structures that it is difficult to alter once maturity has been reached; this view pays insufficient attention to the consequences of uniformity of social role in serving to maintain the manifest regularities of behavior.

Although this discussion concludes at the stage of adolescence, developmental changes continue through senescence; personality is constantly in the making.

History of Developmental Concepts

If a historic perspective requires justification, Needham reminds us:

The history of science is the guarantee of its freedom. The mistakes of our predecessors remind us that we may be mistaken; their wisdom prevents us from assuming that wisdom was born with us; and by studying the processes of their thought, we may hope to have a better understanding, and hence a better organization, of our own.

Forces behind development

Preformationist concept. A fragment surviving from the Ionian philosopher Anaxagoras, who lived in the 5th century B.C., comments on the origin of things: "Hair cannot come out of not-hair, nor flesh out of not-flesh." This notion is echoed in the Hippocratic writings on embryology:

Everything in the embryo is formed simultaneously. All the limbs separate themselves at the same time and so grow, none comes before or after the other, but those which are naturally bigger appear before the smaller, without being formed earlier.

This quotation is of particular interest because of its appeal to reason rather than experience. Other passages make it clear that embryos had been examined. The observed was explained by a preformationist doctrine that coerced and restricted the observations that at face value would have suggested unequal times of beginnings for the different parts of the embryo. This doctrine was given poetic expression by Seneca:

In the seed are enclosed all the parts of the body of the man that shall be formed. The infant that is borne in his mother's womb bath the routes of the beard and hair that he shall wear one day. In this little masse likewise are all the lineaments of the body and all that which posterity shall discover in him.

For all the naivete—by present day standards—embodied in these quotations, they are no mere exercise in antiquarianism. The same notions implicit in classic genetic theory are still adhered to, in modified form, by many biological and behavioral scientists.

Epigenetic concept. An alternate theoretical conception was first formulated by Aristotle in the 4th century B.C. The ovum being unknown and not to be discovered for another 2 millennia, he concluded that the semen, as the active shaping force or soul, acted on the catamenia (menstrual fluid) as the base material to form the fetus. Aristotle grappled with the perplexing question of the order of formation of the parts. Having opened eggs at various stages in development, he commented:

All the parts, as heart, lung, liver, eye and all the rest, come into being either together or in succession. . . . That the former is not the fact is plain even to the senses, for some of the parts are clearly visible as already existing in the embryo while others are not. That it is not because of their being too small that they are not visible is clear for the lung is of greater size than the heart and yet appears later than the heart in the original development.

In trying to account for the coming into being of that which was not evident at an earlier stage, he advanced an idea alternative to the preformationist view that the earlier stage was already present but simply invisible.

For if in a certain sense [the parts cannot be made by what is external to the semen], yet in another sense they can. It is possible, then, that A should move B and B should move C, that, in fact, the case should be the same as with the automatic machines shown as curiosities. For the parts of such machines while at rest have a sort of potentiality of motion in them, and when any external force puts the first of them into motion immediately the next is moved in actuality. As, then, in these automatic machines the external force moves the parts in a certain sense (not by touching any part at the moment but by having touched one previously), in like manner also that from which the semen comes, or in other words that which made the semen, sets up the movement in the embryo and makes the parts of it by having touched first something though not continuing to touch it. In a way it is innate motion that does this, as the act of building builds a house. Plainly, then, while there is something which makes the parts, this does not exist as a definite object, nor does it exist in the semen at the first as a complete part.

Aristotle's analogy of the automatic machine in which A moves B and B in turn moves C constitutes the first statement of the doctrine of epigenesis: successive differentiations in the course of embryogenesis. This is the essence of modern developmental theory.

Predeterminist concept. Preformationism, nonetheless, continued to be the prevailing doctrine, so much so that with the invention of the microscope the early microscopists described a homunculus with all the features of a man in the head of the sperm. Certain difficulties, however, troubled those of a theoretical bent. Hartsoeker, assuming divine creation to have occurred 6,000 years earlier and calculating the number of generations of rabbits during that interval, came to the conclusion that $10^{100,000}$ rabbits would have had to have existed in the first rabbit. Bonnet replied to this calculation with the rejoinder that it was always possible by adding zeros to crush the imagination under the weight of numbers. Bonnet

hailed preformationism as a victory of understanding over the senses.

However, the accumulating force of new data necessitated the abandonment of preformationism in its original form. With the development of better microscopes, the expected structures were not seen in early embryonic stages. Observation of the regeneration of limbs in adult organisms and the formation of embryonic monsters made the earlier position untenable. For preformationism, there was now substituted the doctrine of predeterminism. Stemming from the theological doctrine of predestination, it offered biologists a convenient fusion of science and religion. Swammerdam commented, "Thus original sin is explained, for all men were contained in the organs of Adam and Eve."

Predeterminism became the prevailing biological theory. It was implicit in Haeckel's aphorism: ontogeny recapitulates phylogeny, a slogan still quoted in current textbooks of biology. This notion was transplanted into psychology by writers as divergent as Jung and Gesell. Jung wrote: "Ontogenesis corresponds in psychology to phylogenesis. Consequently, . . . the state of infantile thinking in the child's psychic life, as well as in dreams, is nothing but a reecho of the prehistoric and the ancient." Gesell stated: "Infancy is the period in which the individual realizes his racial inheritance. This inheritance is the end product of evolutionary processes which trace back to an extremely remote antiquity." This concept of a set of psychic forces evolved in time long past but persisting as active and *unmodifiable* in the present is implicit in Freud's concept of the unconscious. He pointed out that the very emphasis of the commandment, "Thou shalt not kill," demonstrates that men are descended from an endless chain of "murderers" with a love of murder in their blood. He held that, since our attitude toward death is similar to that of "primitive" man, primitive man lives on in our unconscious and the primitive psyche is thus indestructible.

Scientific developments in embryology and in genetics called the predeterminist position into question. Direct intervention in embryogenesis led to the concept of the embryonic organizer or inducing substance—that is, a product of one group of cells that influences a contiguous or remote group of cells—an idea that bears a remarkable formal similarity to Aristotle's B, which, when produced by A, causes C. In genetics, Johannsen distinguished the phenotype from the genotype, the phenotype resulting from genotypic processes modified by environmental interaction in a sequential fashion. Just as the inducer is effective only within certain time limits, given environmental contingencies lead to specific consequences only when stage-related. The conflict between predeterministic and epigenetic viewpoints is still alive in embryology as well as in psychology, in instinct theory, ethology, and theories of intelligence.

Process of development. There are two contrasting models: continuous and discontinuous. The continuous view is concerned with a linear accession of events, the prototype of which is simple growth—that is, increase in the number and the size of cells. In a sense, this viewpoint is represented in psychology by associationist or stimulus-response theories in which sequential chaining of behavior is the essential principle and the learning of complex behavior is reducible to the forming of connections.

In a discontinuous model, the central assumption is a segmentation into stages or levels of development. What characterizes a stage or level is an internal structure or set of laws or, to use computer language, a stage-specific program governing the response of the organism to a given stimulus configuration. Lehrman's studies of the ring dove provide elegant illustrations of the differential effects of external stimuli at different stages of the reproductive cycle. A female ring dove, prior to courting by a male, ignores eggs and nests if they are placed in her cage; after courting, she broods if they are made available. Courting, to be effective, must occur after sexual maturity. Courting leads to nest building if materials are available; nest building activity itself increases the likelihood of subsequent brooding. The reproductive cycle does not occur in the absence of a mate and is abortive if nesting materials are not available or if the eggs are removed once they are laid.

It is appropriate to distinguish between *growth*, increase in the number and size of cells; *experience*, summation of all previous internal and external stimulation; and *maturation*, altered function resulting from interaction between growth and experience. Maturation, according to the viewpoint adopted here, is not linear but discontinuous, one might almost say quantized. Stages of development follow an age sequence, but stages and ages are not equivalent terms, though they are often incorrectly used as synonyms. The sequence of stages is not automatic but dependent on both central nervous system growth and life experience; chronological change can proceed while psychological maturation lags. There is some evidence that particularly favorable environmental stimulation can accelerate progression from one stage to another, and there is clear evidence that unfavorable environments can markedly delay some aspects of development.

There appear to be lower limits of age for the appearance of each stage, limits determined by central nervous system maturation; thus, no amount of verbal stimulation will lead to speech within the 1st half year of life. On the other hand, verbal stimulation during this period does play an important role in preparing the ground for the later acquisition of language. What is not known is whether there are upper time bounds for the acquisition of a given cognitive stage—that is, are there critical periods for the development of certain abilities, such that, if the appropriate

stimulus conditions are not provided within a given interval, the ability will never appear? Despite the common assumption that this is true, compelling evidence has not yet been provided in human development. It is more useful to assume that recoverability is possible, at least until thorough and exhaustive efforts at rehabilitation fail to bring results.

Development of the Human Species

Fossil evidence. For all his pride of place, man is a relative newcomer to the earth. If life on earth dates back some 2,000 million years, the life span of modern man has occupied less than one hundredth of 1 per cent of that total. In orders of magnitude, Primates have been in existence for some 60 million years. Hominidae for 1 million years, and *Homo sapiens sapiens* (modern man) for some 50,000.

The Cercopithecoidea (the catarrhine or Old World monkeys) and the Hominoidea superfamilies diverged from common ancestral forms. Of the Hominoidea—Proconsul, Dryopithecus, Sivapithecus, Oreopithecus, and Ramapithecus—the last appears as the most likely candidate for the form on the path to the Hominidae and the first to the Pongidae (the anthropoid apes). The family Hominidae, which includes both apelike men and man, has, as its oldest identified fossil precursors, the australopithecines discovered by Dart in South Africa. These animals possessed a brain case of 435 to 600 cc.—the same magnitude as that of the great apes, which ranged from 275 to 750 cc.—but a pelvis much like that of man; they have been found in association with pebble tools. It is still argued by some that the tools may have been made by a more advanced species preying on this more primitive precursor. Whether or not the fossil with a cranial capacity of 640 to 725 cc. and given the species name *Homo habilis* is to be differentiated from other australopithecines (*Australopithecus boisei*, *Austra-*

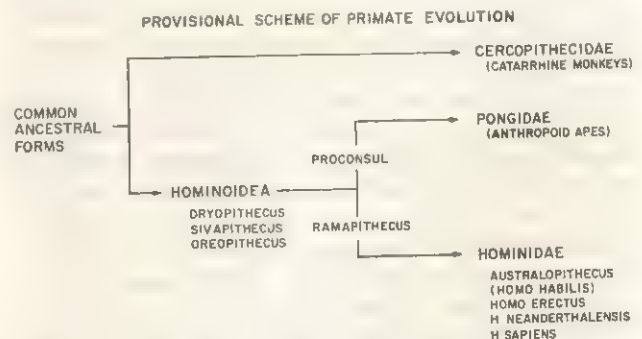


FIGURE 1. An outline, based on contemporary anthropological evidence, of the probable evolutionary pathways en route to man. Proconsul appears to be the ancestral prototype for the pongids and Ramapithecus for the hominids. Australopithecus is the earliest form identifiable as hominid and has been estimated, in the most recent finds (1967), to be two million years old. The sequence, while probably correct in general, undoubtedly is incomplete and subject to modification on the basis of future study and discovery.

lopithecus robustus, *Australopithecus africanus*), these Hominidae were either derivatives of the form or forms directly ancestral to *Homo erectus* on the line to man. *Homo erectus*, represented by *Pithecanthropus* and *Sinanthropus* with brain cases in the range of 775 to 900 cc. and 915 to 1,225 cc., respectively, are immediate or collateral fossil remains of the next step in the evolutionary radiation. Intermediate between *Homo erectus* and *Homo sapiens sapiens* is *Homo sapiens neanderthalensis* with a brain case, at least in some specimens, fully as large as that of modern man. Neanderthal man is generally thought to represent an offshoot that became extinct, perhaps destroyed by Cro-Magnon man in internecine warfare. (See Figure 1.)

This ordering is at best approximate and subject to modification by subsequent study and by the discovery of new fossils. Moreover, differences in definition of the characteristics for species differentiation and for the category of man continue to produce dispute among anthropologists. Distinctions cannot be based on single traits but must take into account the complex or pattern of traits, as Clark emphasized. Whatever the argument as to detail, it is clear that the direction of primate evolution has been toward greater adaptability rather than greater adaptation.

The point to be emphasized is that the essential step in the differentiation of the hominids occurred well before any substantial increase in brain size had occurred. Indeed, if the pebble tools found in association with the australopithecines are, in fact, products of their manufacture, tool making occurred at a brain size only slightly larger than that of the chimpanzee or orangutan and was followed by a 3- to 4-fold expansion of the brain.

The role of bipedal locomotion. The most important single factor in the evolutionary emergence of hominids as a separate and independent line is the development of erect bipedal locomotion. The pongids, on the other hand, developed a markedly different specialization toward the brachiating mode of locomotion. In the hominids, the lower limb increased in length in relation to trunk and upper limb; in the pongids, it was the upper limb that increased in relative length. In the hominids, the bones of the foot and the knee joint were modified for structural stability; in the pongids, mobility at these joints was enhanced for prehensile function. Far reaching changes occurred in the hominid pelvic girdle because of the demands of erect posture; the pelvis of the pongid retained the general shape and proportions found in lower primates. Although muscle structure can only be inferred from fossil remains, studies on contemporary species show marked differences in muscular anatomy between ape and man.

In a recent article, Hewes has suggested that habitual food carrying may have made bipedalism advantageous. He bases his thesis on observations of troops of Japanese monkeys, in whom a new loco-

motor habit could be observed to emerge as part of a chain of behaviors initiated by a new food supply. The monkeys had to walk some distance from the forest edge and return, carrying the food in their forelimbs, in order to eat in safety. In any event, Leakey's finds in the Olduvai Gorge suggest that the australopithecine was a "habitually bipedal plantigrade primate"—that is, an animal that walked on two legs and put its feet flat on the ground. Fossil fragments indicate that the hind limbs are more sapiens-like than the forelimbs. The development of a prehensile hand includes elements that are both peripheral (form and proportion of bone and muscle) and central (cortical sensorimotor mechanisms with increased cerebral representation of thumb and forefinger).

The roles of the hand and the brain. The question of whether hand or brain took the lead concerned Aristotle. On teleological grounds, Aristotle concluded:

Now Anaxagoras has said that it is the possession of hands that made man the most intelligent of animals. The probability is that it was because he was the most intelligent that he got hands... if it is best that it be so, and if nature, out of what is possible, always does what is best, it is not because he has hands that man is wise, but because he is the wisest of animals that he has hands.

Recent evidence, not available to Aristotle, appears to have settled the question in quite the opposite direction.

Tool making has been regarded as an essential characteristic of man, so much so that Benjamin Franklin suggested the name *Homo faber* for the human species. How unique are tools? Animals other than primates use tools; the sea otter smashes clams on rocks held against itself. In Napier's classification, this constitutes ad hoc tool using—that is, the use of an object available at the time. Goodall has recently provided evidence of purposeful tool using in the chimpanzee. These animals will soak up water in a clump of leaves, which are then brought to the mouth and squeezed. Moreover, she has photographic evidence of ad hoc tool modifying: for "termite fishing," the chimpanzee will walk some distance from the termite hill, pick a slender stalk and strip off side branches, return and thrust the stalk into the flight hole of the termite hill. When withdrawn, it is covered with termites and passed against the lips to deliver an avidly swallowed mouthful. There is as yet no evidence in animals other than man of tool modifying for future eventuality, of ad hoc tool making, or of the final stage, cultural tool making. Both ad hoc tool making and cultural tool making are evident from the eoliths found in association with *Homo erectus*.

The crucial step in the evolutionary sequence to man was the assumption of the erect bipedal posture, which freed the hands for the manufacture of tools and weapons. Tools have important consequences for the further development of the teeth, the jaws, and the powerful temporal and masseter muscles, which

in pongids are essential for the mastication of unprocessed and tough natural foods. Dental and mandibular changes occurred early in the evolutionary sequence to hominids. These structural and muscular changes, it has been suggested, may have permitted expansion of the cranium, which in the ape is confined by the massive attachment of the temporal muscles. Whatever the role of this intervening step, the manufacture of tools and weapons enhanced the survival value of central nervous system mutations, which permitted enhanced brain function, resulting in the manufacture of more effective tools, leading to a more elaborate social structure, and increasing the value of brain mutations, which permitted language development, etc. This lag of the brain behind other structural changes is also evident in the paleontology of the horse and may be a general principle in evolution.

Implications of an evolutionary view. Viewing the genesis of *Homo sapiens* from the evolutionary standpoint has important implications for the psychiatric study of modern man. By definition, the present characteristics of man are those that led to relative reproductive superiority. Modern man has existed for no more than 50,000 years after an evolution from primitive hominids over the preceding 1 million years or more; it is only the last 10,000 years, trivial from the standpoint of biological time, that have been characterized by an enormous technological and cultural efflorescence.

Man may have been left with biological traits that, though of positive survival value for conditions 50,000 years ago, may now be maladaptive for contemporary cultural conditions, at a time when man modifies his environment rather than himself. One example will illustrate this point. Stress responses, integrated through hypothalamic and limbic systems, initiate adrenal cortical and medullary activity, which leads to protein catabolism, enhanced blood coagulability, a differential shift of circulation, and enhanced carbohydrate mobilization. These anticipatory metabolic responses improve the capacity for muscular response to crisis. It has clear adaptive value in primates and in primitive man for fight or flight. But contemporary man continues to exhibit the same anticipatory mechanisms to culturally defined stress, to which an effective response is intellectual rather than physical. May not these physiological stress responses, repeatedly evoked by the complexities of urban civilization, play a role in the generation of arteriosclerosis and hypertension?

Postnatal brain development. The development of the human brain occurs predominately during postnatal life. This would appear to be a consequence of the size of the pelvic outlet that limits permissible brain size at birth. Man differs markedly from other primates in the proportion of brain development that occurs prenatally. Whereas the ratio of adult to neonatal brain weight is about 2.2 for the chimpanzee

and about 2.5 for the orangutan, the ratio for man is in the order of 3.5 to 4.0. The brain weight of the human infant is about 350 gm., about twice that of the infant chimpanzee, whose brain weight is about 170 gm.; but the adult brains are 1,450 and 375 gm., respectively. The difference is qualitative as well as quantitative. There is a 4-fold increase in the neocortex, a marked elaboration of the receiving areas for the teloreceptors, a disproportionate expansion of the motor area for the hand in relationship to representation for other parts, a manifold greater representation of tongue and larynx, and a great increase in the association areas. There is no homologue in other primates for the *speech* area found in man in the cortex; in contrast, *vocalization* can be produced by stimulation of the mesencephalic system in both species.

Although the gestation period is of the same order in higher apes and man, the postnatal maturation in man is greatly prolonged. Immaturity, and with it the disadvantage of dependency, is the purchase price for the greater adult adaptability attained through the increase in learning made possible by evolution of brain size and complexity.

Conel's histological studies of cerebral cortex in infants and young children have demonstrated the enormous growth in the number and branching of dendrites and the multiplication of synaptic junctions, all occurring while the organism is subject to shaping by the environment. The denseness of the feltwork of the cortex has made it impossible to detect structural changes in relation to experience, even if these do occur. Some recent experiments by Rose et al. indicated that growth of dendrites is a continuous process throughout life. They produced laminar lesions in the cortex of rabbits by monoenergetic heavy ionizing particles. By grading the radiation dose properly, they were able to produce a laminar zone of cortical tissue destruction without inducing cysts or scarring. Several weeks after radiation, sacrificed animals displayed a translucent zone without recognizable cellular structures. Companion animals allowed to survive a month longer and then sacrificed gave clear evidence of new fibers growing through the previously acellular zone. These studies provide the first evidence of structural growth in the central nervous system of adult mammals.

Evolution of social behavior. Among the adaptive mechanisms with biological significance for survival are behavior sequences. Behaviors that have a reproductive advantage lead to the selective multiplication of the organisms gifted with them. The basic mechanisms must be genic, but the genes concerned do not determine the behavior; rather, they determine the readiness with which it is learned. Part of this process is a selection for emotional states that make more likely the exhibition of adaptive behavior—that is, pleasure associated with the patterns evolution demands and fear toward maladaptive sequences. Per-

haps the best example is the supreme pleasure associated with the sexual act, an association that guarantees that all animals will seek to consummate the act on which the continuity of life itself depends.

What can be reasonably surmised about behavior mechanisms from the study of primate social behavior and from the study of Stone Age food-gathering and hunting societies? Primates live in groups with a surprisingly complex social order and division of labor, based on sex and age. The ubiquity of group behavior makes it clear that there must be genetic antecedents for the social learning that ties the individual to the group. Primates both young and old demonstrate marked differences in state when with and when separated from the tribe. Ethological observations of primate colonies in the wild have made clear the infrequency of full-fledged aggressive behavior within the group. Although there are differences by species and by colony, the over-all picture is one in which an elaborate social hierarchy is maintained by gesture and vocal threat so that destructive attacks within the colony occur rarely. Even the traditional image of the fearsome gorilla has to be abandoned after the observations of Schaller, who found him to be a remarkably pacific and gentle creature.

The social bond is fashioned initially out of the dependence of the infant on its mother and then from peer interaction. What Harlow has called "contact comfort" takes precedence in monkeys over the attachment to a nursing surrogate. But that this is based on the primacy of the grasp reflex in this species and that the grasp reflex is essential to survival are apparent when the mode of locomotion of arboreal primates is recalled. As the mother swings rapidly through the branches with the alternating use of her arms, the infant must have a genetic mechanism for clinging or be dashed to the ground.

Among the langur monkeys, the birth of an infant is an event of great attractive significance to other females, who will await a turn to handle the neonate under the watchful eye of his mother. The new mother, whatever her position in the general social hierarchy, takes precedence in governing accessibility to the infant. De Vore's field observations demonstrated that the adult male baboon is alert to distress cries by infants and young juveniles and defends them from attack; the dominant male, from whose proximity other adults flee, tolerates with surprising equanimity aggressive play and teasing by the young of the colony. Grooming behavior, reciprocated between mother and infant and between peers, is a major factor in fashioning the primate social matrix. Out of grooming, play, and the exchange of threats and gestures, strong social ties are fashioned, which maintain structured colony behavior. Although variations in the amount of aggression displayed, attributable to species differences and even to differences between colonies of a single species, are evident from field

studies, the most striking over-all characteristic of primate social behavior in the wild is the infrequency of intracolony physical attacks severe enough to produce injury, except under conditions of severe stress.

Among primitive peoples, all food-gathering and hunting societies exhibit the following characteristics: relatively open groups of 20 to 50 members, among whom relations are usually friendly; a kinship ethic that prescribes mutual aid (food sharing appears to be a *sine qua non* of the human condition); division of labor by sex and by domestic (family) units; rules to regulate patterns of mating and of competition; common language; a craving for response by each individual from his human environment, a craving that appears to be as fundamental as that for food. Although the modalities of interpersonal exchange become more and more complex with social evolution, the basic needs for recognition and acceptance by peers is everywhere evident.

The most remarkable trait of human social behavior is its *variability*. Aggression is no more fundamental or ubiquitous than is generosity. Freud's formulation—"The tendency to aggression is an innate independent instinctual disposition in man"—has no more scientific evidence to justify it than the misanthropic statement by Thomas Hobbes: "I put for . . . a general inclination of mankind a perpetuall and restlesse desire of Power after Power, that ceaseth only in death. . . . [This leads] to a time of Warre, where every man is Enemy to every man . . . no Arts, no Letters, no Society, and which is worst of all, a continuall feare and danger of violent death; and the life of man, solitary, poore, nasty, brutish and short." Both are statements of political philosophies. Freud, like Herbert Spencer before him, projected onto biology the socially derived characteristics of the civilization of his time (and ours). But that civilization is no more an immediate derivative of man's nature than the culture of the Pueblo Indian or the Alaskan Eskimo, to whom aggressive competition was unknown.

Development of the Individual

With the appearance of the human species, biological evolution has been superseded by cultural evolution. Man is the only animal capable of changing his environment in a planned—that is, future-oriented—fashion, though he does not always do it wisely or with a sufficiently long range view. All organisms change their environment—bacteria in consuming food and producing wastes, beavers in building dams—but most without the ability to anticipate or to plan for consequences. Man is the only animal capable of symbol use. Other animals communicate by signs and signals, but man alone possesses *symbols* that bind time. Language permits cognitive rehearsal, thinking through the consequences of action before attempting it. Language permits the abstraction of the general from the concrete and the realignment

of relationships between elements without dependence on actual or possible manipulation of the elements. By language, man can transmit the experience of the past generation to the young of the next and build continuously on his cultural heritage; this has led to the exponential growth of knowledge. Man's capacity to learn is of a different magnitude from that for any other species. Man surrenders built-in preadaptations (and hence is more vulnerable in infancy) for the capacity to adapt through learned responses in a wide variety of possible environments. This can be viewed as a choice of evolutionary strategies. These, then, are some of the issues to be faced in considering the development of the individual as the focus shifts from phylogeny to ontogeny.

Kessen's splendid collection of readings demonstrate that interest in the child as child has a cultural history. Until very recently, the child was viewed as an ill-formed or incomplete adult. The concept of childhood as a phenomenon unto itself, requiring special institutions for its preservation, is an invention of modern times. To quote Aries:

In medieval society, the idea of childhood did not exist; this is not to suggest that children were neglected, forsaken or despised. The idea of childhood is not to be confused with affection for children: it corresponds to an awareness of the particular nature of childhood... Language did not give the word child the restricted meaning we give it today.

Through the 18th century, the conditions of childhood were extremely precarious. Children born in London had by the end of that century only a 50-50 chance of reaching their fifth birthday; infantile death rates were on the order of 400 per 1,000. The factory system of the industrial revolution demanded cheap labor, and children were, in effect, sold into slavery. An "enlightened" law of 1833, passed over savage opposition, provided that children from 9 to 13 were not to work more than 48 hours a week and those from 13 to 18 not more than 68 hours. Even these minimal regulations did not apply to children working in mines until the Earl of Shaftesbury's crusade. Only with the writings of Locke and Rousseau did childhood begin to be thought of as an epoch important in itself. Rousseau's *Emile* or *On Education*, published in 1762, proposed revolutionary ideas: successive stages of development, the necessity for exercise of mental functions, adaptation to age-appropriate circumstances, and individuality in development. The first baby diaries were those of Tiedemann in 1787 and of Darwin on his firstborn son, William Erasmus, in 1840.

Darwinism revolutionized the concepts of psychology. The theory of evolution provided a mechanism for the doctrines of perfectibility heralded by the Encyclopedists of the French revolution. As homologies were sought between the phylogenetic progression of species and the development of individual man in society, comparative psychology was founded, and sociology and anthropology were profoundly in-

fluenced. Man was to be understood, not by an analysis of his adult functions, but by a study of his origins—in the scale of nature and in the child.

Prenatal factors. The analysis of individual development customarily begins with birth. However, significant experiential factors influence intrauterine development. It has been shown that intrauterine curare will lead to ankylosed joints in the sheep; movements of the limbs in utero are important factors in maintaining joint mobility. The administration of androgenic hormones in the effort to prevent miscarriage alters sex differentiation in the infant. Maternal stress, through the production of adrenal hormones, may influence the behavioral characteristics of the newborn. These few examples point to the wide range of potentially significant findings from a still uncharted area of investigation.

Complications of pregnancy and parturition are precursors of prenatal and paranatal injury to the central nervous system of the infant. Pasamanick and Knobloch have introduced the important concept of a continuum of reproductive casualty extending from miscarriage and stillbirth through cerebral palsy, mental retardation, and epilepsy to learning and behavior disorders—that is, extending from lethal injury to the central nervous system to minimal brain damage without obvious neurological impairment. The prevalence of these disorders (both the pregnancy complications and the clinical psychiatric manifestations) displays a distribution that is differential by social class and related to the relative adequacy of nutritional, medical, and general hygienic factors associated with class status. In no area of psychiatry are there clearer implications for preventive measures. The decision to apply what is known and the social action to make it available without distinction of class and race could result in a significant reduction in neuropsychiatric morbidity.

Infant stage. Once normal birth has occurred, to quote William James, "the baby, assailed by eyes, ears, nose, skin and entrails, all at once, feels it all as one blooming, buzzing confusion." How does this essentially brain stem preparation—the anencephalic infant behaves much like the normal newborn for the first 4 to 6 weeks of life—progress to the highly encephalized adult? Brain stem organization itself is different at birth from what comes into being with progressive differentiation of superordinate structures. The survival systems—breathing, sucking, swallowing, and circulatory and temperature homeostasis—are relatively functional at birth. But sensory systems are only incompletely developed; sensory impulses register at thalamic levels with no evidence of specific cortical responses. Further differentiation of neurophysiological functions depends on stimulatory reinforcement and is not an automatic consequence of the genomic structure.

Stimulus deprivation. The experiments of Riesen on chimpanzees reared in total darkness demon-

strated atrophy and up to 90 per cent loss of retinal cells if the animal is maintained in the dark for 2 years. The possibility of reversibility is lost after 5 to 7 months of total darkness. Rearing in diffuse light, by placing ground glass goggles over the eyes, results in poor eye movement control and poor fixation, consequences that become irreversible with the passage of time. In children with strabismus severe enough that images fall on nonequivalent parts of the two retinas, the image from one eye is suppressed; if left uncorrected to the age of 6, there is an irreversible loss of sight in the suppressed eye, amblyopia ex anopsia.

Hubel and Weisel have carried out a series of studies with microelectrode recordings from single cortical cells in the occipital lobes of kittens. At the earliest age, the investigators were able to identify cells responsive to the orientation of stationary linear light fronts—horizontal, vertical, or oblique—and to light fronts moving either from left to right or from right to left. That this organization is intrinsic is evident from the demonstration of these properties in newborn kittens with no visual experience. However, after 3 months of light deprivation in one eye, with the other eye maintained as a control, the kittens display functional blindness in the deprived eye, with no visual fixation, despite normal pupillary response and normal electroretinogram. At the level of the lateral geniculate, there is a 40 per cent shrinkage in cell mass. In the occipital lobes, there is an almost total absence of response in cells driven by the monocularly deprived eye. Here is an instance of the loss of functional interrelationships already present at birth but dependent on patterned stimulation for their maintenance. More recent unpublished work by these investigators indicated that the loss of functional representation in the cortex for the deprived eye is determined by the locking in of these units to the effective field of the normal eye; that is, if both eyes are deprived of visual experience, *neither* demonstrates much loss in its subtenant cortex, but *binocularly* driven cells are no longer evident. Moreover, if amblyopia is produced by severing the lateral rectus muscle in the eye of the newborn kitten, it sees well with either eye (and shows corresponding occipital electrical activity) but shows neither binocular vision nor occipital cells driven binocularly.

Simple passive visual experience is not enough for the acquisition of visual-motor coordination. Held and Hein have demonstrated that the development of visual placing responses and the ability to discriminate moving from stationary objects is a function of active exercise. In their studies, paired experimental kittens were exposed to a lighted environment for brief periods each day. One member of the pair is allowed to walk freely through the lighted environment; the second member is yoked to the first in such a fashion that he experiences the same translation through space but without the possibility of controlling his own move-

ment. Only the kitten who does the active exploring develops normal visual responses. The development of intersensory integration is an active, not an automatic process. The organism begins with its initial given capacities, and these are differentiated and interrelated via exercise so that higher order capabilities emerge.

In the terminology of Piaget, there are two fundamental processes at work: assimilation and accommodation. Assimilation is the process of utilizing and incorporating stimulus elements in the environment, just as the organism utilizes foods. Although Piaget used the term "aliment" in a figurative sense, it is remarkably descriptive of the visual experiments in which maintenance of the very integrity of the neurons in the optic system depends on external stimulation for alimentation. In assimilation, the organism takes in the new in terms of the familiar and acts in the present as it has in the past. In the process of accommodation, the organism is modified by the demands—that is, the novelties—of the environment. Accommodation leads to a reorganization of the programs of the organism as it struggles to cope more effectively with the mismatch between its available action patterns and the new requirements of its current environment.

Development of the social bond. As sensory development progresses, there is for all social organisms a parallel task of fashioning a tie between the newborn and its species. In recent years, much attention has been focused on the concepts of ethology. Ethologists have demonstrated, primarily in birds but also in ungulates, that there is a critical period shortly after birth in which the newborn becomes "imprinted" on a moving, sound-producing object that from then on serves to elicit following behavior, just as the mother does in the natural situation. Birds imprinted on artificial objects become isolates from the flock and may be unable to mate. For all of the undoubted importance of imprinting in certain species, it should be emphasized that imprinting has not been demonstrated in man or in other primates.

The effects of total social isolation in subhuman species are of great interest in studying the socialization process. Puppies isolated in individual cages for 6 months exhibit a peculiar syndrome characterized by overactivity, distractibility, inadequate response to pain, whirling fits, inferiority to pet-reared and colony-reared dogs in problem solving and in food competition, and inability to be effectively socialized thereafter. Monkeys reared as isolates, even when offered surrogate mothers (objects for clinging), are subsequently unable to adjust to a colony existence and have extraordinary difficulty in learning to mate. When impregnated, isolate-reared females fail to mother their young. The behavioral peculiarities of these isolates were initially attributed to the lack of mothering in infancy, but Harlow's more recent studies have demonstrated that an opportunity for

peer interaction between two nonmothered infant monkeys apparently suffices for the development of social behavior.

Harlow traced five affectional systems in the development of the monkey: infant-mother; peer; heterosexual; maternal; and paternal. The infant-mother affectional system is modulated via body contact, clinging, nursing, rocking, warmth, and visual stimulation. It passes through four stages: reflex, attachment, security, and separation. The peer system exhibits successive stages of presocial exploration, interactive play, aggressive play, and developing social status. Heterosexual differentiation includes the passivity pattern and pelvic thrusts of the female; the threat pattern, pelvic thrusts, and clasps of the male; grooming behavior; and full adult sexual behavior. The maternal affectional system develops through stages of attachment and protection, ambivalence, and separation and rejection. The paternal system includes such behaviors as retrieval, protection, and punishment.

Schneirla and Rosenblatt, in studying the suckling behaviors of kitten and cat, have emphasized the interactive nature of the developmental process. The maturation of the kitten, its acquisition of experience, and the interactions of the behaviors of kitten and cat contribute to the sequence. The suckling period, some 60 days in the cat, can be divided into three phases. In the 1st to the 20th day, the female approaches the kittens, arches her body in a "U" to present the mammary surface, and licks and so orients the kittens toward her. In response to tactile stimulation, the kittens acquire increasing skill in nipple localization and suckling. During the second phase, from the 20th to the 30th day, both the kittens and the cat initiate approaches. The kittens display increasing perceptual organization and orient to the home corner of the cage and to the cat. The cat responds with a "U" to the approach of the kittens. The kittens begin to play with one another. During the third and final phase, from the 30th to the 60th day, most suckling occurs at the initiative of the kittens, who pursue the mother vigorously. The cat now responds irregularly and avoids the kittens more and more until she no longer accepts them. Summarizing their findings, Schneirla and Rosenblatt stated:

These considerations favor a very different view of the concept of critical periods from the one now held by many writers. In the social development of the cat... striking changes in the essential progression are grounded not only in the growth-dependent processes of maturation but also, at the same time, in opportunities for experience and learning arising in the standard female-litter situation. This conception of social ontogeny encourages stressing not just one or a few chronologically marked changes in the behavior pattern, but rather indicates that normally each age period is crucial for the development of particular aspects in a complex progressive pattern of adjustment... critical periods in social development are not matters of maturation *per se*. Rather, time-conditioned factors depending upon experience in the normal situation, in close conjunction with growth-dependent factors, are necessary for both

the turning points and the intervening progress in social adjustment... Mammalian social development is thus seen as advancing from birth in ways that, for the species-characteristic outcome, continuously require not only the standard conditions of organic maturation but also the presence of the standard developmental setting with its progressively changing behavioral properties.

Social deprivation syndromes. What happens to the human infant deprived of normal social and cognitive experience? Pediatricians have long known and repeatedly recorded the severe developmental retardation that accompanies maternal rejection and neglect. Infants in institutions characterized by low staff-to-infant ratios and frequent turnover of personnel, even when physical care and freedom from infection are adequate, display marked developmental retardation. The same infants, if placed in adequate foster or adoptive care, undergo marked acceleration in development. Bowlby, in 1952, on the basis of an extensive review of the literature, concluded that early separation had persistent and irreversible effects on personality and intelligence. The most persuasive evidence for this conclusion was that provided by Goldfarb, who compared the behavior in adolescence of two groups of children abandoned in infancy. The first group remained in an orphanage for the first 3 years of life and then were placed in foster care; the second group were placed in foster care in infancy. The foster homes for the two groups were said to be substantially alike; the possibility of differential placement because of the initial characteristics of the infants was denied by the social agency. As adolescents, the children institutionalized for the first 3 years showed lower I.Q.s, inferior school performance, and sociopathic traits. Bowlby's later studies of children who had been separated from their families early in life because of tuberculosis failed to confirm the anticipated severe psychological consequences. Such factors as the quality of institutional care, the care received before and after institutionalization, the reasons for removal from the family, and the maintenance of a relationship with parents by visiting during the period of separation are important variables in determining outcome.

The most striking evidence that early damage can be reversed by adequate subsequent care was provided by the studies of Skeels. He identified 25 children in an orphanage, 13 of whom were removed for placement in an experimental program. They were placed in the care of older female retardates as foster mothers and were enrolled in a preschool enrichment program. Two years later, the experimental group, with a mean initial I.Q. of 64.3, had attained an I.Q. of 91.8, whereas the control group left in the orphanage, initially at 86.7, had declined to 60.5. Eleven of the 13 experimental children were adopted. Three years later, their mean I.Q. was 95.9, compared with 66.1 for the controls. Current information on the adult adjustment of the study subjects revealed that all 13 of the experimental children are self-supporting, and

11 are married and parents of 9 normal children. This group had attained a median education of 12th grade. In contrast, the 12 controls had a median third grade education. One had died in adolescence, 1 is in a mental hospital, 4 are in institutions for the retarded, 3 are unemployed, 2 are unskilled laborers, and only 1 is a skilled worker. The median cost to the state for the experimental program was about \$1,000 a child; the control group, most of whom remained in care throughout their lives, had cost from \$7,000 to \$24,000 each.

Bowlby's monograph on maternal deprivation, reviewed and critically assessed by a later World Health Organization publication, served to call attention to the disastrous and far reaching effects of early neglect. Its stress on the irreversibility of the damage was unfortunate; the early studies confounded the effects of separation and institutionalization with the poor care provided the children once they were removed from the initially depriving situation. The consequences of deprivation vary with the severity and duration of the depriving experience, the age of the child at which the deprivation occurs, and the adequacy of restitutive measures.

Temperamental differences. But what of the normal newborn in his own family? Is he a *tabula rasa*, a smooth slate on which characteristics are engraved with greater or lesser ease? Though a definitive answer to this question is not possible with present evidence, there are strong suggestions of congenital differences. Lipton et al. and Bridger have demonstrated wide individual differences among infants in autonomic reactivity, differences that persist over the newborn period but whose long range consequences are not yet known. The studies of Thomas et al. have demonstrated temperamental characteristics already evident by the 3rd month of life. In a careful longitudinal study of 130 middle class infants, the researchers were able to identify nine behavioral dimensions on which reliable ratings can be obtained: activity-passivity; regularity-irregularity; intensity; approach-withdrawal; adaptive-nonadaptive; high-low threshold of response to stimulation; positive-negative mood; high-low selectivity; and high-low distractibility. The ratings on individual children showed substantial correlations between 3 months and 2 years but much lower correlations at 5 years. During the course of the study, 27 of the children presented clinical psychiatric problems. Chess et al. were able to discern a relationship between the initial characteristics of the infant, the mode of parental management, and the subsequent appearance of symptoms.

Clinicians are coming to the view that the infant is an important actor in the family drama, one who in part determines its course. The behavior of the infant serves to control the behavior of his mother, just as her behavior modulates his. The calm, smiling, predictable, good infant is a powerful reward for ten-

der maternal care. The jittery, irregular, irritable infant tries a mother's patience; if her capacities for giving are marginal, his traits may cause her to turn away from him and thus complicate his already inadequate beginnings.

Cognitive development. At birth all infants have a repertoire of reflex behaviors—breathing, crying, defecating, head turning toward the stimulated cheek, mouthing of a nipple touching the lips, sucking, and swallowing. Recent studies have indicated that both vision and hearing are more highly developed in the newborn than they had been thought to be. By 1 to 2 weeks of age, the infant "smiles"; this response is endogenously determined, as evident by smiling in blind infants. By 2 to 4 weeks of age, visual fixation and visual following are evident, behaviors that may be compared to the following movements in subhuman forms. By 4 to 8 weeks, social smiling is elicited by the face or voice of the caretaker. By 16 to 18 weeks, vocalization or babbling has appeared in the child in a language-rich environment. The persistence and further evolution of this vocalization depend on rewarding consequences from the human environment. By 18 to 20 weeks, selective social smiling is apparent to familiar faces. This smile has been shaped by the response of adults and is in turn a powerful mechanism for controlling the adults. By 6 to 8 months, the child sits; by 9 to 12 months, he stands; and between 12 and 15 months, he usually walks and speaks his first words. Details of the sequence of motor and adaptive behaviors exhibited by the normally developing infant have been described by Gesell, whose scales permit comparison of the accomplishments of a particular infant with normative standards.

In contrast to the normative approach taken by Gesell, who views development as the unfolding of a genetically determined sequence, is Piaget's epigenetic theory of intelligence, summarized recently by Flavell. To Piaget, intelligence is but a special instance of biological adaptation within the context of life, which he views as a continuous creative interaction between the organism and its environment. The outer manifestation of this interaction is coping behavior; the inward reflection is the functional organization of the mental apparatus. Adaptive coping continuously reorganizes the structures of the mind. This theory is dissonant with most philosophical systems since Plato, which take the logical structures of space, causality, and time as given rather than as evolving epigenetically.

Piaget divided the development of intelligence into three major periods: sensorimotor, birth to 2 years; concrete operations, 2 to 12 years; and formal operations, 12 years through adult life. The sensorimotor period is one in which the congenital sensorimotor schemata or reflexes are generalized, related to one another, and differentiated to become the elementary operations of intelligence. The period of concrete oper-

ations is divided into a preconceptual phase, from 2 to 4 years of age, during which symbols are constructed; the intuitive phase of acquiring concepts of space, causality, and time, from 4 to 7; and the phase of concrete operations, in which thought becomes de-centered from perception and action—that is, the increasing autonomy of central processes permits the activities of classifying, ordering, and numbering. The period of formal operations is one of systematization and recombination of the concrete operations, in the course of which the logical structures of abstract thought are mastered.

A review of the first few stages of the sensorimotor period may serve to convey Piaget's method of analysis. In its first stage, from birth to 2 months, the exercise of the ready made reflexes leads to a transition from passive release by stimulation to active groping. Reflex sucking is accompanied by search and discrimination; vision moves from the pupillary reflex response to light to following and active search; prehension moves from the grasp reflex to separate finger movements. The exercise of a function brings inherent satisfaction or what Buhler called function pleasure. This notion of function pleasure is to be distinguished from the widely held concept that the satisfaction of a physiological need is the governing principle of behavior. The varying circumstances of stimulation during this period promote accommodation of the organism to the necessities of the external world; that is, the infant shapes his response to the particularities of the simulating object—be it finger, nipple, or spoon—and, in so doing, changes himself.

The next stage, primary circular reactions, from 2 to 5 months, is one of reciprocal coordination between the hand and the sucking movements of the mouth, between the hearing and the seeing of a visible and audible object, between the seeing and the grasping of a visible and palpable object, etc. New objects elicit greater interest than overly familiar ones. Recent studies have demonstrated that infants will view complex patterns for longer periods than they will simple patterns. As the infant's hands come into his visual field by chance, he stares at them and then begins to move them as he watches them. Something looked at becomes something to grasp, and something grasped becomes something to suck. However, at this stage reality remains subjective—that is, there is no further search for an object that disappears from the visual field. The child has no general space but only a buccal, a kinesthetic, a visual, an auditory space.

The third stage, secondary circular reactions, from 5 to 9 months, is one in which the coordinations of the second stage become dissociated and regrouped in new ways and acquire the independence of learning sets. The rudiments of intentionality appear as the child begins to anticipate the consequences of his own acts. The infant no longer merely utilizes adventitious circumstances but begins to bring definite actions to

bear on these circumstances. Ends, the outcomes sought, are differentiated from the means, his own actions. The infant dandled on his father's knee will begin to bounce up and down when the knee stops, as if this were intended to cause the knee to bounce him. Recognition is manifested by outlined or abbreviated acts. Thus, the infant who had enjoyed the movements of a toy brought about by the shaking of his legs will briefly shake his legs when he sees the toy again. It is at this stage that the elementary constructions of reality are undertaken. Objects begin to acquire permanence. Prior to this point, the rest of the world exists for the infant only insofar as it impinges on his sensations or is subject to his actions. Once removed from his immediate presence, objects have no further meaning for him. But, now, if an object is dropped in front of him, he will look down to the ground to search for it; that is, he behaves for the first time as though the object had a reality outside of him. Although true object permanence is not attained until well into the 2nd year of life. Another important acquisition in this stage is the beginning of imitation.

The remaining stages of the sensorimotor period—coordination of the secondary schemata, the tertiary circular reactions, and the invention of new means through mental combination—cannot here be described, nor can the periods of concrete operations and formal operations. They will, however, repay careful study in Flavell's synthesis of Piaget's many volumes or, better yet, in the originals. Piaget has emphasized throughout the role of intervening experience on the maturation of cognitive functions. It is the richness, complexity, and diversity of stimulation in a favorable environment that results in the accommodation of mental structures to the nuances of reality and in the elaboration of the highest mental functions. Although Piaget's studies have until recently been limited to normal children of favorable circumstance, the framework he developed is a useful one in cross-cultural and cross-class comparisons. Currently, there are active efforts to develop intelligence tests based on the Piagetian scheme of the epigenetic development of intelligence.

Emotional development. Parallel to the stages of cognitive development are the stages of emotional development. Despite the conventional practice of separating them, they are clearly interdependent. Indeed, it is the care-taking person who provides the major stimulus to both aspects of mental growth. The human infant is totally dependent on adult care-takers for sheer survival. It is in relation to regular and hence predictable events of care-taking that an affectional tie between infant and care-taker develops; his behavioral repertoire expands as his acts have consequences in the form of social responses from the care-takers.

The Freudian formulation that the tie to the mother develops solely or principally by extension from the

nursing act takes far too restricted a view of the interoceptive and exteroceptive channels stimulated by mothering and important to the sensory hierarchy of the infant. Contact does not play the role in the human infant demonstrated by Harlow for the monkey, but touch, smell, sight, sound, warmth, kinesthetic stimulation, and the infant's own behavior do enter into the complex of care. As perceptual and cognitive maturation occurs, the infant is able to relate these initially disconnected and separate experiences to the person who provides them and to distinguish her from other persons in the environment.

The severity of the effects resulting from deprivation of mothering care attests to the central role of mothering—and *fathering*—in the normal developmental process. However, just as with Bowlby's initial view that irreversible harm results from early lack, Erikson's concept that a sense of trust—confident expectation that needs will be met—is elaborated primarily from need satisfaction in the *1st year* of life is one-sided and incomplete. The basis for trust in others *begins* to emerge from good care in infancy, but trust is in *no* sense a final acquisition of this 1st year and must be continuously reinforced during all of childhood and adolescence if it is to become a prevailing trait. A more accurate formulation would be that the nucleus of trust is established in infancy but that the issue is far from settled.

Toddler stage. The 2nd year of life is marked by acceleration of motor and intellectual development. The ability to walk confers on the toddler a degree of control over his own actions that allows him to determine when to approach and when to withdraw. The acquisition of speech profoundly extends his horizons. Typically the child learns to say "no" before he learns to say "yes." Correspondingly, the infant knows what he doesn't want long before he is able to formulate what he does want. The negativism of the toddler is a vital stage in individuation. "It is useless to be able to do what one cannot stop doing," noted Lao-Tse.

The 2nd and 3rd years of life are a period of increasing social demands on the child. The clinical observation that toilet training can become a focus of struggle between mother and child has led to the simplistic formulation that toilet training in itself is a critical event for character formation. The prolific literature on this subject implies that training is inevitably a traumatic event, but this is a distorted formulation based on one-sided experience with disturbed families. It *can* be elevated to a central issue by a rigid, severe, and restricting mother, but it varies with the culture and with the temperamental characteristics of mother and child. The fortunate mother whose child has regular bowel function with predictable evacuations can train him with a minimum of effort, in contrast to the potential for trouble provided by an irregular youngster. When toilet training problems are associated with clinical psychiatric dis-

orders, it is not necessarily because of the toilet training itself but rather because toilet training serves a paradigm of the general training practices of the family—that is, the mother who is overly severe in this area is likely to be punitive and restrictive in others as well. Thus, what appears to be a consequence of toilet training is a consequence of general child-rearing practices, of which this is only an instance. The child's ability to accommodate himself to social demands by the acquisition of self-control can lead to pride in self and zestful striving for a new accomplishment; if he surrenders to parental coercion with shame at his physiological functions and doubt as to his own worth, he emerges inhibited, fearful, and stereotyped; if he rebels, he may remain stubborn and oppositional.

Parallel to the changing tasks for the child are changing tasks for his parents. Whereas in the stage of infancy the major responsibility for parents is to meet the infant's needs in a sensitive and giving fashion, without so anticipating and so fulfilling his needs that he never experiences tension, the parental task at the toddler stage is a requirement for firmness about the boundaries of acceptable behavior and encouragement of the progressive emancipation of the child. The child must be allowed to do for himself insofar as he is able, but he must be protected and assisted when the challenges are beyond him.

In the 4th year of life, there is further augmentation of the youngster's capacities, which, however, still run well behind his aspirations; he often undertakes things he cannot complete successfully. He becomes capable of anticipation as a basis for accepting the postponement of immediate gratification. There is a flowering of imagination, as revealed in controlled fantasy and play. Play is a central psychological activity for this period. It is, to begin with, fun: the sheer pleasure of exercising new executive capacities and acquiring mastery. It serves the function of releasing tension and energy. Following stress, it can provide emotional catharsis. But perhaps most important of all, the trial roles assumed in dramatic play allow the child to try out the adult identities he will one day have to understand and to assume. It is during this era that sexual identity is firmly established.

Psychosexual development. The forerunners of sexual differentiation are evident from birth when parents dress infants differently and treat them differently because of the differential expectations evoked by sex typing. The child through imitation, reward, and coercion assumes the behaviors that his culture defines for his sexual role. The way he walks, talks, and gestures; the level of activity he is permitted; the games he plays—all are differential by sex, and all serve to identify him to others and to tell him about himself as his role becomes crystallized. He exhibits active curiosity about anatomical sex. If this curiosity is recognized as healthy and is met with

honest and age-appropriate replies, he acquires a sense of the wonder of life and comfort about his own role in it. If the subject is taboo and his questions rebuffed, he responds with shame and discomfort.

At this stage he is likely to struggle for the exclusive affection and attention of his parents. This includes both rivalry with his siblings and with one or another parent for the star role in the family. Although he is beginning to be able to share, he gives up only with difficulty. Psychoanalysis has emphasized the competition for the exclusive possession of the parent of the opposite sex and rivalry with the same-sexed parent, the oedipal conflict. Here again, the elaboration of theory based on the study of disturbed patients—indeed, of adult patients whose recollections of early childhood are distorted by fantasy—has led to an unwarranted focus on the oedipal problem. It is more useful to conceptualize the developmental task as one of acquiring a comfortable sharing of love roles in the family rather than a distorted love affair with a parent whose response sexualizes the child's search for security and comfort. If the demands for exclusive possession are not effectively resolved, the result is likely to be jealous competitiveness in relations with peers and lovers. The fantasies aroused by the struggle lead to fear of retaliation and displacement of fear onto external objects. These issues are important in elaborating the basis for conscience. In an equitable, loving family, the child elaborates a moral system of ethical rights freely contracted. This contrasts with conscience based on terror, with fear of retaliation for unchecked cupidity, leading to ritualized and rigid moralism.

School period. As the child enters kindergarten and elementary school, the formal demands for academic learning, particularly in Western society, become major determinants of further personality development. So crucial is this task of developing competence that success or failure in it molds the child's image of himself as a capable and adequate person or as an inferior and feckless one.

Intelligence measurement. Although the child's "intelligence" as measured by I.Q. tests is the single variable that correlates most highly with academic success, the coefficient of correlation between I.Q. and grades does not exceed 0.6 to 0.7, thus accounting for no more than a third to a half of the variance. Equally salient are motivation, work habits, creativity, and other traits for which there are as yet no quantitative measures. There is impressive evidence that the disadvantageous circumstances associated with urban slum life depress motivation, measured I.Q., and academic accomplishment. Eisenberg reported, in 1966, that from a third to a half of children from urban slums are more than 2 years retarded in reading by the sixth grade, and the gap is even greater by the ninth grade. These are the youngsters who are likely

to drop out of school and to join the mass of chronically unemployable adults because of lack of salable skills.

Unfortunately, by a process of circular reasoning, the poor school performance is commonly explained by the poor I.Q., which is attributed to the genetic consequences of assortative mating—that is, the inferior academic accomplishments of slum dwellers are attributed to biological inadequacy. This viewpoint has been espoused at least since the time of Plato, who invented the myth of the men of gold, silver, brass, and iron as a useful falsehood to persuade citizens to accept their destiny in the state. In its contemporary version, its advocates justify the conclusion that the poor are inferior by pointing to their school performance, without recognizing the role of the inadequacy of the education provided to them in determining that performance.

The children of the urban slum, of migrant workers, of ghettoized minority groups are doubly disadvantaged. They arrive at school poorly motivated, unfamiliar with the academic materials that are commonplace in the middle class home, with short attention span, with language deficient in vocabulary and in syntactical structure, rich in survival behaviors suitable for the alleys of the city but highly inappropriate in school. Once they arrive, they are faced with schools that are overcrowded, obsolescent in physical structure, inadequately staffed, and frequently staffed by ill trained and poorly motivated teachers. Is it then a wonder that serial measures, both of I.Q. and of academic attainment, show a progressively widening gap between these children and those more favored?

Indeed, one of the most pernicious of myths is the notion of constancy of the I.Q. Though it is true that I.Q. measures on groups of children show remarkable apparent constancy over a period of several years, the scores for individual children within the group, even of middle class children, show wide variation. For example, in the Fels study of I.Q. from age 3 to age 12, two thirds of the children varied more than 15 points in I.Q.—and one showed as much as a 58-point change—despite a mean group I.Q. that remained at about 120. Noteworthy in these studies was the observation that children who at 5 displayed the traits associated with achievement motivation—independence, competitiveness, self-initiation—were among those likely to show I.Q. gains, whereas those low on these measures were characterized by declining I.Q. figures.

Indeed, all this was said by Binet, whose psychometric methods have been suborned for a purpose he deplored:

Some recent philosophers appear to have given their moral support to the deplorable verdict that the intelligence of the individual is a fixed quantity.... We must protest and act against this brutal pessimism.... A child's mind is like a field for which an expert farmer has advised a change in the method of cultivating, with the result that in place of desert land, we

TABLE I

Raw Scores for Head Start Subjects and Controls in Peabody Picture Vocabulary Test (PPVT) and Harris-Goodenough Draw-a-Person (DAP)

	Head Start						Controls ^a	
	First week of program		Sixth week of program		Two weeks after program		PPVT	DAP
	PPVT	DAP	PPVT	DAP	PPVT	DAP		
Mean.....	32.63	7.71	36.83	9.10	39.74	9.75	33.65	8.91
Standard deviation.....	12.33	4.79	10.82	4.20	11.34	4.41	11.70	4.98
Number of cases	(424)	(500)	(423)	(476)	(413)	(435)	(402)	(420)

^a Controls were tested 2 weeks after the end of the Head Start program.

TABLE II

Porteus Maze Test Quotient Scores before and after Treatment^a

	Drug		Placebo	
	Before	After	Before	After
Number of cases.	(19)	(19)	(19)	(17)
Mean	102.79	118.63	105.63	107.59
Standard deviation..	16.37	10.41	17.14	18.66

^a The drug given was a stimulant, either dextroamphetamine or methylphenidate. $t(df = 34) = 3.32$; $P < 0.01$.

now have a harvest. It is in this particular sense, the one which is significant, that we say that the intelligence of children may be increased. One increases that which constitutes the intelligence of a school child, namely, the capacity to learn, to improve with instruction.

That Binet was indeed correct is evident from the modification of cognitive performance by preschool enrichment programs for disadvantaged 5-year-old slum dwellers. In studies on Project Head Start in Baltimore in the summer of 1965, the Peabody Picture Vocabulary Test (PPVT) and the Harris-Goodenough Draw-a-Person (DAP), which correlate respectably with standard I.Q. measures on the usual population samples, were administered to the Head Start children and to a control group. On the PPVT, the controls and the Head Start children showed no significant difference on the pre-test, but the Head Start children showed improvement during and after the program (see Table I).

In the DAP, Head Start children also showed improvement, but the controls scored about the same as the Head Start children half way through the program (see Table I). This suggests either that the function tapped by the DAP matures with less dependence on outside stimulation or that the stimulus configurations necessary for its development are relatively more available in the slum environment.

The question remains: What has changed in relation to the Head Start experience? That the difference is not simply ascribable to test practice is suggested by test-retest data reported by others. That the effects are substantial and reproducible is indicated by the studies of Gray and Klaus and of Dunn and Mueller with children given longer enrichment experiences. It is not at all clear whether Head Start has improved understanding of instructions, involvement in the test situation, attentiveness, planfulness, familiarity with test materials and methods, hearing vocabulary, verbal intelligence, visumotor performance, or intellectual maturity.

The dependence of intelligence, that which cognitive tests attempt to measure, on such primary traits as the ability to sustain attention and to inhibit impulsive responding is illustrated by findings in the treatment of children with hyperkinetic behavior disorders with stimulant drugs (dextroamphetamine and methylphenidate). The patients were given Porteus Maze Tests before and after treatment by active drug or placebo in a double-blind design. As Table II indicates, the children treated by the stimulant drug showed a highly significant improvement in Porteus I.Q., whereas the placebo group showed no change. Was intelligence increased? Or did the drug, by diminishing impulsiveness, reveal the intelligence that was really there? Clearly, the answer depends on what is included in the definition of intelligence.

There is no innate intelligence. Intelligence is as intelligence does, for it is *behavior* that is measured. Intelligent behavior emerges from the interaction between the characteristics of the child and the demands and opportunities of his environment. These statements do not represent a denial of the reality of individual differences. The emphasis on nature or nurture in polemics on intelligence is a false issue. *All* behavior is inherited; *all* behavior is acquired. It is as meaningful to ask how much is inherited and how much acquired as it is to ask how much of the area of a rectangle is due to the length and how much to the width. There can be no behavior without both nature and nurture. The relevant questions are: With nature held constant, what is the variance produced by differences in nurture? With nurture held constant, how much variance can be produced by differences in nature?

Aggressive behavior. The frequency of aggressive behavior in children is often used as an argument for an innate aggressive instinct. Here is yet another instance of the widespread tendency to substitute for the actual study of infantile behavior the mere a priori assignment of motives on the basis of spurious analogies with adult motivations. In the normal child, aggression can be effectively understood in terms of the motives—defense, mastery, curiosity—for which aggressiveness is a suitable mediator. Its greater frequency in the abnormal child can be correlated with defects in the organism, as in the case of brain in-

jury, or with distortions in his environment, as in the case of faulty identification models. Moreover, the frequency of display of aggressive behavior is a function of the culture in which the child is reared. Aggressive fantasy materials—movies, crime comics, and so on—rather than affording catharsis for instinctual aggressiveness, generate the very tensions they profess to release. It is not the ubiquity of aggression that needs to be accounted for; it is its remarkably wide variation from culture to culture, from time to time in a given culture, and from individual to individual in a given culture at a given time.

A central issue is the meaning to be ascribed to the term "aggression." If a child is observed taking apart a watch, this behavior can be described as aggressive. In a given instance, it may be—if, for example, the watch belongs to the child's father, and the father has just punished him. On the other hand, if the watch is an old one in his stock of toys, his motive may be curiosity about its mechanism—a belief more readily accepted if his delight as he is able to reassemble it in working order is observed. If he strikes another child, this can be an act of aggression. It well may be if the victim is the baby sister his parents have just embraced. Or it may be defensive if the victim has made a threatening gesture or has tried to seize a favorite toy. Homely anecdotes serve to make the point, but documented experimental examples are readily available—children emulating adult models, children systematically subjected to frustration, children watching films of aggressive behavior—all of whom show predictable increases in aggressiveness.

The doctrine of aggressive instincts exhibits a curious indirectness of reasoning. All active behavior is labeled aggressive. The label is then taken as sufficient to represent the source. In so doing, this argument reflects the ambiguity of everyday language, in which aggressive is defined at one and the same time as "assaultive and violent" and as "energetic and vigorous." Surely, there is a world of difference between an assault intended to destroy and a vigorous effort to cope adaptively. To argue that the latter is but a sublimated equivalent of the former is to substitute mere verbal trickery for detailed behavioral analysis. The capacity for aggression is indeed inherent in the biological organization of man, as it is in all mammals; its display is, however, conditioned by other determinants.

Adolescence. Adolescence is a critical period of development, with manifestations at the biological, psychological, and social levels of integration; it is a period of variable onset and duration, marking the end of childhood and setting the foundation for maturity. Biologically, its onset is signaled by the final phase of acceleration of growth and the beginnings of secondary sexual development, and its termination is marked by epiphyseal fusion and the completion of sexual differentiation. Psychologically, it is marked

by an acceleration of cognitive growth and personality formation and is succeeded by the stage of parenthood and the acquisition of an adult work role. Socially, it is a period of intensified preparation for the assumption of an adult role, and its termination is signaled when the individual is accorded full adult prerogatives, the timing and nature of which vary widely from society to society.

Development at the biological, psychological, and social levels of integration is marked by significant interaction between levels, with events at any one level being able to impede or accelerate development at each of the others. Although the time at which the hypothalamic-pituitary axis initiates growth acceleration and sexual maturation is a function of individual heredity, it may be delayed or advanced by environmental factors. The ultimate height attained by adolescents in economically developing countries has shown striking gains as nutrition has improved—as, for example, in Japan since the war. Similarly, the time of menarche has shown a trend toward acceleration in countries with improving standards of nutrition and health; these physiological trends are the result of industrial and social organization.

In similar fashion, biological maturation provides the muscular strength and dexterity that permits the adolescent to participate successfully in the activities of his peer group, success at which promotes a psychological feeling of adequacy. At the same time, positive psychological motivation is a prerequisite for task perseverance and the search for variety of experience, which provides the conditions necessary for full muscular development through exercise. Folk beliefs about diet may lead to inadequate nutritional intake; social prejudices against minority group members may deny them the experiences necessary for full individuation. The importance of these reciprocal influences is underscored by the fact that each society is ultimately dependent on its adolescents as its future adults. Failure to provide the conditions necessary for their optimal development will handicap the growth potential of the society.

Biological factors. Biological factors set wide limits for the onset, termination, and achievements of adolescence. Onset in normal children may occur as early as age 7 or 8 or as late as 17 or 18; termination may be as early as 15 or 16 or as late as 24 or 25. The timing is a function both of internal factors, such as sex and inheritance, and of external factors, such as nutrition and medical care.

Social factors. Adolescence as a social phenomenon, though restricted by biological limits, is a function of cultural norms. The more sophisticated a society in its technology, the more prolonged the period of adolescence, since the complexity of the preparation required for adult roles depends on the demands the society sets. In the United States, the long period of study required for specialized occupational roles delays the age of self-support, the opportunity for

marriage, and the age of creative contribution to society—all attributes of the adult role.

In many cultures, the onset of adolescence is clearly signaled by puberty rites, usually in the form of tests of strength and courage. In technologically advanced societies, there is no such clear significance of the end of childhood; moreover, the requirements for adulthood are less sharply defined; the individual must undergo a more prolonged and, at times, confused struggle to attain adult status.

Psychological factors. At a psychological level, the most striking attainment during adolescence is the ability for abstract conceptualization. It is here that the foundations of scientific contribution and of creativity are to be found. The adolescent's capacity for abstract thought accounts for his increasing concern with national and international problems and with the basic meanings and values of human existence. This idealism of adolescents is shaped by the cultural envelope that surrounds the individual, but its very existence leads to questioning, to examination of basic premises, and to dissatisfaction with the imperfections in the world as it is. Fostering and strengthening this suprapersonal psychological trait in adolescence leads to the creation of adults who enhance the society that bred them. The denial of opportunity for its positive expression warps development and leads to a generation of self-preoccupied adults who may fail to meet the challenge of history.

A related theme of adolescence is the search for a sense of personal identity, in the cogent terminology of Erikson. No longer a child and not yet an adult, the adolescent engages busily in determining who he is and what he is to become. He examines his parents from a more critical perspective and leans more to peer groups for his sense of belonging. If his relations with his parents have been soundly constructed and if they meet his doubts and criticisms with sympathetic understanding, this temporary unsettling of his prior role leads to a resynthesis of his relations with them on a firm and lasting basis, one marked by reciprocal respect and by personal independence without abandonment of filial loyalty. Where the prior parent-child relationship has been one of excessive dependence or excessive hostility, adolescent turmoil may be prolonged and lead either to failure of emancipation or to rejection of family ties and a lasting sense of isolation.

A third major psychological issue is the further evolution of psychosexual role. The development of adult sexual characteristics and the experience of a bewildering array of new physical sensations, both of which lead to an upsurge of interest in physical sex and a psychological sensitization to a new aspect of interpersonal relationships, challenge the psychosexual structures of childhood. Comparative studies indicate that, as the scale of evolution is ascended, sexual behavior is less dependent on hormones and more dependent on learning. In man, the role of hor-

mones is limited to priming the organism for biological maturation and to influencing but not determining solely the level of libido; the direction, nature, and adequacy of sexual performance are controlled by psychosocial factors. The many investigations of the biology of sex deviants have failed to identify chromosomal, hormonal, or gonadal aberrations. The remarkable variation in sexual behavior between societies and between social classes within a single society emphasizes the cultural determinants of sexual behavior, given adequate biological maturation.

The ambivalence of Western society toward sexuality—manifested by the conflicts between official attitudes and private behaviors and the pervasive emphasis on sex side by side with sanctions against its expression—contributes to the difficulty, so common in adolescence, of attaining the basis for a sense of competence, freedom, and pleasure as a sexually functioning adult. Adolescents are entitled to full and unambiguous information about the physiology of sex and its ethical significance as an intimate relationship between human beings. Commonly expressed fears that providing such information to adolescents will lead to premature experimentation run contrary to clinical experience, which indicates that ignorance of sex and impoverishment of human relationships account for sexual misadventures. A sense of inadequacy in sexuality not only impairs sexual function but leads to disabilities in other adult roles.

The search for identity is markedly influenced by peer groups. If these are constructive social groups that provide creative outlets for adolescent energy, the result is a sense of meaningful membership in the community and identification with its goals. But if the peer group is a delinquent gang, with values antagonistic to the larger society, the result is likely to be antisocial personality organization. The experience of growing up as a member of a disadvantaged minority group, with attendant humiliation and denial of opportunity, makes it difficult for the adolescent to identify with the values of the society at large and favors instead hostility toward its norms and a disposition to anarchistic individualism. However, even under these circumstances, leadership and social forms that permit the disadvantaged adolescent to employ his energy in efforts to change unjust social patterns can foster his emergence into creative adulthood.

The *family* is an important agent in transmitting the behavior patterns and values expected of the adolescent by society. Distortions in family structure, whether idiosyncratic or socially induced, inevitably have profound effects on individual development. The social consequences of economic disadvantage—poor health, reduced longevity, poor education, extralegal marital arrangements, the necessity for exploiting children economically—erode family structure. The unemployed drifting father and the unmarried de-

served mother not only fail to provide their children with adequate nurture but also serve as poor identification models. The aggregation of disadvantaged families in decaying neighborhoods all too often reinforces family psychopathology by exposing the adolescent to delinquent gangs and ineffective schooling.

The sensitivity of the adolescent to the good opinion of his peers and the dependence of his sense of identity on the attainment of competence in an adult role render him psychologically vulnerable to variations in physiological development, such as precocious or delayed growth, acne, obesity, enlarged mammary glands in the males, and inadequate or overabundant breast development in the female. These deviations from expected patterns of maturation, though they may be without great medical significance, can lead to major psychological harm if not offset by sensitive guidance by the physician. The adolescent with limited intellectual or physical capacity can develop a persisting and even unchangeable feeling of inferiority if he is forced to compete in situations in which he repeatedly experiences failure. The individualization of education and vocational training for adolescents is essential, both to permit the talented individual to exploit his abilities and to direct the youngster with specific limitations to activities that develop the capacities he does have.

The characteristic fluidity of psychological structure in adolescence results in the common display of transient symptoms, many of which resemble the psychopathological syndromes of adulthood. The clinician must exercise great caution lest he misinterpret the turbulent but temporary maladaptive patterns manifested by the adolescents. Incorrect diagnostic formulations may lead to social consequences that freeze into permanence an otherwise readily correctable deviation in the normal growth pattern. It is, of course, true that schizophrenia and manic-depressive psychosis appear at significant rates for the first time in adolescence. However, these remain relatively uncommon disorders and must be discriminated from panic states in a youngster confronted by overwhelming internal and external stimulation.

The psychological basis for a sense of individual worth as an adult rests on the acquisition of competence in a work role during adolescence. A sense of competence is acquired not by being reassured but by experiencing success in a socially important task. The educational challenge is to stimulate abilities to the utmost without setting standards so high that they lead to inevitable defeat. The educational accomplishment must be matched by an opportunity for the individual to exercise his competence as a worker in the economic world. The sustained motivation necessary for mastering a difficult work role is only possible when there is a real likelihood of fulfilling that role in adult life and of having it respected by others. The task of providing full employment in a world in

which automation is revolutionizing traditional work roles is a challenge to the citizenry and the government.

The capacity for engagement in meaningful social activity is present in young people in every country of the world. For all the dismay caused by the disengagement and alienation experienced by many American adolescents, the dedication, zest for life, and commitment displayed by workers in the Peace Corps, VISTA, and the civil rights movement give us faith that this is a generation better than our own. The provision of an optimal framework for adolescent development is inseparable from the struggle to create a better world by helping to mold the citizens who will build it.

After adolescence. Development continues as long as life continues. As social roles change, as intellectual and physical capacities first advance and later recede, new challenges demand new adaptations. Studies of sensory deprivation in the normal volunteer have emphasized the role of sensory input in maintaining reality testing and perceptual organization. Social input is necessary for the maintenance of personality organization. What appear to be remarkable constancies of personality over a lifetime are not to be taken as evidence of a crystallized and unchangeable structure; rather, they result from the constant reinforcement of personality traits by the social environment in which the individual moves. Changes in the social field—brought about by chance, social change, or catastrophe—can lead to profound alterations in personal function.

The adult psychiatrist, no less than the child psychiatrist, must view his patient in dynamic terms as an organism with a history, with a set of attitudes and expectations, and with profound dependence on the forces in his social field. The patient should be assessed as much in terms of his abilities as his disabilities, as much in terms of what he can become as what he has been and what he is. Clinical diagnosis and treatment are most effective when based on a view that stresses personality as an emergent, constantly in the process of formation and never fully complete.

Suggested Cross References

See the section by Chess (Section 40.1) for further information regarding normative developmental sequences; disturbances in the developmental processes and sequences that were described in this section are discussed in the sections by Chess and Hornick (Sections 40.1 and 40.2). A more detailed discussion on maternal deprivation may be found in Section 44.1. For information regarding fundamental concepts of cognition and intelligence, see Section 3.2 in Area B, on the basic behavioral sciences. In that same area, see Sections 3.1, 5.7, and 4.3, respectively, for discussions of perception, normal sexuality, and the influence of family dynamics on personality development.

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Chapter 39

Assessment in Child Psychiatry

39.1 PSYCHIATRIC EXAMINATION OF THE CHILD

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The psychiatric examination of a child is a step in a process in which the clinician is responsible both to the child and to his parents, who are ultimately accountable for the child. The patient unit consists of the child and his parents—a child in a family. Understanding the parents is as important as the direct examination of the child. Interviews with the child are the culmination of an evaluative process illuminated by historical information and an appraisal of the child's current adjustment. The evaluation includes psychological tests and measurements and physical examination, with indicated biological studies.

The psychiatrist usually encounters the child through his parents, who have initiated the move to seek help. Work is carried out with their approval and assistance. They have been intimately involved in the development of the difficulties over which they are concerned, and their feelings and attitudes influence the evaluative review. The clinician is in the unique position of carrying out a service for the parents as he endeavors to study and understand them. He must weigh the manner in which their personal needs and inclinations color the information they provide and estimate how they will influence steps that are to be undertaken in diagnosis, treatment, or management. Some of the most important information about parents derives from the manner in which they participate in the clinical procedures.

History

The parents. By the time some parents appear for psychiatric help, they are interested in learning how to proceed with treatment. They may have completed previous psychiatric or psychological studies. Compiling an extensive history seems to them superfluous and may divert them from their urge to approach their difficulties actively. When treatment is the immediate

aim of the parents and if the nature of the difficulty is evident, historical information can accumulate as interviews with the child and parents proceed on a scheduled basis.

In order to obtain a complete picture of the family, both parents must be included in the diagnostic study. With younger children it is common for mothers to present themselves alone for the initial interview. This is partly because it is more convenient for mothers who are not working to keep appointments during the business day and partly because mothers are more actively involved in the daily care of younger children. The readiness of each parent to participate in the early studies may yield information about the nature of the relationship between the parents and the manner in which difficulties with the children are approached in the family. Of special interest are discordant differences in their direction and management of the child.

Parents are not objective informants. Their account of the development and past events in the life of the child and their description of his current adjustment may be inaccurate. Distortion of factual information can be of significance in revealing the attitudes of the informant. Data obtained from the parents in separate interviews can be considered reliable if their statements correspond. Further verification may be obtained by consulting additional informants, such as grandparents or other relatives, teachers, etc. The establishment of reliability may be less important than the information that unfolds before the clinician as he observes the manner in which the parents proceed.

Technique. There is considerable variation among clinicians in the emphasis placed on the early compilation of an historical account and on the manner in which the parents react in the clinical process. With this dual interest, attention can seldom be absorbed fully in the review of historical events. It is not customary to proceed serially through the items of a history form. Even though the information is to be organized eventually in a formalized manner, the parents are encouraged to proceed spontaneously, and direct questioning is done later.

When the parents or the clinician seek clarification

of the nature of the difficulty the child is presenting or if information is needed about the abilities, psychological patterns, or physical state of the child, the procedures are diagnostic, and a more extensive historical exploration is undertaken.

Although the manner of eliciting the history is guided by the custom of the individual clinician and the spontaneous inclination of the informant, specified areas of inquiry must be covered to provide adequate background for the understanding of the child. Information is needed from the parents that the child cannot himself provide. After an exploration of the immediate concerns of the parents, a review of the child's current adjustment and history are pursued through a variety of dimensions. The information sought involves a family history and a developmental or past history of the child, with consideration of the development of the presenting problem.

As each incident has factual and emotional significance, the taking of a history could become a lengthy and involved process. It is necessary to develop a sense of what material may be of pertinence so that certain lines of investigation are explored more completely than others. The need to survey all the various indicated areas must be kept in mind, and some items may be noted and reserved for investigation at a later time.

The history is commonly pursued after the parents have been allowed to talk freely about the presenting difficulties and the child's current adjustment. When informants do not express themselves readily, it may be easier for them to respond to a methodical inquiry about the child's growth and development. The clinician can thus assist them to participate, having in mind that spontaneity can be allowed as the parents become more confident.

Areas of inquiry

Identifying data. Identifying data are obtained about each member of the immediate family and sometimes of the families of either parent. The data include names, sex, birth dates, occupation or school grade placement, race, religion, etc. Dates of marriages, divorces, and deaths are listed. The legal custody of the child and those who comprise his domestic setting are indicated.

Family history. The family history is a life or developmental history of each member of the family. The search for hereditary factors, chronic disease, and cultural influences leads the discussion to collaterals, grandparents, and other antecedents. More emphasis is placed on the emotional and social experiences of the parents and those who have been members of the immediate household. It is important to evaluate the solidity of the family and the quality of emotional nurture that has been provided. Through identifying data, the legal custody of the child has been indicated. Further inquiry may be necessary to ascertain whether ongoing responsibility in its full sense has been assumed for the child.

An evaluation of the maturity and social, behavioral, and emotional inclination of the parents is made with concern for the nature of the marital relationship and the emotional atmosphere of the home. Cultural and economic factors are considered. Special interest is directed toward the attitudes of the parents toward child rearing, discipline, direction, and supervision.

Indications of emotional disturbance in the life of either parent or conflict between parents are pursued. Special interest is directed to the manner in which the parents respond to the behavior of the child. It is sometimes possible to ascertain that the parent's insecurity, rejection, overprotection, indifference, etc., have played a primary determining role in the initiation of symptomatic responses in a child. In any event, whatever the parents' attitudes and feelings toward the behavior of the child, they are important to evaluate both from the point of view of understanding the nature and development of the difficulty and because the parents are going to be active participants in measures for treatment or management that be recommended.

Developmental history. A developmental history is the life history of the child. It provides information about his physical and psychological experiences. During the inquiry, attention is directed toward evaluating his motor competence, intellectual capacity, social responses, and emotional patterning. As age advances, social and interpersonal factors are increasingly complex, and the child's reactions are intertwined with the attitudes of those who care for him and with whom he associates.

Health history. In the health history, disease or biological influences that could affect the child through genetic potentiation or contagion are sought. Attention is directed to neuromuscular disorders, convulsive disorders, intellectual retardation, mental or behavioral abnormality, and chronic disease, such as tuberculosis. The circumstances of the pregnancy, birth, and neonatal period are reviewed for evidence of contagious disease, traumatic injury, and hematological or metabolic abnormality. Involvement of the central nervous system in febrile illnesses during infancy and early childhood may escape detection and become manifest later. The illnesses and injuries the child has experienced are discussed.

Motor skills and social reactions. A review of the acquisition of motor skills and social reactions yields information about the child's intellectual endowment and his emotional maturation. The final estimate of intelligence should be a clinical determination and is based, in good part, on historical information.

During the 1st year, before the development of speech, the rate of motor maturation corresponds closely to basic intellectual capacity, unless there is disease of the neuromuscular system. Inquiry is made into performances that parents commonly note. Among these are the time at which the child held his head erect, rolled over, sat up, cut his teeth, crawled, stood, walked, talked, etc. The progression of feeding patterns

from breast to bottle to spoon and the transition to solid foods, and self-feeding, control of bowel and bladder, sleep patterns, etc., are more complicated activities that are influenced readily through the relationship of the child and parent. As motor skills are acquired, the infant passes through a period of exploration of his physical surroundings and can play for limited periods by himself.

With greater social awareness, negativism to direction or insistence on independence develops. Between the ages of 4 and 5 years, the child should be able to play outside the home for periods of time and eventually to be away from his parents for considerable periods. Many children can attend kindergarten at 4 or 5 years, and most are expected to begin school by 6 years of age. Grade progression and subject achievement are important indicators of intellectual ability and/or emotional adjustment. Similarly, the development of social interests and the capacity to care for one's personal needs, to complete chores, and to participate in group play, become measures of maturity. With adolescence, social interest is heightened. Group and club activities must be more organized, and increased personal responsibility is expected. The patient's activities during vacation periods may be revealing. These include camp, organized recreation, and work.

An appraisal is made of the child's progress through the various developmental levels: prenatal and birth, infancy, 2 to 6 years, 6 to 12 years, and adolescence. Failure to acquire appropriate skills and interests may be due to intellectual or physical handicaps.

Symptoms. The patient may react to failure with symptoms, and parents may respond in a troubled manner, becoming overprotective, rejecting, etc. The development of symptoms and intrafamilial emotional pressures may precede the social or scholastic developmental lag and be of primary significance. Parental attitudes and the emotional and behavioral tendencies of the child are then the causal factors. This is the situation with primary emotional problems.

If maturation is not progressing normally, the child may present a variety of symptoms. Habits such as thumb sucking, scratching, hair pulling, head banging, masturbation, and clinging to favored objects are seen in the early years. Fears may be associated with refusal to carry out specific acts, to separate from parents, to attend school, etc. The child may present obsessive-compulsive phenomena. Some symptoms result from a reluctance to progress to a more mature level of behavior. These are exemplified in neglect of personal grooming, such as not tying shoe laces or buttoning buttons, not washing the face and hands or combing hair, carelessness with arrangement of clothes, etc. Immature behavior and a preference for childish toys, objects, and friends are also in this category. More complicated phenomena are the articulatory inaccuracies (such as baby talk), bed wetting, soiling, etc. Shyness, aloofness, aggressiveness, delinquency, and sexual misbehavior are examples of maladaptive

behavior with considerable social and psychological import.

Symptoms and symptomatic behavior are indications of emotional distress in the child, and they arouse expressions of concern by the parents. Such indications of difficulty may be traced through several levels of development, portraying patterned behavior that becomes characteristic for the child. Similarly, the responses of the parents may be followed, revealing the manner in which the parents deal with difficulties that obtrude in the family. This will facilitate an evaluation of the nature of discipline, encouragement and assistance, personal warmth and interest, etc., that each parent brings to the care of the child. Differences in parental aims or interests can be observed. These circumstances underlie the presenting problems that have motivated the parents to seek psychiatric help.

One notes whether the parent has attempted to deal with the difficulties as they have arisen and whether he has been ready or reluctant to seek professional advice. The age at which the patient is brought for psychiatric study may be significant, especially if the duration of the difficulty has been long. It is important to note whether the decision to find help was made by the parents out of their concern for the indications of emotional or social distress they observed or whether action was compelled by difficulties in which the child became involved outside the home. Trouble with school subjects or school attendance, difficulty with school friendships or group activities, etc., press parents, who have been worried about other indications of trouble for some time, to act. Parents of many delinquent adolescents who come before the juvenile court have been reluctant to acknowledge earlier evidences of distressed behavior.

Examination

The psychiatric examination of a child or adolescent consists of a consideration with him of the difficulties that have brought him to psychiatric attention. These are the expressed concerns of others for which he may or may not be prepared to accept responsibility. He has knowledge of the circumstances and events that have worried his parents, but he may have a limited understanding of them and of his feelings about them. There is a natural aversion to the intrusion into one's thoughts and feelings, but, in his early encounter with a psychiatrist, a child is expected to reveal them.

Preparation. Knowledge of the attitudes and feelings of another human being remain limited if that person does not participate actively in a motivated manner. The child who comes to an initial interview without prior knowledge of its purpose is usually perplexed, frightened, or angry. Even the youngest child who has acquired speech can understand that his parents are concerned and that he is to be the object of study or that change in him is required. This is a challenging circumstance but one in which he can respond purposefully.

Preparation should involve a simple and honest talk

with the child about what he is coming to the psychiatrist to accomplish. He should understand that the discussion will be about him and in relation to difficulties of which both he and the parents are aware. The difficulties are not new, and it would be unusual if they had not been repeatedly discussed within the family group. The element that is new is the decision to undertake action through psychiatric assistance.

The manner in which the parents prepare the child is important. If the parents have misgivings and are uncertain, the patient himself may be distrustful and uneasy. The parents have previously established acquaintance with the psychiatrist or the clinic. There has been consideration of their concerns during the historical review. A beginning worker is sometimes distressed to learn that, after a careful discussion with the parents of how they shall prepare a child, he comes for the examination with little understanding of what will transpire; he is either ill informed or misinformed. Experience teaches that much can be learned about the relationship of parents and child as they become actively involved together.

Technique. The psychiatrist endeavors to create an atmosphere in which the child can act and express himself and in which he, with his patient, can consider the difficulties that have brought them together. A simple direct approach with an implied respect for the feelings and concerns of the child avoids affectation and distrust. The patient naturally expects to discuss his troubles. Unless he plunges into them spontaneously, it is well to begin with less consequential material and to wait until he has shown some active initiative or inquisitiveness. The clinician should be ready to make the first overtures but also to be responsive if the child chooses to direct the discussion. It is natural to say something about the office or the play material that is in evidence or to confirm introductions. Questions about school, age, and the identification of other members in the family are familiar topics with a child. The conversation will shortly turn to the reasons for the child being in the interview. Prolonged delay in discussing meaningful material can establish a strained and defensive lethargy, just as too precipitous a beginning may arouse fear and a defensive attitude. It is well to establish, fairly early, the amount of time that will be spent together—number of interviews, their duration, etc.

It may be desirable to acknowledge the interest of the parents in what will transpire. A degree of confidentiality should be implied or acknowledged, but the child psychiatrist should avoid assurances that information will be withheld from the parents unless he intends to do so. Some child psychiatrists practice absolute confidentiality with a child or adolescent patient. Others recognize openly that events which concern the parents cannot be kept isolated and that patient and doctor must have a reasonable trust in each other.

One can anticipate that a child will be apprehensive

and uncertain as he finds himself in the presence of a professional person whom he has endowed with the power to influence his life. The way this initial fear is recognized and dealt with affects the nature of the relationship throughout the examination. Too abrupt and frank a confrontation may be terrifying, especially with the younger child. The adolescent who is challenged and chooses to deny his anxiety may remain passive; or, if he responds with hostility, he may find it hard to yield and be friendly eventually. The clinician will proceed sensitively, knowing that, as he becomes acquainted with his patient, the patient is also becoming acquainted with him.

Leaving the parents. A good deal can be learned from the way a child leaves his parents in the waiting room. Crises occur in which a fearful child or an uncertain overprotective parent cannot separate. If a child cannot leave his parent, it is sometimes helpful to have the parent accompany him to the interview room and leave as the child becomes familiar with the new surroundings. Some fearful children cannot leave their parents without parental encouragement, and this is not always available. Fortunately, whether through acquired skill or confidence, unmanageable separation problems are less frequent with the experienced clinician. Whatever the response, as the child leaves his parents to go to his separate interview, it is important that it be noted.

Play. Play is a natural mode of expression for a child. It is customary for the interview room to be equipped with a variety of familiar play materials that appeal at varying ages. Children are not comfortable in the usual office setting, where freedom of movement is not easily allowed. Even the older adolescent is usually more at ease in the informal atmosphere of a room with play equipment. The patient is aware of the communicative element in his actions and conversation. He does not become absorbed in play unless he is engaged in an especially meaningful constellation of thought. Sometimes children feign absorption in play to avoid meaningful discussion. If the child does play, in the literal sense of the word, the purposeful quality of the interview is diverted. It is, accordingly, best not to have too involved or attractive toys or too overwhelmingly varied a display.

The child's perceptions. In the diagnostic interviews, the clinician endeavors to learn how the child thinks and feels about himself. There is interest in his perception of the problems that have brought him to psychiatric attention. More important is his concept of himself as an individual, especially in relation to others. What is his estimate of his size, maturity, and competence? One wants to learn of his relationships within the family and the manner in which he perceives his parents, siblings, and others, including the feelings and attitudes each has toward the others. Interest is directed to his opinions about his social ability through discussion of friendships and participation in games, group activities, etc. The examiner

attempts to evaluate the intellectual level at which the child functions and to observe abnormalities in thought, action, and emotional responsiveness. An estimate is made of the child's ability to relate and communicate and of the level of responsibility he assumes for his behavior. The clinician hopes to be able to delineate habitual patterns of response that constitute the outstanding features of the personality.

The child's communications. The psychiatrist must learn to understand the language of the child. Methods of communication with the child or adolescent patient differ from those with the adult, who enters into discussion in a more orderly manner and who is more impelled by the social implications of the interview. A few characteristics of clinical communication with children can be illustrated.

Play materials. Children occasionally discuss their feelings and attitudes directly but more commonly utilize play materials in order to feel at home and comfortable. Significant statements may arise from apparently inconsequential play and are often couched in figurative language, as illustrated in the following situation.

A 5-year-old girl was playing with a family of dolls when she said, "I wish my daddy was here. He takes care of me. I can't write, and I have to go to school, but I won't like school." She looked thoughtfully at her fingernails and said, "These fingernails won't grow up." The psychiatrist commented, "I guess that somebody bites them." She continued, "Ellen bites them, and they won't grow up. But my daddy will grow them up. My father is missing me. He will wonder what I am doing up here. He is going to send me to school, and I hate it. I don't want to learn forever."

Toys. Toys may also be used as a vehicle for expression.

A 4-year-old girl, playing with a doll, said, "That's a baby girl. The baby is sleeping. After she's sleeping, she eats. She eats her breakfast, her lunch, and her dinner, and then she sleeps again. Honey wants to be locked in the bathroom. No, Honey is going to be locked in the dining room. Honey is the little girl doll. I'm awfully silly." The child had presented an eating problem, and, since she had introduced the topic, the psychiatrist asked why she had come to see him. She continued, "To get help about my eating. I came to get help from you." The psychiatrist replied, "I think if there's going to be any help, we're going to need your help too." She continued, "Well, I'll help you because, if I want to eat, I could. Someday I'll start to eat." She returned to her doll, "Now she's a very bad baby, . . ."

Action. Children tend to depict feeling in action. Even as a child experiences anxiety in a challenging situation, he attempts to find a way to handle it. The clinician learns to understand the child's expression of emotional feeling and to note the manner in which he responds.

An 8-year-old boy revealed his fear during the beginning of an interview and indicated the manner in which he tried to handle it by controlling the situation about him so that nothing would happen that would place more requirements on him.

As he came into the interview, he stated, "Don't call me Morton, call me John." He didn't like his name. He made people call him John. It was warm, and the psychiatrist opened a

window. The boy continued, "Don't open the window, it's too cold." He looked at the chairs and said, "Oh, if I sit on one of those chairs, I'll bust it. Yes, I'll bust it. I'll cave those chairs through once I sit on them." The psychiatrist said, "I imagine they're strong enough to hold you, but I suppose you feel a little frightened about using those chairs." The boy replied, "I have to sit down, but I'm not going to."

A 3-year-old girl was fearful and reluctant to participate but indicated readiness to become involved.

She cried, "Open that door, Mommy. Open that door, Mommy. I don't want to go up here." Reaching for a tray of toys, she found it too far away. The psychiatrist helped by pushing the toys toward her. She in turn pushed them away. This was repeated with a mechanical tank, and the psychiatrist said, "I guess you don't want me to help you." She continued crying but took the tank and tried to wind it, saying, "No, no. I don't want to play. I don't want to play." As she expressed her reluctance, she was handling the tank and trying to use it.

Painting and drawing. These are useful media for communication. With pencils, crayons, and paints, children are able to enter into expressive play that frequently has significance.

During World War II, a 10-year-old boy painted a picture of an airplane. He drew a swastika on the side of it and said, "I don't like Germany. I don't know why I make signs. Maybe I feel bad like the Germans do. Maybe I do." He decided to paint the whole page purple so that his mother would not know that there was anything on it. He continued, "I'll leave a little space so that my mother can look through, and she'll say, 'Germany.'" The examiner wondered if she would know what was in there. He replied, "Yes, it will be bad, but she won't know it. Here's where I'm going to put them." He left a large space at the top of the paper, in which he plainly drew a swastika. He turned and said, "She'll know that. Wow! I don't think she'll like this so good. I'm scared to take it downstairs."

The following is an expressive passage in which a 7-year-old boy was painting at an easel.

He decided to paint a house. As he was working, he said, "This house is haunted. Do people paint and draw houses every time they come here?" The psychiatrist supported his individuality and said, "No, they don't draw houses like yours. This is different because it is yours." The boy continued, "This house is haunted; it has spooks in it. You can't see the spooks. When you look in that house, you get scared. Oh yeah, you can't see in the windows. They're dirty, and when you go inside, the door creaks. It's almost too dangerous to look in." The psychiatrist said, "I guess, when you really feel like it, you will look in." The boy replied, "I'll carry a gun then." He painted over the doorway and wanted to know if the psychiatrist had even seen a house just like this. This time the psychiatrist replied, "No, I have never seen one just like it." The boy continued, "There's a witch in there. It's a candy house. There are only rich people." After a pause, "Something strange happened; the lady waved a wand." The psychiatrist replied, "Then it is different." The child continued, "Whoever goes in it is different. They don't come out, even if they are a hundred years old." The psychiatrist tried to point up what the child had been saying and asked if that was a little the way he felt inside, a little fearful? The child replied, "Who said I was? I am sometimes." The psychiatrist added, "And you worry about what's inside." The boy replied, "What's worry?" Then he answered his own question: "Thinking and fear. Why say it isn't?"

Correlation of Results

Through the direct examination, the psychiatrist brings clinical perspective into the several parameters

from which the child has been studied—historical, current, psychometric, and physical. The patient may allow an extensive acquaintance with his thoughts, emotions, and patterns of reaction, or he may restrict what can be learned about him. Even an examination with a responsive child, extended over several interviews, will leave some limitations in the knowledge that can be gained about him. When a child is reticent—whether because of timidity, incapacity, or antagonism—the direct observations cannot be extended to all the areas of thought and feeling that the examiner would wish to study in order to confirm his impressions. It is necessary then to place greater reliance on the history, psychological test results, and physical findings.

Diagnosis

Diagnosis in child psychiatry is a continuing process. Treatment and management involve the child with his parents. Further experience with the family and maturation in the child may be necessary to clarify diagnostic questions. The initial assumptions will be reassessed repeatedly as work with the family continues.

Suggested Cross References

Ancillary sources of data important in the psychiatric evolution of the child include psychological testing, social service information, and the neurological evaluation, which are discussed respectively in Sections 39.3, 39.4, and 39.2 in this chapter. See Area E, on assessment in psychiatry, for information about the psychiatric examination of adults.

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TABLE I

Symptoms That May Be Manifestations of a Psychiatric or a Neurological Disorder

Most Common Age at Onset	Symptom	Diagnosis
yrs. 0-2	Recurrent episodes of crying and stiffness of body	Infantile functional colic or minor motor epilepsy
	Convulsions following holding of the breath	Breath-holding spells or epilepsy
2-6	Brief (momentary) episodes of inattentiveness and staring	Psychiatric disturbance or petit mal epilepsy
6-12	Somnambulism, night terrors, nightmares, and nocturnal laughing spells	Psychiatric sleep disorder or epilepsy
	Recurrent attacks of headache, abdominal pain, vomiting, and dizziness	Psychiatric disturbance or nonconvulsive epileptic equivalent
	Bizarre motor or psychic behavior	Psychiatric disorder or psychomotor epilepsy
12 through adolescence	Convulsions preceded by emotional upsets	Hysterical convulsion or major motor (grand mal) epilepsy
	Recurrent attacks of fainting	Psychiatric disturbance or epilepsy

stances the physical and neurological examinations give a clue to the diagnosis. When physical or neurological deficits are not detectable, the diagnosis may be made on the basis of the clinical history and the results of various laboratory procedures. This presentation is limited to the use of the clinical history and electroencephalography as diagnostic procedures in the evaluation of some of the symptoms that may be manifestations of a psychiatric or a neurological disorder (see Table I). For the purpose of this discussion, it is assumed that all other laboratory procedures appropriate for the case in question were nonrevealing.

39.2 NEUROLOGICAL EVALUATION IN CHILD PSYCHIATRY

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Psychiatric and neurological, especially epileptic, disorders may present similar symptoms. In some in-

Diagnostic Techniques

History. The importance of a comprehensive clinical history as a diagnostic tool cannot be overemphasized. Special attention should be directed to the age of onset and the prodromal features of the symptomatology, since these aspects frequently provide valuable diagnostic clues. For example, true petit mal epilepsy rarely, if ever, makes its onset during the first 2 years of life or after 15 years of age; and a

breath-holding convulsion is almost always preceded by an acute emotional upset and cry.

Electroencephalogram. In certain disorders, the electroencephalographic (EEG) examination reveals diagnostic abnormalities, such as the spike wave discharge of petit mal epilepsy and the hypsarrhythmic pattern of minor motor epilepsy. However, in other disorders, the electroencephalogram may show equivocal findings or may be normal. This is frequently the case in patients, particularly young children, who suffer with frank clinical evidence of major motor (grand mal) epilepsy.

Response to therapy. In those instances where the electroencephalographic examination is nonrevealing and the symptoms cannot be definitely classified on clinical grounds, one should make a tentative diagnosis initially and a final diagnosis in retrospect, depending on the response to drug therapy or psychotherapy. For example, in the case of a teen-ager who has recurrent major seizures in association with emotional upsets and a normal electroencephalogram, a definite diagnosis of hysterical convulsions or epilepsy cannot be made in many instances until one has had the opportunity to study the response to specific antiepileptic agents or psychotherapy.

Syndromes Requiring Differentiation between Psychiatric and Neurological Etiology

Recurrent episodes of crying and stiffness of the body. Young infants frequently present episodes of suddenly crying and holding themselves in a rigid position for a moment or so with their thighs drawn up toward their abdomen, appearing as if in pain. Sometimes there are fine trembling movements associated with the rigidity. In the absence of evidence of an organic central nervous system basis, these attacks are usually diagnosed as infantile colic. However, similar symptoms may be a manifestation of minor motor epilepsy (infantile spasms). The differentiation between these two disorders can usually be made on clinical grounds.

Minor motor epilepsy usually makes its initial appearance between 3 and 6 months of age. The spell of minor motor epilepsy varies somewhat in its clinical manifestations but most frequently consists of a sudden flexion or extension of the head with simultaneous extension of the arms and flexion of the thighs on the abdomen. It is frequently preceded or followed by a short cry, laugh, or giggle. The myoclonic feature, which is characteristic of the spell of minor motor epilepsy, is lacking in the clinical symptomatology of functional infantile colic. The spells of minor motor epilepsy almost always recur many times daily and frequently in series—10 to 15 spells in a row.

A definite differential diagnosis can be made with the use of the electroencephalogram. In minor motor epilepsy, the electroencephalogram reveals abnormalities almost always consisting of random high voltage spikes followed by large slow waves (hypsarrhythmia) as shown in Figure 1.

Convulsions following holding of the breath.

Breath-holding spells of the convulsive type can usually be easily differentiated on clinical grounds from epilepsy. The onset of breath-holding spells is usually during the first 2 years of life but rarely before 6 months of age. They tend to disappear spontaneously after 3 or 4 years of age and rarely recur after 6 years of age.

Breath-holding convulsions are almost always preceded by an obvious precipitating factor, such as a slight injury or some other provocative incident that creates an acute emotional upset in the child; in most instances, epileptic seizures occur spontaneously, without any apparent disturbing factor. Breath-holding episodes are preceded by crying and holding of the breath; young children with epilepsy rarely cry before an attack. Cyanosis appears with the crying and precedes the convulsions of breath-holding spells; in epilepsy the cyanosis usually appears after the onset of the convulsive movements. Opisthotonus almost always occurs in association with breath-holding spells; it rarely occurs with epileptic seizures. The electroencephalogram does not reveal specific abnormalities in patients with breath-holding convulsions.

Brief (momentary) episodes of inattentiveness and staring. A diagnosis of petit mal epilepsy should always be considered in a child who presents such disturbances as inattentiveness and staring episodes. It must be noted, however, that the most common age of onset of true petit mal epilepsy is between 4 and 8 years, and rarely much before 3 or after 15 years of age.

A diagnosis of petit mal epilepsy can almost always be established by carrying out the voluntary hyperventilation test and can be definitely established with the use of the electroencephalogram. A clinical spell can be precipitated in essentially all patients with petit mal epilepsy who are able to satisfactorily cooperate for the hyperventilation test. In most children, a clinical petit mal spell will appear after short periods, 1 to 2 minutes, of hyperventilation, but in



FIGURE 1. EEG of a 1-year-old child with minor motor epilepsy. This record was obtained during sleep artificially induced by secobarbital (Seconal). Note high voltage spikes followed by large slow waves (hypsarrhythmia).

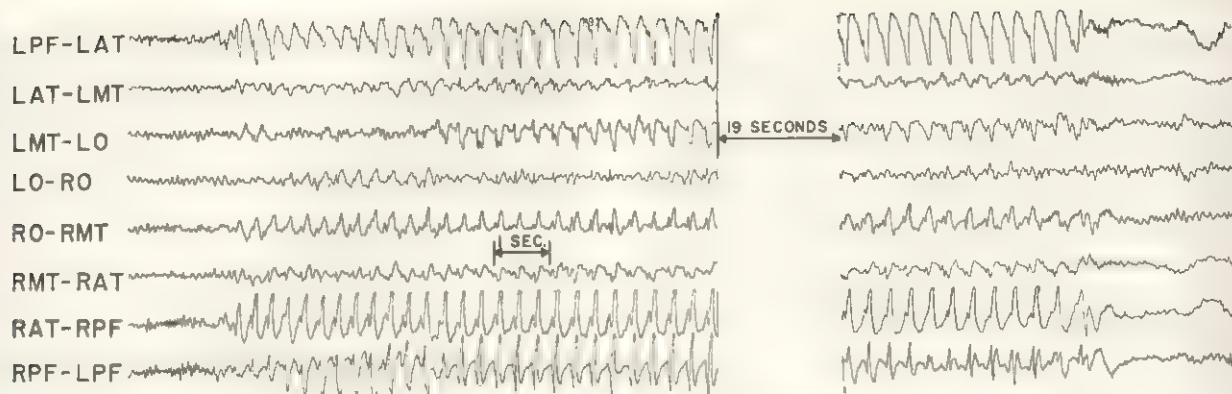


FIGURE 2. EEG in petit mal epilepsy in an 8-year-old child. The record was obtained when he was awake. Note the classic 3 per second spike and wave discharge. The patient had a concomitant clinical spell.

other instances it may be necessary to hyperventilate the patient for 4 or 5 minutes in order to precipitate a spell.

The electroencephalographic abnormality of petit mal epilepsy is classic and consists of diffuse, bilaterally synchronous spike and wave forms that recur at frequencies varying from $2\frac{1}{2}$ to 4 per second but usually at 3 per second (see Figure 2).

Somnambulism, night terrors, nightmares, and nocturnal laughing spells. The differentiation of disturbances of sleep of epileptic origin from those of psychiatric origin is frequently very difficult on clinical grounds. The occurrence of electroencephalographic abnormalities concomitant with clinical symptoms during either natural or artificially induced sleep is definite proof of an epileptic disorder. The occurrence of electrical abnormalities during the awake state or during sleep unassociated with clinical symptoms should be considered as suggestive evidence of an epileptic disorder.

In those patients with normal electroencephalograms, the occurrence of diurnal symptoms of epilepsy suggests an epileptic basis for the sleep aberrations; the presence of marked emotional disturbances, such as fears and anxieties, favors a functional basis. In most instances, however, a definite diagnosis cannot be made except in retrospect, depending on response to specific antiepileptic drugs or psychotherapy.

Some patients present behavioral aberrations of various types during the postconvulsive stage of a major motor epileptic seizure. Therefore, if such a relationship between a sleep disturbance and a major seizure is established, the diagnosis is unquestionably that of epilepsy.

Recurrent attacks of headache, abdominal pain, vomiting, and dizziness. These are among the most common complaints the pediatrician is called on to interpret. Since these symptoms may be associated with many disorders, it is essential that all known causes be explored before a specific diagnosis is made. In some instances, a definite neurotic basis can be established, such as in the case of children with

school phobia or other anxieties and frustrations. In many patients, however, a definite basis for these symptoms cannot be elicited; for this reason, they are usually designated as functional in origin.

One should bear in mind that recurrent attacks of headache, abdominal pain, vomiting, and dizziness may be the only clinical manifestations of an epileptic disorder (nonconvulsive epileptic equivalent). A diagnosis of nonconvulsive epileptic equivalent—autonomic epilepsy, diencephalic epilepsy, thalamic-hypothalamic epilepsy—should be assigned to children who suffer with these symptoms and in whom the electroencephalogram reveals abnormalities like those seen in patients with overt epilepsy. In those patients with normal electroencephalograms, the following factors constitute evidence in favor of an epileptic disorder: (1) concomitant disturbance of the sensorium followed by stupor or sleep; or, (2) a beneficial response to specific antiepileptic medication.

An electroencephalographic discharge consisting of 6 per second and 14 per second positive spikes (see Figure 3) has been reported in many children with recurrent headaches, abdominal pain, and other symptoms suggestive of autonomic dysfunction. This pattern is also found in patients with other forms of epilepsy and in a significant number of "normal" children. The nature and significance of the 6 and 14 phenomenon remain controversial.

Within recent years, it has become apparent that migraine is much more prevalent in children than was previously thought. The classic unilateral headache is not commonly seen in children. Migraine headaches in children are almost always associated with gastrointestinal disturbances, such as nausea, vomiting, and abdominal pain. In fact, abdominal pain and vomiting are frequently the predominant symptoms of a migraine disorder in the younger child and in many instances precede the onset of the headache.

The diagnosis of migraine should be considered in those children who suffer with recurrent paroxysmal headaches associated with gastrointestinal disturbances. Unilateral headache, visual disturbances, or a history of migraine in the family are additional

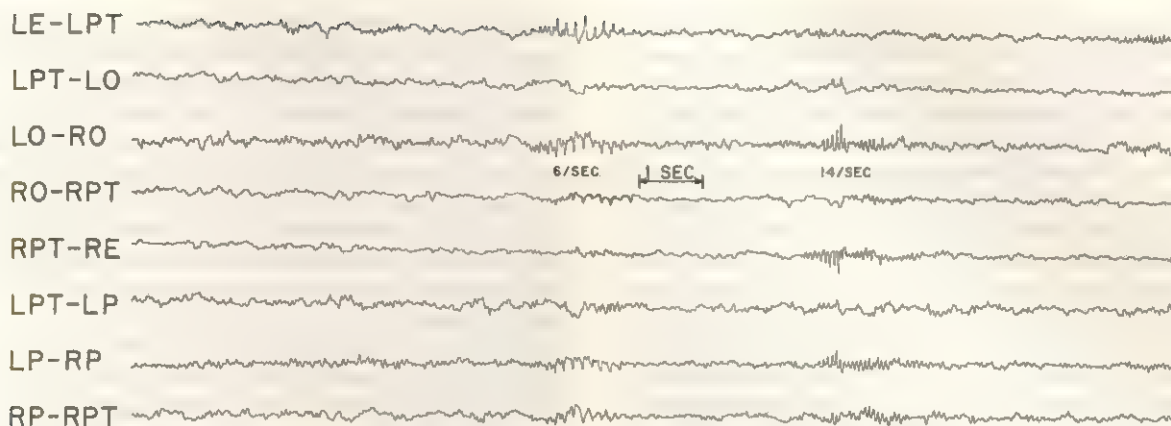


FIGURE 3. EEG of a 9-year-old child with recurrent attacks of abdominal pain. The record was obtained during light sleep artificially induced by chloral hydrate. Note 6 per second and 14 per second positive spike discharge.

features that confirm the diagnosis. The electroencephalogram does not reveal abnormalities diagnostic of migraine; therefore, this examination cannot be used as a differential tool.

Bizarre motor or psychic behavior. Since a wide variety of behavioral aberrations—such as hallucinations, fugues, confused states, amnesia, temper tantrums, rages, and bizarre motor performances—may be manifestations of psychomotor (or temporal lobe) epilepsy, one is often faced with the difficult problem of differentiating psychomotor epileptic seizures from a psychiatric disorder.

Some clinical features that assist in differentiating a psychomotor seizure from a psychiatric aberration are: (1) Psychomotor epileptic seizures occur abruptly and spontaneously without any apparent precipitating factor; emotional aberrations are usually preceded by some disturbing situation. (2) There is usually complete amnesia for the psychomotor attack; in the emotional disorder, the individual usually has some recollection of the event and of the circumstances that precipitated the behavioral abnormality.

Behavioral abnormalities are sometimes seen during the postconvulsive phase of a frank major seizure. They may last for short periods of time or for hours. The evaluation of these behavioral aberrations, obviously, should not present a problem.

Electroencephalography serves as an important differential diagnostic tool, since most patients with psychomotor epilepsy present anterior temporal electrical irregularities, most commonly spikes (see Figure 4). This electroencephalographic abnormality is seldom seen in patients much under 6 years of age. In those patients with normal electroencephalograms, a diagnosis of psychomotor epilepsy, in many instances, cannot be made on clinical grounds except in retrospect, using the response to specific antiepileptic medications as one of the major criteria.

Convulsions preceded by emotional upsets. In most instances, the differentiation between a hysterical convulsion and a true epileptic seizure is not difficult on clinical grounds. Hysterical convulsions

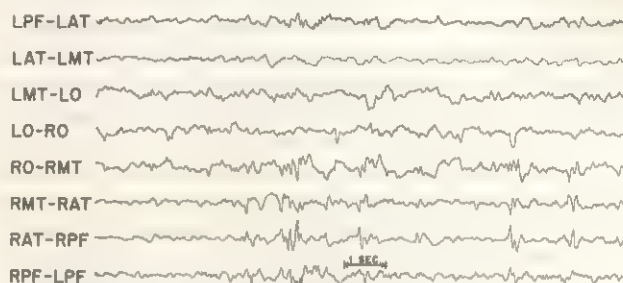


FIGURE 4. EEG of a 12-year-old child with psychomotor (or temporal lobe) epilepsy. This record was obtained during natural sleep. It shows spikes localized to the right anterior temporal area.

are encountered most frequently in the older child. They are not usually associated with biting of the tongue, and generally there is no urinary or fecal incontinence. As a rule, the onset of the hysterical convulsion is less sudden than that of true epilepsy, and, in most instances, bodily injury from this spell does not occur. Postconvulsive sleep or stupor, which is commonly seen following a frank epileptic convulsion, is generally not observed after a hysterical convulsion; when it does occur, the patient can be aroused easily.

The interseizure electroencephalogram in most patients with frank epilepsy reveals specific electrical irregularities, such as spikes, random spike and wave forms, and abnormally slow waves; in patients with true hysteria it is normal. An electroencephalographic examination performed on a hysterical patient during an active convulsion and immediately thereafter reveals normal findings, whereas an electroencephalographic tracing recorded during a frank epileptic seizure reveals continuous spiking and abnormally slow high voltage waves during the postconvulsive phase.

One rarely has the opportunity to perform an electroencephalographic examination during an active seizure, especially on ambulatory patients. Therefore, in those patients with normal electroencephalographic

records in whom the clinical findings are equivocal, a definite diagnosis can be made in many instances only after the passage of time and favorable response to specific antiepileptic drugs and/or psychotherapy.

Recurrent attacks of fainting. Fainting (syncope) is an exceedingly common complaint, and relatively few people have not experienced this disturbance sometime during their lives. In most instances it is without major implications. When syncopal attacks occur repetitiously, a differential diagnosis frequently proves to be difficult. When disorders such as brain tumor, congenital heart disease, hypoglycemia, orthostatic hypotension, and carotid sinus sensitivity can be ruled out on the basis of physical, neurological, and laboratory examinations, the diagnosis almost always lies between a functional disturbance and some form of epilepsy.

Recurrent functional syncopal attacks of momentary duration must be differentiated from nonconvulsive epileptic equivalents. Functional syncopal attacks of longer duration frequently simulate atonic epileptic seizures. Some features that may assist in differentiating these two disorders are: (1) Functional syncopal attacks are almost always preceded by an exciting or disturbing situation, and the individual is generally aware of the waning of consciousness: in epilepsy, although there is some relationship between emotional upsets and the occurrence of seizures, the attacks generally occur abruptly and spontaneously. (2) The occurrence of electroencephalographic abnormalities of the type seen in patients with overt epilepsy constitutes evidence of an epileptic disorder.

In those patients with normal electroencephalograms, the differentiation between functional syncopal attacks and epilepsy frequently presents a diagnostic dilemma, and in many instances a definite diagnosis can only be made after the passage of time.

The "hyperventilation syndrome," which is thought to be functional in origin, may simulate an epileptic disorder in some of its clinical manifestations. This disturbance is occasionally seen in the teen-ager, but it occurs most commonly in older individuals, particularly nervous, anxious women who have other functional disturbances related to tension.

A narcoleptic attack may simulate an atonic epileptic seizure because of its paroxysmal and recurrent nature. Narcolepsy differs from epilepsy in the following respects: (1) The narcoleptic sleep is usually shallow, and the patient can be easily aroused; the patient cannot usually be aroused from the unconsciousness associated with the epileptic spell. (2) There is mental alertness following recovery from a narcoleptic attack; the atonic epileptic seizure is generally followed by a period of disorientation and drowsiness. (3) Narcolepsy is apt to respond to amphetamines; atonic epilepsy is more likely to respond to anticonvulsant medication.

Narcolepsy is sometimes associated with sudden loss of muscular tone and weakness, the cataplectic

attack. These attacks may simulate the akinetic or drop epileptic seizure in the brevity and general appearance of the spell. The cataplectic spell differs from the epileptic seizure in the following respects: (1) The cataplectic attack is almost always precipitated by some emotional disturbance; the akinetic or drop epileptic seizure generally occurs spontaneously. (2) Consciousness is maintained throughout the cataplectic attack; there is at least a momentary disturbance of consciousness associated with the epileptic seizure.

Most investigators have reported normal electroencephalographic findings in patients with narcolepsy. Within recent years several investigators have reported that the electroencephalograms of some narcoleptics show the occurrence of rapid eye movements (REM waves) at the onset of sleep.

Suggested Cross References

For information regarding the conduct of neurological examinations on children and adults see Area D, on neurology. Epilepsy is discussed further in Ervin's chapter (Chapter 21) in Area F, which deals with the psychiatric disorders of adults.

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39.3 PSYCHOLOGICAL TESTING OF CHILDREN

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The principal focus of this section is on the evaluation of psychological tests and the interpretation of test results. Although the major types of ability and

personality tests currently available for use with children are described, no comprehensive survey of such instruments has been undertaken. Besides requiring far more space than is available, such a survey would be quickly outdated.

Because of the rapidity with which new tests are developed and revised editions of existing tests are prepared, the test user needs to be familiar with sources of information about tests. The most important of these is undoubtedly the series of *Mental Measurements Yearbooks* edited by Buros.¹ These yearbooks cover nearly all commercially available psychological, educational, and vocational tests published in English. While the coverage is especially complete for paper and pencil tests, major performance tests are also included. Each yearbook surveys tests published during a specified period, thus supplementing rather than replacing earlier yearbooks in the series. The *Sixth Mental Measurements Yearbook*, for example, includes tests published between 1959 and 1964. Beginning in 1938, the yearbooks have appeared at intervals of 2 to 6 years; understandably, these intervals have tended to lengthen as the volume of published tests has increased. Besides giving such routine information as price, length, general content, and age or other characteristics of persons for whom each test is designed, the yearbooks include critical reviews of the tests by one or more experts.

A comprehensive bibliography covering all published tests currently available in English-speaking countries is provided by *Tests in Print*, also edited by Buros. Information on recent tests, published in the years following the last available *Mental Measurements Yearbook*, can be found in several other sources. Short abstracts of new tests are regularly included in *Psychological Abstracts*. Reviews of current tests appear in a number of journals, such as the *Journal of Counseling Psychology* and the *Personnel and Guidance Journal*. For more detailed treatment of many of the problems discussed in this section, together with more extensive coverage of specific tests, the reader is referred to current textbooks on psychological testing, such as those by Anastasi and Cronbach. An excellent introduction to the use of tests in counseling and clinical practice is provided by Goldman.

Essential Technical Considerations in Test Evaluation

In evaluating the effectiveness and applicability of any psychological test, we need to ask certain basic questions regarding its reliability, validity, and norms. The information required to answer these questions should be provided in the test manual. When the necessary data are too extensive to fit conveniently into the manual itself, they may be presented in a technical supplement or published in other sources to

which references should be given in the manual. The present section provides an introduction to the principal concepts and techniques required for test evaluation and for the proper interpretation of test results. In this connection, reference is also made to the *Standards for Educational and Psychological Tests and Manuals*, a guide for test evaluation prepared and officially adopted by the American Psychological Association. First published in 1954, this guide was revised in 1966. It presents a summary of desirable practices in test construction, based upon the current state of knowledge in the field.

Reliability. Test reliability refers essentially to the consistency of scores obtained by the same individual on different occasions. Random fluctuations in test scores may result from several kinds of "chance errors" in test administration, scoring, condition of subject, or selection of items constituting a particular form of a test. Different methods for computing test reliability are influenced by one or more of these types of chance errors. Consequently, not all reliability coefficients have the same meaning. To interpret a reliability coefficient, it is necessary to know by what procedure it was found.

The principal procedures for computing test reliability include retest, equivalent form, split-half, and Kuder-Richardson techniques (for references, see Anastasi, 1961, Ch. 5). All these techniques report reliability in the form of a correlation coefficient between independently obtained measures. *Retest reliability* is the correlation between scores on the identical test administered at different times. The interval may vary from a few days to several months. Obviously this correlation shows degree of temporal stability from one test session to another. When parallel forms of a test are administered on the two occasions, the correlation between them represents *equivalent form reliability*. This measure is influenced by both temporal fluctuation and differences in subjects' responses to the two sets of items constituting the parallel forms.

The latter differences alone are measured by *split-half reliability*. The usual way to compute split-half reliability is to find each person's score on the odd-numbered items and on the even-numbered items. These two scores are then correlated and the reliability of the whole test estimated from this correlation of half tests. Like split-half reliability, *Kuder-Richardson reliability* is derived from a single test session. Being ultimately based on inter-item consistency, however, it is also influenced by homogeneity of test content. For example, in a test consisting of 50 vocabulary and 50 arithmetic items, the Kuder-Richardson reliability would be lower than in a test composed of 100 items of either type alone. Any discrepancy between subjects' performance on the verbal and numerical items would lower the Kuder-Richardson reliability of the first test.

Mention should also be made of *examiner* and *scorer reliability*. Most tests provide such highly

¹ All references cited by name are listed alphabetically at the end of this section. Tests are arranged in Table I, p. 1348, and alphabetized by title.

standardized procedures for administration and scoring as to leave little room for examiner variance. This is particularly true of group tests designed for mass administration and machine scoring. In most infant and preschool tests, however, as well as in other individual instruments for clinical testing, there is more opportunity for the examiner's judgment to operate. Under these conditions, some data on examiner reliability should be reported, in the form of a correlation between the results obtained by different examiners with the same subjects or through some other statistical index. Certain types of tests, such as projective personality tests, present special problems of scorer reliability. Whenever qualitative judgment is required in scoring, a sample of papers should be independently rescored by another examiner and the degree of agreement determined.

In interpreting the reliability coefficients reported in test manuals, certain precautions should be observed. The first relates to the subjects used in finding reliability. All correlation coefficients are affected by the range of scores or variability within the group. The greater the variability, the higher will be the correlation. Since tests are usually employed to differentiate among individuals within fairly narrow age levels, reliability coefficients should be reported separately for each level. This procedure also makes it possible to see whether the test is equally reliable at all ages. A single reliability coefficient found on a highly heterogeneous standardization sample, on the other hand, may be misleadingly high.

It should also be noted that reliability is directly related to test length. An abbreviated form of a test can thus be expected to show some loss in reliability. Similarly, subtests or parts of a test will have lower reliability than the complete test. If subtest scores are to be separately analyzed, as in a trait profile, reliability coefficients should be reported for each subtest.

With school-age children and older subjects, most well constructed tests of ability yield reliability coefficients clustering around .90. For infant and preschool tests, however, reliabilities tend to run lower. Among the conditions contributing to such low reliability are distractability, shyness, negativism, and other factors interfering with test administration. Reliability may be further lowered by scoring irregularities, since many test responses of the very young child consist of fleeting movements that leave no permanent record. Despite these difficulties, some of the more carefully developed infant tests, such as the Cattell Infant Intelligence Scale and the California First Year Mental Scale, yield split-half reliabilities between .70 and .95 after the first 3 months of age (for references, see Anastasi, 1961, Ch. 11).

Validity. The most important property of a test is undoubtedly its validity. The concept of validity concerns the relationships of a test to other data about the individual. An analysis of such relationships makes

it possible to state what the test measures and how well it does so. It is meaningless to report that a test is "valid" or possesses "high validity," without indicating the purpose for which it has the specified validity. For the selection of appropriate tests, as well as for the proper interpretation of test scores, full information is required regarding the procedures followed in estimating test validity.

In accordance with current usage, validity may be classified into three categories, namely, content validity, criterion-related validity, and construct validity. *Content validity* is most often used with educational achievement tests, although it also underlies the construction of certain personality inventories. This type of validity concerns primarily the adequacy with which the test items sample the content area to be measured. An achievement test, for example, may be checked against relevant course syllabi, textbooks, and the judgment of subject matter specialists. Coverage of essential topics, in the correct proportions, is the major consideration.

In *criterion-related validity*, test scores are correlated or otherwise compared with an outside criterion. The criterion is an independent index of those behavioral characteristics that the test is designed to measure. For example, a test of emotional instability may be validated by administering it to individuals known to have exhibited neurotic behavior, as well as to a normal control group. If the test differentiates significantly between the two groups, it is said to have concurrent validity for this criterion of emotional instability. Or an intelligence test may be administered to school children upon admittance to the first grade and their scores correlated with their educational achievement at the end of the school year. This correlation would represent the test's predictive validity against an academic criterion.

Construct validity is a very broad concept, covering a variety of validation procedures. It is concerned primarily with an experimental verification of hypotheses regarding the psychological traits or theoretical constructs that account for performance on the test. The most frequent application of this validation procedure is found in factorial validity. Thus if a factor of spatial visualization has been identified through factor analysis, the correlation of a test with this factor is its factorial validity. Essentially, this correlation indicates the extent to which the test measures an ability common to a group of similar tests which sample a relatively unified area of performance. Almost any experimental evidence regarding the correlates of test scores would contribute to construct validity. If, for example, a test is designed to detect anxiety, it could be administered to children before and after an anxiety-provoking experience (such as carrying out arithmetic computations under distracting and stressful circumstances). If the anxiety test scores rise significantly on the retest, the initial hypothesis regarding the test is confirmed. Still another

example of construct validation is provided by the age differentiation technique in terms of which most infant and preschool intelligence tests are validated. It is part of the construct of "intelligence" that this function improves with age in childhood. Therefore, individual test items, as well as total test scores, are checked against each child's age to see whether performance does in fact show progressive improvement with advancing age.

Norms. On any test, a "raw score," such as the number of items correct or the time required to complete a problem, is meaningless until compared with a norm or average performance. Psychological tests have no preestablished standards of passing or failing. Each new test must be administered to a large, representative sample of the population for which it is designed. The scores obtained by this group provide the test norms. Test manuals should always include such norms, together with information on the size and nature of the normative sample. The test user will then be able to evaluate the adequacy of the published norms and their applicability to the subjects he plans to test. Owing to differences in the characteristics of the samples upon which different tests have been standardized, the same individual may appear to perform much better on one test than on another, although both tests presumably measure the same trait. This is one of the reasons why test scores should always be accompanied by the name of the test with which they were obtained.

An individual's position in relation to the norms may be expressed in several ways. Basically, however, all such derived scores in current use fall into three categories: ratio I.Q.s, percentile ranks, and standard scores. The traditional intelligence quotient, or *ratio I.Q.*, is found by dividing a child's mental age by his chronological age. Theoretically, mental age represents the age of normal children whose test performance the child equals. Thus if a 10-year-old does as well on a test as the average 12-year-old, his mental age is 12, regardless of his chronological age. If, now, we divide his mental age ($M.A. = 12$) by his chronological age ($C.A. = 10$) and multiply by 100 to avoid decimals, we obtain an I.Q. of 120.

Despite its popular appeal, the traditional ratio I.Q. has serious technical deficiencies and has generally been replaced by more suitable measures. Few tests today have retained the ratio I.Q. Such I.Q.s can be properly employed only with age scales specifically constructed to yield comparable I.Q.s at different age levels. The essential requirement for such comparability is that the extent of individual differences, or variability, of I.Q.s shall remain constant at all ages. In statistical terms, this means that the standard deviation (σ) of the I.Q. distribution must be equal at all ages. This is a very difficult condition to impose upon the test constructor and has never been completely met in practice. When the condition is not met, an I.Q. of 115 at age 10, for example, might be equiva-

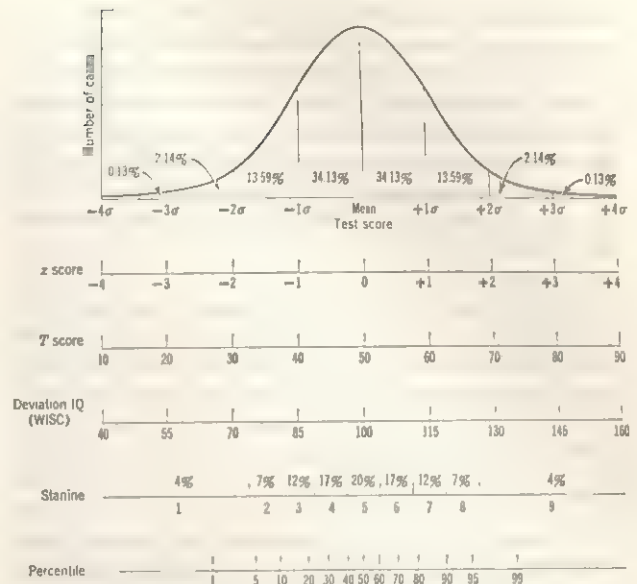


FIGURE 1. Varieties of test norms.

lent to an I.Q. of 140 at age 12, since both might fall at a distance of one standard deviation from the means of their respective age distributions.

A second major type of score is the *percentile rank*, which indicates the percentage of cases in the normative sample falling at or below the subject's score. Percentiles are not to be confused with the ordinary percentage score representing the percentage of items correctly completed. The percentile rank refers to persons, not items. Although satisfactory for crude evaluative purposes, percentiles do not provide a precise measure because of marked inequalities in size of units. Owing to the greater clustering of cases at the center of the range and the decrease in number of persons as the extremes are approached, percentile units near the center (i.e., 50) cover a much smaller distance than do those near the ends of the scale (i.e., 0 and 100). These size discrepancies can be seen by reference to the bottom scale of Figure 1. While percentile ranks correctly indicate the relative position of different individuals, they do not accurately reflect differences in amount of a trait.

The most precise measure is provided by *standard scores* and their various derivatives. In all such scores, the individual's distance from the mean is expressed in standard deviation units (σ). Thus if the normative sample has a mean of 38 and a standard deviation of 4, a raw score of 34 would correspond to a standard score of -1.00 . Such simple standard scores, utilizing the original σ of the distribution as their unit, are called *z scores* (see Figure 1). Several available derivatives of *z scores* provide more convenient scales, which avoid the use of negative numbers. An example is the *T score*, representing standard scores in a normal distribution with a mean of 50 and a σ of 10. As can be seen in Figure 1, a *T score* of 40 cor-

responds to a z score of -1.00 . Another type of standard score is the stanine, which utilizes a single-digit scale ranging from 1 to 9 and having a mean of 5 and a σ of 2. Because there are so few cases at the extremes of the distribution, stanines 9 and 1 represent larger units than the other stanines, extending from $+1.75\sigma$ to the upper end of the distribution and from -1.75σ to the lower end of the distribution, respectively (see Figure 1).

Of particular interest is the deviation I.Q., currently employed in the Wechsler Intelligence Scale for Children (WISC), the Stanford-Binet, and other recently developed intelligence scales. WISC deviation I.Q.s are actually standard scores with a mean of 100 and a σ of 15. Thus a child with a deviation I.Q. of 100 falls exactly at the mean of his age group. Deviation I.Q.s of 115 and 85 correspond to 1σ above and 1σ below the mean, respectively; a deviation I.Q. of 130 falls 2σ 's above the mean, and so forth. In the 1960 form of the Stanford-Binet, the earlier ratio I.Q. was replaced with a deviation I.Q. having a mean of 100 and a σ of 16. The latter value was chosen because it approximates most closely the standard deviations of the ratio I.Q.s found with the earlier forms of the Stanford-Binet and thus permits continuity of interpretation among forms.

Problems of Test Administration

Each type of test and each age level presents its own characteristic problems of test administration. The proper use and interpretation of most personality tests, for example, require extensive psychological training and experience. To qualify for the administration of individual intelligence tests such as the Stanford-Binet, as well as for any infant and preschool testing, the examiner needs an intensive course of specialized training. Practical suggestions for testing infants and preschool children are given by Goodenough (Ch. 20) and by Watson (Ch. 12). Terman and Merrill (pp. 46-58) discuss general procedures for the individual examination of older children.

Standardized procedure. Test scores are of little or no value unless obtained under uniform testing conditions. Failure on the part of inadequately trained examiners to realize the susceptibility of test performance to even slight variations in conditions is one of the chief causes of inaccurate test results. The need for uniformity applies not only to such obvious factors as time limits and wording of directions, but also to more subtle conditions. In certain tests, for example, performance may be appreciably affected by the rate at which the examiner speaks, where he places emphasis and when he pauses in his presentation, his facial expression while pronouncing key words that might reveal the correct answer, and the position of materials to be used by the subject. Any unusual condition of the subject, such as illness, fatigue, or excessive worry, may also affect test scores adversely. Even the nature of the subject's activities

immediately preceding a test must be taken into account. In two studies with the Goodenough Draw-a-Man Test of Intelligence, the mean scores obtained by school children were significantly higher after an emotionally gratifying experience than after a neutral or depressing activity (for references, see Anastasi, 1961, p. 63).

Emotional and motivational factors. Underlying the use of all ability tests is the assumption that the individual is "doing his best." Consequently, if conditions are to be kept uniform in this regard, every person should be motivated to put forth his maximum efforts on the test. Among the emotional and motivational conditions found to affect test performance are praise, reproof, ridicule, knowledge of results, presence of observers, competition and rivalry, and various conditions evoking feelings of frustration, failure, and discouragement. With preschool children, experience with adults outside the immediate family is likely to affect performance on individually administered intelligence tests. When a group of children were examined with the Stanford-Binet upon entering kindergarten and retested with a parallel form 2 months later, a significant mean rise in I.Q. was found (for references, see Anastasi, 1961, pp. 49-50). This gain was attributed largely to the effect of the kindergarten experience in reducing shyness, fear of strangers, and other attitudes inhibiting oral speech. Support for this hypothesis was found in the fact that the mean test-retest improvement was only 4.7% in manipulatory tasks, as contrasted with 11.2% in the oral items.

The nature and effects of "test anxiety" among school children have also been extensively investigated, particularly by Sarason and his associates at Yale. There is evidence that children vary widely and consistently in their susceptibility to anxiety while taking tests and that high degrees of anxiety have a deleterious effect on test performance.

It is likely that motivational factors in general are especially influential in the test performance of certain types of children, such as preschool children, emotionally maladjusted children, ethnic minorities, and members of lower socioeconomic classes. Juvenile delinquents, also, may approach tests with unfavorable attitudes, such as suspiciousness, insecurity, fear, or cynical indifference. Specific kinds of past experiences in the lives of some children may influence their test performance adversely. Because of early failure and frustration experienced in school work, for example, they may have developed feelings of hostility and inferiority toward any academic task, which most intelligence tests resemble.

Rapport and examiner variables. An important aspect of the examiner's function, particularly in the administration of individual clinical instruments, is the establishment of rapport. Essentially, this is a process for arousing interest and eliciting cooperation from the subject so that the objectives of the test will be most fully attained. In the case of an ability test,

good rapport means that the subject performs to his fullest capacity. On a self-report personality inventory, it means frank and accurate reporting of personal problems and difficulties rather than choosing answers to create a desired impression. Whether the latter tendency can ever be eliminated through proper rapport is doubtful; but it can at least be reduced.

The specific techniques for establishing rapport vary, not only with the objectives of the test, but also with the age and other characteristics of the subjects. In testing preschool children, for example, special factors to be considered include shyness with strangers, distractability, and negativism. A friendly, cheerful, and relaxed manner on the part of the examiner helps to reassure the child. The shy, timid child may need more time to become familiar with his surroundings before testing is begun. For this reason, it is better for the examiner not to be too demonstrative at the outset and to wait until the child is ready to make the first contact. At this age level, test sessions should be brief and the tasks should be varied and intrinsically interesting to the child. The testing should be presented as a game and the child's curiosity aroused before each new task is introduced. Some flexibility of procedure is necessary at these ages because of possible refusals, loss of interest, and other instances of negativism.

In the testing of children in the primary grades, the "game" appeal is still the most effective way of arousing interest in the test. The older school child, on the other hand, can usually be motivated by an appeal to his competitive spirit and his desire to do well on all kinds of tests. It should be kept in mind, however, that every test presents an implied threat to the individual's prestige. Some reassurance is therefore needed at the outset. The examiner should explain, for example, that no one is expected to finish or to get all items right. It should also be remembered that all these procedures for establishing rapport may need to be modified when testing children with special problems or backgrounds, as mentioned in the preceding section.

That test performance, particularly on individually administered intelligence tests and on projective tests, is significantly affected by examiner and situational variables is evidenced in a number of studies surveyed by Sarason (1954) and by Masling (1959, 1960). Among the significant examiner variables are age, sex, professional and social status, appearance, and such behavioral characteristics as self-confidence, aggressiveness, responsiveness, and social warmth. Situational variables are illustrated by the place where the test is given (school, clinic, hospital, prison, psychology laboratory), the expectations and attitudes established by the way the forthcoming test is presented to the subject, and the nature of specific instructions. The effect of all such conditions can be best conceptualized in terms of interaction between subject variables and examiner or situational variables. For example, such factors as ego-involving instructions and ex-

aminer's appearance have a different influence on subjects with different personality characteristics.

Practice, coaching, and test sophistication. It has been repeatedly demonstrated that scores on intelligence tests can be appreciably improved by practice and coaching (for references, see Anastasi, 1961, pp. 54-57). The effects differ widely, however, with the nature of the test and with the age, ability, and previous experience of the subjects. With certain tests, repetition of the identical form within a few weeks may make the retest score meaningless because of recall of previous responses by the subject. Even retesting with alternate forms generally produces some improvement over short time intervals. In such cases, some adjustment in score should be made to allow for practice effect. General test sophistication must also be considered in interpreting test performance. The child who has had extensive test-taking experience will usually score higher than the one who is taking his first test.

With regard to the effect of coaching upon test scores, a fundamental question pertains to the breadth of the resulting improvement. Is the improvement limited to the specific test items, or does it extend to the broader area of behavior that the test is designed to predict? The answer to this question represents the difference between coaching and education. Rote memorization of the correct responses to a list of vocabulary test items can markedly raise a child's score on that particular test without appreciably improving his general appreciation of word meanings. This would be coaching in the narrow sense and would reduce the predictive validity of the test for that child. On the other hand, a year of carefully selected reading, accompanied by a discussion of word meanings, would improve *both* the child's vocabulary test score and his general verbal comprehension, thereby leaving unaltered the test's validity.

Intelligence Tests

Testing the school child. It was for the school child that intelligence tests were first designed. In 1904, the French psychologist Alfred Binet was appointed to a commission to study the problem of retardation among Paris school children. Although for many years he had been exploring different approaches to the measurement of intelligence, it was to meet this practical demand that Binet, in collaboration with Simon, developed the first Binet-Simon Scale. Partly because they originated in an educational context and partly because they are commonly validated against academic criteria, intelligence tests measure primarily those abilities essential for academic achievement. For this reason, they are often more accurately described as tests of scholastic aptitude.

Typically, intelligence tests provide a global score, such as an I.Q., purported to indicate the individual's general intellectual level. They include a wide variety of tasks, on the assumption that through "the sinking of shafts at critical points" all important intellectual

TABLE I
Psychological Tests

The following table contains a list of all tests cited in this article. It is *not* to be construed as a comprehensive or recommended list; each test was mentioned only to illustrate a category. For a more complete coverage of available tests and for evaluations of each test, the reader should refer to current textbooks of psychological testing and especially to the *Mental Measurements Yearbooks* cited in the appended references section. It should be noted that the names of tests do not provide a reliable guide to the functions measured by the tests or the uses to which they may be put.

Title	Major Category ^a	Author(s)	Publisher	Date(s)	Age or Grade Range	MMY ^b
The Blacky Pictures: A Technique for the Exploration of Personality Dynamics	P	G. S. Blum	Psychodynamic Instruments, Ann Arbor	1950-1962	5 yrs. and over	6, 204
California Test of Personality, 1953 Revision	P	L. P. Thorpe, W. W. Clark, and E. W. Tiegs	California Test Bureau, Monterey, Calif.	1953	Kindergarten to adult, in 5 levels	5, 38
Cattell Infant Intelligence Scale	C	Psyche Cattell	Psychological Corporation, New York	1940-1960	3-30 mos.	3, 281
Children's Apperception Test (CAT)	P	L. Bellak and Sonya S. Bellak	C. P. S. Co., New York	1949-1961	3-10 yrs.	6, 206
Differential Aptitude Tests (DAT), Forms L and M, 1963 Edition	C	G. K. Bennett, H. G. Seashore, and A. G. Wesman	Psychological Corporation, New York	1963	Grades 8-12	6, 767
Gesell Developmental Schedules	C	A. Gesell et al.	Psychological Corporation, New York	1925-1949	4 wks.-6 yrs.	6, 522
IPAT Children's Personality Questionnaire	P	R. B. Porter and R. B. Cattell	Institute of Personality and Ability Testing, Champaign, Ill.	1959-1960	8-12 yrs.	6, 122
Jr.-Sr. High School Personality Questionnaire	P	R. B. Cattell and H. Beloff	Institute of Personality and Ability Testing, Champaign, Ill.	1953-1964	12-18 yrs.	6, 131
Metropolitan Readiness Tests	C	Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvrau	Harcourt, Brace & World, New York	1965	Grade 1 entrance	(4, 570)
Mooney Problem Check List: 1950 Revision	P	R. L. Mooney and L. V. Gordon	Psychological Corporation, New York	1950	Grades 7-16 and adult, in 4 levels	6, 145
Rorschach	P	Hermann Rorschach	Hans Huber (U.S. distributor; Grune & Stratton, New York)	1921-1960	Ames et al. norms, 2-16 yrs.	6, 237
Rosenzweig Picture Frustration Study: Form for Children	P	S. Rosenzweig	S. Rosenzweig, St. Louis, Mo.	1948-1960	4-13 yrs.	6, 238
Sequential Tests of Educational Progress (STEP)	C	Cooperative Test Division, Educational Testing Service	Educational Testing Service, Princeton	1956-1963	Grades 4-14, in 4 levels	6, 25
SRA Junior Inventory, Form S	P	H. H. Remmers and R. H. Bauernfeind	Science Research Associates, Chicago	1957	Grades 4-8	5, 104
SRA Youth Inventory, Form S	P	H. H. Remmers, B. Shimberg, and A. J. Drucker	Science Research Associates, Chicago	1956	Grades 9-12	6, 170
Stanford-Binet Intelligence Scale, Form L-M	C	L. M. Terman and Maud A. Merrill	Houghton Mifflin, Boston	1960	2 yrs. and over	6, 536
Thematic Apperception Test (TAT)	P	H. A. Murray	Harvard University Press, Cambridge, Mass.	1943	4 yrs. and over	6, 245
Wechsler Intelligence Scale for Children (WISC)	C	D. Wechsler	Psychological Corporation, New York	1949	5-15 yrs.	6, 540

^a Test designed to measure primarily cognitive (C) or personality (P) traits.

^b Volume and entry number in *Mental Measurements Yearbooks* where latest information and critical reviews of the test can be located, including references to earlier reviews. When the latest edition of a test has not yet been reviewed in MMY, reference to earlier edition is given in parentheses.

functions will be sampled. In actual practice, however, intelligence tests are overweighted with certain functions, usually verbal aptitudes, and may completely omit others.

The Binet-Simon tests were translated and adapted for use in many countries. In America, the most notable adaptation is the Stanford-Binet, developed by Terman and his associates at Stanford University. The latest revision of this test, published in 1960, is widely used as a clinical instrument. Extending from the 2-year level to three superior-adult levels of increasing difficulty, the test yields a mental age and a deviation I.Q. The standard materials employed in administering this test are pictured in Figure 2. Objects, pictures, and drawings are used largely at the younger ages; printed verbal and numerical materials occur increasingly at the older age levels. Oral questions and answers are common throughout the scale.

Another individual test commonly used in the clinical examination of children is the Wechsler Intelligence Scale for Children (WISC). This scale provides separate verbal and performance I.Q.s based on different sets of tests, as well as a full scale I.Q. Figure 3 shows a child taking one of the WISC performance tests, the object assembly test.

Both the Stanford-Binet and the WISC are individual tests, which must be administered to each subject singly and which require a highly trained examiner. They are essentially clinical instruments for the intensive study of individuals. In addition to the quantitative scores, such tests provide opportunities for observing work methods, social and emotional reactions, and other qualitative aspects of the child's behavior. Group tests, on the other hand, are designed for rapid mass testing. They not only enable a single examiner to test a large group during one session, but they are also relatively easy to administer and score. Group tests, of course, may also be administered individually. They are useful when a crude index of intellectual level suffices or when facilities for more intensive testing are unavailable. A number of well constructed and carefully standardized group tests have been developed for use from the first grade to college (for references, see Anastasi, 1961, Ch. 9).

Mention should also be made of nonlanguage and performance tests (for references, see Anastasi, 1961, Ch. 10). Comprising both individual and group tests, these instruments were designed especially for children with hearing, speech, or reading disabilities; the foreign-speaking; and the culturally disadvantaged. Other tests have been adapted for use with the blind or the orthopedically handicapped. Performance tests may also be employed as a supplement to such tests as the Stanford-Binet, in order to provide a fuller picture of the child's intelligence. The inclusion of performance tests in the WISC illustrates this approach.

Prechool and infant testing. Tests applicable prior to school entrance are conventionally subdivided into infant tests, designed for the first 18 months of

life, and preschool tests, covering the ages of 18 to 60 months (for references, see Anastasi, 1961, Ch. 11). The two levels require different procedures of test administration. The infant must be tested while lying



FIGURE 2. Test materials employed in administering the Stanford-Binet. (Courtesy Houghton Mifflin Co.)



FIGURE 3. Child taking the object assembly test of the Wechsler Intelligence Scale for Children. When properly assembled the pieces form a human figure. (Courtesy The Psychological Corporation.)

down or supported on someone's lap. Speech is of little or no use in giving test instructions, although the child's own speech development provides relevant data. Most of the tests at this level are actually controlled observations of sensorimotor development, as illustrated by the infant's ability to lift his head, turn over, reach for and grasp objects, or follow a moving object with his eyes. At the preschool level, on the other hand, the child can walk, sit at a table, use his hands in manipulating test objects, and communicate by language. At these ages, the child is also much more responsive to the examiner as a person, while for the infant the examiner serves chiefly as a means of providing stimulus objects. Preschool testing is a more highly interpersonal process, a fact that increases both its difficulties and its opportunities for observation.

One of the most extensive investigations of infant and preschool behavior is that initiated by Gesell at the Yale Clinic of Child Development. Following longitudinal studies of the normal course of development in the human child, Gesell and his associates prepared the Gesell Developmental Schedules (Gesell and Amatruda). These schedules are essentially a refinement and elaboration of the qualitative observations routinely made by pediatricians. Although a few may be properly described as tests, most of the items in the Gesell Schedules are based on observations of the child's everyday behavior. Data are obtained through direct observation of the child's responses to standard toys and other stimulus objects (see Figure 4) and are supplemented by information provided by the mother. The schedules yield separate scores indicating the level of the child's behavioral development, relative to the norms, in four areas: motor, adaptive,

language, and personal-social behavior. While extending from the age of 4 weeks to 6 years, the Gesell Schedules typify the approach usually followed in infant testing. Items from these schedules have been incorporated in several other scales designed for the infant level.

A more highly test-oriented approach is illustrated by the Cattell Infant Intelligence Scale. Extending from 2 to 30 months, this scale was developed as a downward extension of the Stanford-Binet and also includes some items from the Gesell Schedules. If a child passes any test at the 30-month level, testing is continued with the Stanford-Binet, beginning at the 3-year level. Between 22 and 30 months, Stanford-Binet items are intermingled with other items in the Cattell scale. A continuous scale is thus provided from the age of 2 months to the adult level.

A few scales have been developed for the preschool level only. In procedure and content, they have much in common with the lower levels of the Stanford-Binet and of performance tests (for references, see Anastasi, 1961, pp. 289-300).

Long term prediction. Theoretically, if a child maintains the same status relative to his age norms, his I.Q. should remain the same at all ages. Empirically, the I.Q. has in fact proved to be fairly constant for most children. In a follow-up of the Stanford-Binet standardization sample, for example, tests administered between the ages of 2 and 5½ years correlated .65 with retests after 10 years and .59 with retests after 25 years (Bradway, Thompson, and Cravens). Other longitudinal studies with preschool and school age children have yielded similar results (Bayley; Cattell; Honzik, Macfarlane, and Allen). On the other hand, scores on infant tests, obtained



FIGURE 4. Test objects employed with the Gesell Developmental Schedules. (Courtesy The Psychological Corporation)

prior to the age of 18 months, are virtually useless in predicting intellectual level in late childhood. The correlations between these tests and I.Q.s during school ages are usually zero or low negative (Bayley). In their present form, infant tests find their chief usefulness in the early detection of severe retardation resulting from organic causes of either hereditary or environmental origin. Among the reasons for the negligible correlations between infant tests and later intellectual performance is the heavy reliance of infant tests on sensorimotor functions. These functions bear little relation to the verbal and other abstract functions that comprise intelligence in later years.

Even in later childhood, however, the I.Q. cannot be regarded as rigidly fixed. A major reason for the usual stability of the I.Q. is that most children remain in the same type of environment throughout their development. Another is that their previous experiences determine their level of attainment in prerequisite intellectual skills needed for subsequent learning. An early deficiency thus becomes cumulative unless corrected by special remedial programs.

Longitudinal studies have demonstrated that in individual cases large upward or downward shifts in I.Q. may occur, depending upon the child's subsequent experiences. In one extensive follow-up project, individual I.Q. changes of as much as 50 points were found (Honzik, Macfarlane, and Allen). Between the ages of 6 and 18 years, when retest correlations are usually high, 59 per cent of the cases changed 15 or more I.Q. points, 37 per cent changed 20 or more points, and 9 per cent changed 30 or more points. These changes were not random or erratic, but exhibited consistent upward or downward trends over several years. Large shifts in I.Q., moreover, were usually associated with cultural milieu and emotional climate of the home. Children in disadvantaged environments tended to lose with age, while those in superior environments tended to gain, in relation to test norms. Changes in I.Q. have also been found to be related to certain personality characteristics of the child, such as emotional independence and achievement motivation (Sonntag, Baker, and Nelson).

Aptitude Tests

Shortly after the first intelligence tests came into general use, their limited coverage became apparent and efforts were made to construct tests of special aptitudes to fill the gaps (for references, see Anastasi, 1961, Chs. 14 and 15). Since most intelligence tests concentrate on the more abstract verbal and numerical abilities, a particular need was felt for tests measuring the more concrete and "practical" intellectual skills. Accordingly, mechanical aptitudes were among the first for which special tests were developed. Tests of clerical aptitude, measuring chiefly perceptual speed and accuracy, and tests of musical and artistic aptitudes followed. Many of these tests are particularly useful in vocational counseling.

Following the application of factor analysis to research on the composition of intelligence, it was recognized that intelligence tests themselves cover a limited number of relatively independent aptitudes. As a result of these findings, many recently developed intelligence tests report separate scores on verbal and numerical abilities, either in place of a total composite score or in addition to it. Another related finding is that different intelligence tests may measure different combinations of abilities. Nonlanguage and performance tests, for example, are often heavily loaded with spatial and perceptual abilities; some intelligence tests are almost entirely measures of verbal comprehension; still others combine verbal and numerical functions. Even a single scale, such as the Stanford-Binet, may measure different functions at different age levels (for references, see Anastasi, 1961, pp. 204-205). The diversity of functions measured by different intelligence tests provides one of the reasons for insisting that every test score be accompanied by the name of the test from which it was derived. An unlabeled "I.Q." may be quite misleading.

The most direct effect of factor analysis upon psychological testing has been the development of multiple aptitude batteries. Rather than yielding a single global score, such as an I.Q., these batteries provide a profile of scores on separate tests, most of which correspond more or less closely to traits identified through factor analysis. Several batteries of this type are now commercially available (for references, see Anastasi, 1961, Ch. 13). An example is the Differential Aptitude Tests (DAT), for which the largest amount of validity information has so far been gathered. The DAT yields scores in eight abilities: verbal reasoning, numerical ability, abstract reasoning, clerical speed and accuracy, mechanical reasoning, space relations, spelling, and grammar. In Figure 5 is a profile chart showing the DAT scores of a junior high school boy whose greatest strengths are in verbal reasoning and numerical ability. The score in the third column, based on the sum of these two scores, gives a single index of scholastic aptitude similar to that obtained from most intelligence tests.

Factorial analyses conducted at different ages suggest that intelligence may be relatively undifferentiated in early childhood, becoming increasingly specialized with age. Consequently, multiple aptitude batteries are most useful in the testing of older children and adolescents. One of their chief applications has been in educational and vocational counseling.

Educational Tests

Although nearly every type of test is used in schools, certain tests have been specially developed for educational purposes. Of particular interest are tests of readiness, tests of special educational disabilities, and educational achievement batteries (for references, see Anastasi, 1961, Chs. 16 and 17; Cronbach, Ch. 13).

Readiness tests. Readiness tests are designed to as-

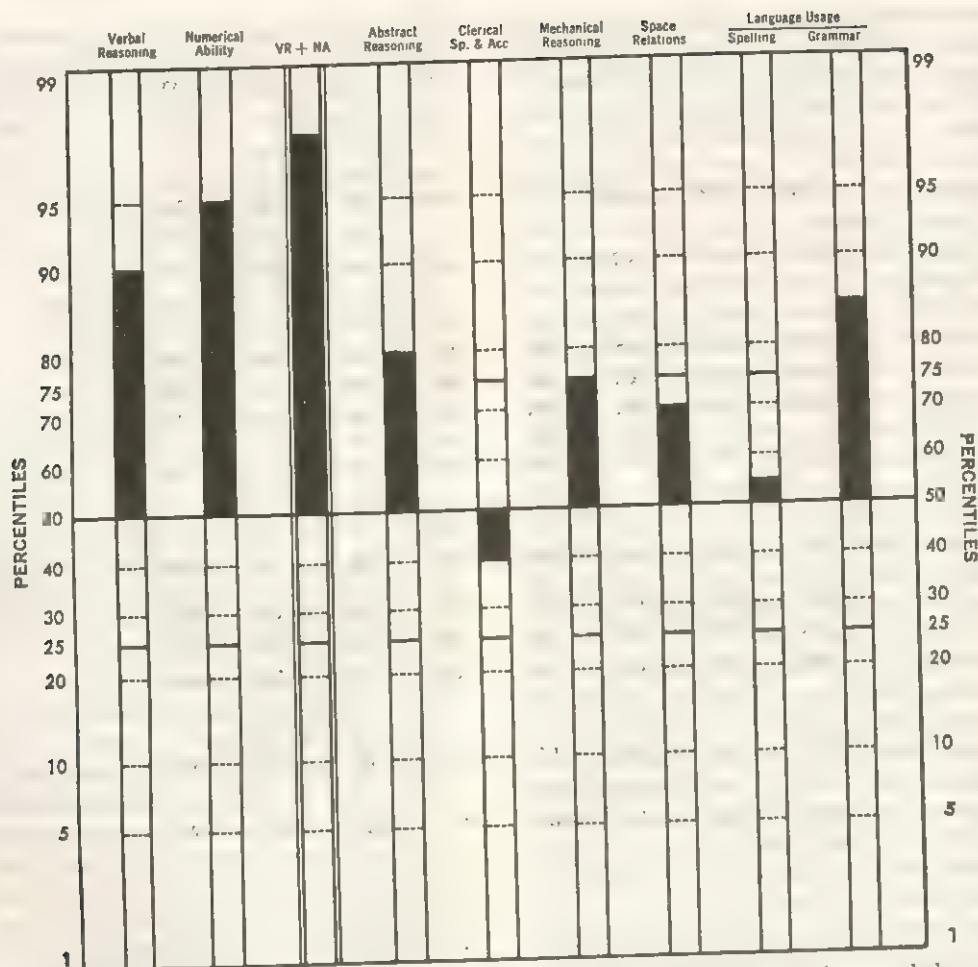


FIGURE 5. Profile of scores on the Differential Aptitude Tests. Vertical bars show distance above or below norm on each test. Percentiles are spaced to correspond to equal distances in a normal distribution. (Reproduced by permission Copyright 1963, The Psychological Corporation.)

sess the child's specific qualifications for school work. Essentially "readiness" refers to the development of prerequisite skills and knowledge that enable the learner to profit maximally from a certain kind of instruction. Individual differences in the reading readiness of 1st grade school children provide a familiar example. At one time, readiness was considered largely in terms of maturation. To be sure, the attainment of certain minimum physical prerequisites facilitates some kinds of learning. Unless he can make the necessary auditory discriminations, the child cannot learn to speak by the usual procedures; without the ability for fine motor coordination, he cannot manipulate a pencil in writing. Most school learning, however, is not so closely related to sensorimotor development. In the mastery of educational tasks, the importance of prior learning is being increasingly recognized. More and more emphasis is being placed upon the hierarchical development of knowledges and skills, whereby the acquisition of simpler concepts equips the child for the learning of more complex concepts at any age.

Readiness tests are often administered upon school

entrance. At this level, they have much in common with intelligence tests for children in the primary grades. In the readiness tests, however, special emphasis is placed upon those abilities found to be most important in learning to read; some attention is also given to the prerequisites of numerical thinking and to the sensorimotor control required in learning to write. Among the specific functions covered are visual and auditory discrimination, motor control, verbal comprehension, vocabulary, quantitative concepts, and general information. A well known example is the Metropolitan Readiness Tests. Comprising six subtests, this test yields a total readiness score for 1st grade work.

Tests of special educational disabilities. At all educational levels, tests are available to aid in the diagnosis and remedial training of children with special educational disabilities, principally in reading and arithmetic. Since the treatment of reading disabilities is of special interest to psychologists, reading tests are probably more often used in clinical examinations than any other type of educational test. Reading tests are customarily classified as survey and diag-

nostic tests. Survey tests indicate the general level of the child's achievement in reading. They usually provide a single score, although some differentiate between speed of reading and comprehension. These tests serve largely to screen children in need of remedial instruction.

Diagnostic tests are designed to analyze the child's performance and identify specific sources of difficulty. Although all such tests yield more than one score, they range from group tests providing little more information than a survey test to intensive clinical programs for individual case studies. Some include detailed checklists of specific types of errors. The individual batteries frequently employ apparatus, such as tachistoscopes for controlling rate of exposure of printed matter and ophthalmographs for photographing the child's eye movements while he reads. In dealing with reading disabilities, information about possible emotional difficulties and a complete case history are also essential.

Educational achievement batteries. Of all tests used in schools, the most numerous are undoubtedly achievement tests, the principal aim of which is to measure the effects of a course of study. Some are comprehensive achievement batteries, designed to assess the pupil's over-all progress in school work; others test for mastery of specific subjects or courses. In keeping with modern curricular trends, many achievement tests today measure the attainment of relatively broad educational goals cutting across different subject matter specialties.

An outstanding example is the Sequential Tests of Educational Progress (STEP). These tests are available at several levels extending from the 4th grade of elementary school to the sophomore year of college. At each level, there are seven tests, including multiple choice tests in reading, writing, mathematics, science, social studies, and listening, as well as an essay writing test. Although the need for specific knowledge in particular fields was recognized in constructing STEP items, major emphasis was placed upon the application of learned skills to the solution of new problems.

Achievement tests have traditionally been contrasted with intelligence tests. From one angle, the difference between them stems from the degree of uniformity of relevant antecedent learning. Achievement tests measure the effects of relatively standardized sets of experiences, such as a course in 4th grade arithmetic or American history. By contrast, intelligence test performance reflects the cumulative influence of a multiplicity of experiences of daily life. Thus, achievement tests may be said to measure the effects of learning under partially known and controlled conditions, whereas intelligence tests measure the effects of learning under relatively uncontrolled and unknown conditions.

In this connection we should guard against the erroneous assumption that achievement tests are concerned with the effects of learning, while intelligence

tests tap "innate capacities" independently of learning. Although this misconception was prevalent in the early days of psychological testing, it is now recognized that all tests measure current developed abilities, which inevitably reflect the influence of prior learning. It should also be added that several recently developed achievement tests cover relatively broad and unstandardized educational experiences, thus overlapping traditional achievement and intelligence tests. A particularly good example is provided by the previously cited STEP. Stressing broad intellectual skills, STEP resembles intelligence tests more closely than it does the older type of achievement tests with their emphasis on recall of specific factual content.

Creativity Tests

The growing recognition that creative talent is not synonymous with academic intelligence, as measured by traditional intelligence tests, has been accompanied by vigorous efforts to develop specialized tests of creativity. An extensive investigation by Guilford and his associates, utilizing the techniques of factor analysis, has produced a variety of new types of tests as well as a theoretical schema for integrating creative functions into a broadened conception of intelligence.

Several tests designed in the Guilford project have been adapted for use with children. The research of Getzels and Jackson with high school students and of Torrance with younger children has utilized such creativity tests, and has provided suggestive data on the concomitants of creative achievement in childhood. The tests involve principally various aspects of fluency, flexibility, and originality, which Guilford subsumes under the heading of "divergent thinking." Described as "the kind of thinking that goes off in different directions," divergent thinking is contrasted with convergent thinking, which leads to a single right answer determined by the given facts.

An example of a test that is effective with young children is the "Improvements" test, in which the child is given toys, such as nurse kit, fire truck, and dog, and is asked to think of ways for changing each toy so it would be "more fun to play with." Thinking up unusual uses for common objects, such as a tin can, a brick, or a paper clip, illustrates another technique that has proved applicable over a wide age range.

Personality Tests

Although the number of available personality tests is large and their techniques varied and often ingenious, most of these tests must still be regarded as experimental instruments (for references, see Anastasi, 1961, Chs. 18-21). In comparison with tests of ability, personality tests, on the whole, are much less satisfactory with regard to such technical properties as norms, reliability, and validity. For these reasons, any information obtained from personality tests should be verified and supplemented from other

sources, such as interviews with the child and his associates, direct observations of behavior in natural situations, and case history material.

The personality tests employed most widely in examining children are of two major types: self-report inventories and projective techniques. In addition, a wide variety of other procedures has been devised, such as situational tests, objective laboratory-type tests, measures of self concepts, and techniques for exploring personal constructs (for references, see Anastasi, 1961, Ch. 21). In their present state of development, however, these instruments are suitable chiefly for research purposes, rather than for routine operational use.

Self-report inventories. Self-report inventories originated in an attempt to standardize the psychiatric interview and to provide norms for evaluating the individual's responses. Essentially they consist of a series of questions which the individual answers about himself, concerning emotional problems, worries, and other deviant behavior. The technique was later extended to the investigation of individual differences in other, nonpathological traits, such as interests, motives, values, and interpersonal traits.

Several inventories designed for children and adolescents are basically checklists of personal problems constructed on the principle of content validation. In other words, the questions pertain directly to the information the examiner wishes to elicit about the child's feelings and actions. The responses are thus taken at face value as an indication of the behavior to which they refer. A clear example of this approach is the Mooney Problem Check List. Designed chiefly to identify problems for group discussion or for individual counseling, this checklist drew its items from written statements of problems submitted by about four thousand high school students, as well as from case records, counseling interviews, and similar sources. The checklist is available in junior high school, high school, college, and adult levels. The problem areas covered in the junior high school form include: health and physical development; school, home, and family; money, work, and the future; boy and girl relations; relations to people in general; and self-centered concerns. Other examples of this type of inventory include the SRA Junior Inventory, for grades 4 to 8; the SRA Youth Inventory, for grades 9 to 12; and the California Test of Personality, available in five levels extending from kindergarten to college. Several inventories for the detection of anxiety in children are also available (see, e.g., Sarason et al.).

A somewhat different approach is illustrated by the IPAT Children's Personality Questionnaire and the Jr.-Sr. High School Personality Questionnaire. Utilizing items selected by factor analysis, these inventories yield scores in a number of different personality traits. In general, questions are used in these inventories, not as a means of eliciting specific information,

but as verbal stimuli the responses to which are scored in terms of their empirical correlates. Each item retained in the questionnaire serves as an indicator of a cluster of interrelated behavior tendencies. While the basic methodology is promising, the two questionnaires actually developed are limited in their usefulness by the low reliability of several trait scores and by insufficient validity data. In conclusion, personality inventories today find their major usefulness in screening and identifying children in need of further investigation.

Projective techniques. The chief characteristic of projective techniques is that the subject is assigned an unstructured task, which permits an almost unlimited variety of possible responses. The test stimuli are typically vague and equivocal, and the instructions are brief and general. These techniques are based on the hypothesis that the way the individual perceives and interprets the test materials, or "structures" the situation, reflects basic characteristics of his personality. The test stimuli thus serve as a sort of screen on which the subject "projects" his own ideas.

One of the most widely used projective techniques is the Rorschach, in which the subject is shown a set of bilaterally symmetrical inkblots and asked to tell what he sees, or what the blot could represent. Although for many years the Rorschach was used principally with adults, Ames and her co-workers (1952 and 1959) at the Yale Institute of Child Development have published Rorschach norms for children between the ages of 2 and 10 years, and for adolescents between the ages of 10 and 17. The availability of these norms puts the interpretation of child Rorschach responses on a sounder and more objective basis.

A somewhat more structured test is the Children's Apperception Test (CAT). This test is an adaptation of the Thematic Apperception Test (TAT), developed by Murray. In the CAT, however, pictures of animals are substituted for pictures of people, on the assumption that children respond more readily to animal characters. The animals are portrayed in typically human situations, in the anthropomorphic style common in children's storybooks. The pictures are designed to evoke fantasies relating to problems of feeding and other oral activity, sibling rivalry, parent-child relations, aggression, toilet training, and other childhood experiences. Another example is the Blacky Pictures, a set of cartoons showing a small dog, his parents, and a sibling (see Figure 6). Based on a psychoanalytic theory of psychosexual development, the cartoons depict situations suggesting various types of sexual conflicts. Still another type of picture test is illustrated by the Rosenzweig Picture-Frustration Study. Derived from the author's theory of frustration and aggression, this test presents a series of cartoons in which one person frustrates another. One of these cartoons, from the children's form, is shown in Figure

7. In the blank space provided, the child writes what the frustrated person would reply.

Drawings, toy tests, and other play techniques represent another application of projective methods. Because children are more limited than adults in their facility for verbal communication, these nonverbal procedures are commonly used in the examination of children. Although almost every art medium, technique, and type of subject matter has been investigated in the search for significant diagnostic clues, special attention has centered on drawings of the human figure. Play and dramatic objects, such as puppets, dolls, toys, and miniatures, have also been widely utilized in projective examinations. The objects are usually selected because of their associative value, often including dolls representing adults and children, bathroom and kitchen fixtures, and other household furnishings. Play with such articles is expected to reveal the child's attitudes toward his family, as well as sibling rivalries, fears, aggressions, conflicts, and the like.

When evaluated as standardized tests, most projective techniques have fared quite poorly. In their present state of development, these techniques should be regarded not as tests but as aids to the clinical interviewer. They can serve a useful function, particularly with children, in evoking communication regarding emotional problems whose discussion the individual might otherwise eschew for a variety of reasons. The effectiveness of any one projective technique, however, cannot be evaluated independently of the skill of the clinician using it.

Cultural Differentials in Test Performance

In the measurement of both abilities and personality traits, tests yield significant mean differences between children reared in different cultures or subcultures, such as socioeconomic levels, urban and rural environments, and minority groups (for references, see Anastasi, 1958, Chs. 15-17). For this reason, several attempts have been made to develop so-called "culture-free" or "culture-fair" tests. The earliest culture-free tests were designed on the premise that hereditary intellectual potential could be measured independently of the impact of cultural experiences. The individual's behavior was thought to be overlaid with a sort of cultural veneer, whose penetration became the goal of culture-free testing.

It is now generally recognized, however, that hereditary and environmental factors interact at all stages in the organism's development and that their effects are inextricably intertwined in the resulting behavior. For man, culture permeates nearly all environmental contacts and thus affects all behavior development. Since psychological tests are essentially samples of behavior, cultural influences will, and should, be reflected in test performance. It is therefore futile to try to devise tests that are *free* from cultural influ-

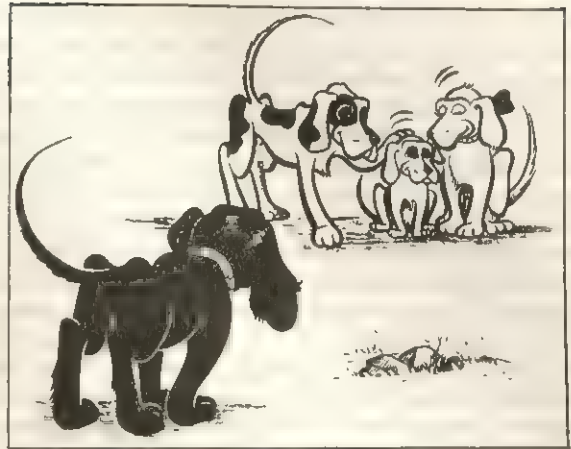


FIGURE 6. Sample item from the Blacky Pictures. (Reproduced by permission of Psychodynamic Instruments, Ann Arbor, Michigan.)



FIGURE 7. Sample item from Rosenzweig Picture-Frustration Study, Form for Children. (Reproduced by permission of Saul Rosenzweig.)

ences. The present objective of cross-cultural testing is, rather, to construct tests that presuppose only experiences *common* to different cultures. Available culture-fair tests eliminate one or more parameters along which specific cultures differ, such as language, reading, speed, or culturally loaded content.

No existing test is universally applicable or equally fair to all cultures. Although less restricted than other tests, culture-fair tests are never completely unrestricted in their cultural reference. Any test tends to favor individuals from the culture in which it was developed. The mere use of paper and pencil or the presentation of abstract tasks having no immediate practical significance will favor some cultural groups and handicap others. Cultural differences in emotional and motivational factors may also influence test performance. Examples include intrinsic interest of test con-

tent for the individual, rapport with the examiner (who may be a member of another culture), drive to do well on tests, desire to excel others, and past habits of solving problems individually or cooperatively.

A fundamental question pertains to the validity of culture-fair tests. Whatever the purpose of testing, one should be able to generalize beyond the test itself. Tests are administered so that conclusions may be drawn about what the individual will do in other situations. Therefore, whether the elimination of cultural differentials from a test will raise or lower its validity for any group depends upon the breadth of the cultural differentials. For example, if a test item requires the interpretation of a proverb familiar to children in one culture but not in another, its inclusion would probably lower the validity of this test against most criteria. On the other hand, if one group performs more poorly than another on certain items because of inadequate linguistic facility, the inclusion of these items would not reduce validity of the test for most purposes. In this case, the same condition that lowered the test score would also handicap the child in his educational progress and other activities of daily life. Similarly, slow work habits, emotional insecurity, low achievement drive, lack of interest in abstract problems, and many other culturally linked conditions affecting test scores are also likely to influence broad areas of criterion behavior.

In the testing of children from varied cultural backgrounds, no universal culture-fair test is suitable. Culture fairness in testing depends upon the elimination of relevant cultural parameters. A nonlanguage test may reduce cultural handicap for children from one culture, but increase it for children from another culture. Available culture-fair tests, moreover, differ among themselves in the extent to which they measure different abilities. When spatial content is substituted for verbal content, for example, the nature of the abilities sampled by the test may thereby be altered drastically. While an I.Q. on one such test may be largely a measure of abstract reasoning, on another it may depend chiefly on spatial and perceptual abilities. Finally, whether or not cultural differentials should be eliminated from a test depends upon the effect their elimination will have on the test's validity for specific purposes. Cultural handicaps tend to be self-perpetuating and cumulative, unless eliminated by special remedial programs. That they can be overcome has been widely demonstrated by the many compensatory educational programs for culturally disadvantaged children initiated in America during the 1960's (for references, see Bloom et al.); but the use of tests that fail to detect the handicap is no solution.

Suggested Cross References

For further information regarding psychological testing see Sections 12.1 and 12.2, which deal respectively with tests of intelligence and personality in adults and with tests for organic brain damage in

adults and children. Information regarding fundamental concepts of perception and cognition which underlie the construction of some of the psychological tests that were mentioned in this section may be found in Sections 3.1 and 3.2 in Area B, on the basic behavioral sciences.

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39.4 SOCIAL SERVICE INFORMATION IN CHILD PSYCHIATRY

MAURICE R. FRIEND, M.D.

Since child psychiatry considers both intrapsychic and interpersonal deviations, any assessment entails consideration of the social behavior of the child in the context of his family, school, and other groups. A child does not communicate and view himself as an adult does, and so the psychiatrist must have the family and school viewpoints of the child's behavior before completing the diagnosis and planning treatment. The child, with few exceptions, does not voluntarily participate in treatment without the support and wish of his parents or without social pressures.

Social work is particularly geared to identify current situational tensions or supportive relationships by obtaining historical and current social facts. Social work in a psychiatric hospital, in-patient or out-patient service, or child guidance clinic involves individual casework and group work. When this takes place in a psychiatric setting, the social work is termed "psychiatric social work."

Use of Social Work

Traditional use of psychiatric social work involved direct interview of the child by the psychiatrist and family interview by the social worker. This has proved to be limiting in scope, and many flexible variations have arisen, depending on the particular setting in which assessment and treatment of the child are provided.

Social work may be used to prepare family and child for the nature of the services provided—the diagnostic procedures used and the means of treatment once goals have been established. Observational home, school, and neighborhood visits may be of great assistance in the evaluation of certain stressful situations that are not perceived by the parents. Social work may add considerably to the therapist's understanding of a family's deviations from prevailing current behavior in various social classes.

Emotionally and socially, children rarely grow in a straight line. Regression as well as progression is to be expected. Generally, children's problems reflect the various aspects of their family figures and the parental unconscious conflicts and ideals. Social workers can, by virtue of their training, assess family interactions that may aggravate and perpetuate emotional problems.

In those instances where there are behavioral disturbances at home but not outside the family, the psychiatric social worker can help assess infantile, neurotic conflicts. Diffuse aggressive behavior with low frustration tolerance both at home and in school points to obvious social displacements of early reactive situations.

Since children are inseparable from their family setting and psychological representations of significant family figures and since assessment and diagnosis is never concluded until maturity is biologically possible, the psychiatric social worker can contribute greatly to the continuity of care and follow-ups of the initial diagnostic work-up. The social worker can contribute to the continued exploration of the efficacy of the treatment process.

Preparation of a social history must evolve from a therapeutic relationship with either the child or the family. The social worker can secure pertinent material for understanding the family, enlisting the help of people important to the patient, and preparing them for his treatment and what it means to them.

Suggested Cross References

For further information regarding the training and special skills of social workers see Section 12.3.

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Chapter 40

Psychiatric Disorders of Childhood. I: Healthy Responses, Reactive Disorders, and Developmental Deviations

40.1 **HEALTHY RESPONSES, DEVELOPMENTAL DISTURBANCES, AND STRESS OR REACTIVE DISORDERS. I: INFANCY AND CHILDHOOD**

STELLA CHESS, M.D.

Developmental Disturbances

Disturbances in behavioral development in the young may involve either (1) over-all developmental retardation, (2) retardation in one function or a small group of related functions, or (3) uneven development, in which precocious development in one area goes along with normal development in others. A further consideration involves the determination as to whether a developmental deviance represents an organic defect or a temporary lag. The organic defects as a group may be characterized by definable and static impairment of function, or they may represent either a deteriorating situation or one in which there will be partial amelioration. The developmental lags, on the other hand, are characterized by a spurt of development with eventual near normal, normal, or even superior level.

The neurological conditions of childhood are important sources of disturbances in behavioral development. These, however, have been discussed elsewhere and will not be repeated here. Of the developmental lags, the most frequently found are retardations in language development, in coordination, and in perceptual organization. Since defects in all these areas are characteristically found in mental retardation, it is of great importance in differential diagnosis and in planning therapeutic procedures to differentiate between a permanent defect and a temporary lag.

Language lags, for example, may be the first sign of mental retardation. History and examination will make it possible to compare the child's verbal level with his cognitive capacities as demonstrated by his nonverbal activities: response to nonverbal signals, the manner in which he accomplishes routines, his level of interpersonal activity, his choice and level of play. If his nonlinguistic behavior is uniformly at age expectancy and only language is retarded, one may determine that this is a specific language defect. Whether this is a permanent defect in the aphasic category or a temporary defect may not be possible to decide without obtaining a longitudinal picture of the child and knowing whether acceleration in language function does occur. Where there is a family history, particularly in the males, of language retardation with eventual normality, the probabilities that this is a temporary defect are high. Where there is no such family history, and if some prenatal, paranatal, or postnatal pathology raises the suspicion of brain damage, determination as to whether the speech lag is permanent or temporary may have to await the emerging facts of the child's development. Similar reasoning applies also to lags in coordination and in acuity of perceptual organization.

Temporary lags. Having determined that the developmental defect is transient and that the child is of normal intellectual capacity, the psychiatrist must then prevent behavioral deviance as a consequence of the stress caused by the developmental disturbance. Where there is a language lag, the onset of expressive language may be delayed to age 3, 4, or 5, with normal receptive language. Such a child is partially but not completely cut off from interaction with his peers; he is able to understand what is said to him but is not able to convey his own desires, thoughts, emotions. Depending on a number of other factors, among which temperamental issues and environmental handling are prominent, the child may develop a variety of de-

fensive behaviors or fears and anxieties or may be brought through this period with a virtual absence of secondary behavioral reactions. He may, for example, become intensely dependent on his mother or members of the immediate family who must act as interpreters to the world. He may become aggressive, protecting himself by pushing, grabbing, and fighting in play situations with his peers. He may become anxious as soon as a situation is unfamiliar and deviates from the routine, and he may exhibit his own typical panic reaction, whether it be crying, kicking, biting, or throwing tantrums, or somatization of his anxiety. He may, on the other hand, involve himself in constructive peer interactions, becoming so adept at receiving and giving nonverbal cues that he is a useful companion in block play, putting puzzles together, painting on easels, riding tricycles, or group games with rules.

Permanent defects. Disturbance in development involving permanent defect may involve autism, mental retardation, and major physical handicaps, such as blindness, deafness, and motoric defects such as polio muscular weakness, muscular dystrophy, or cerebral palsy. In each situation the behavioral reaction depends on the severity of the handicap and what this permits and precludes in terms of participation in normal child groups. The behavioral reaction also depends on temperamental and environmental factors. The handicapped child is under greater stress than the child with normal capacities. There are more situations in which demands are made of him that are beyond his capacity to accomplish, whether in terms of interpersonal responsiveness, intellectual comprehension, or physical accomplishment. As a consequence, he has more experiences than the average child of failure, of expressions of derogation or annoyance from people in his environment, of rejection and exclusion from peer groups. The degree to which he is rejected and excluded may depend more on his temperamental organization than on the fact of the defect itself, and his reaction to the stress may be in the direction of exaggeration of temperamental quality, be it dependency, aggression, compliance, or disorganization.

Adjustment Reactions

Adjustment reactions in childhood must be approached as an interactional concept. One must define the two interacting dimensions: on the one hand, the structure of the organism doing the reacting; on the other hand, the nature of the environment in which positive adaptation or maladaptation occurs.

Temperamental qualities. If one is dealing with a child without organic defect, there still remains the necessity of identifying his temperamental qualities, as these will be an important determinant of his interaction with the world about him. His temperamental organization may be a determinant of the effective environment. For example, an infant with a low thresh-

old of reactivity in an environment that includes much noise of varying ranges in intensity may respond with irritability, crying, or panic reaction; an infant of high auditory threshold in the same objective environment does not have auditory irritation as part of his effective environment. Similarly, a child of high activity level may find a particular milieu to be stressful, whereas a youngster of low activity level finds the same objective environment benign. In addition, the temperamental individuality of the child may influence the conduct of other persons, thus affecting his environmental experiences. An infant who is intense in his activity, is persistent, and cries loudly and long when hungry or uncomfortable may receive faster and more frequent nurturing responses from his mother than an infant whose hunger cry is softer, who stops crying temporarily if not responded to or if distracted by being picked up or amused with a rattle.

The hyperactive toddler may evoke a great many scoldings, expressions of annoyance, and physical confinement to a playpen; the physically less active child of the same age is less likely to get into dangerous situations or disturb the comfort of others of the family. The family's responses depend also, of course, on a number of other environmental circumstances, including the personalities of the parents. In any given set of circumstances, the child's temperamental attributes play an important determining role in the handling he receives and, consequently, his effective environment.

Temperamental individuality in childhood has been studied in a research project engaged in by Thomas, Chess, and Birch over the past 10 years. In the course of the study, children's behavioral reactions have been examined from birth onward through multiple interviews with parents and teachers, observations of the child in school, and standardized testing procedures. From this data an inductive analysis of temperamental qualities has been drawn. The following temperamental attributes have been identified: (1) activity level—the motor component present in a given child's functioning; (2) rhythmicity—the predictability of such functions as hunger, feeding pattern, elimination, and sleep-wake cycle; (3) approach or withdrawal—the nature of the response to a new stimulus, such as a new food, new toy, or new person; (4) adaptability—the speed and ease with which a current behavior is able to be modified in response to altered environmental structuring; (5) intensity of reaction—the amount of energy used in mood expression; (6) threshold of responsiveness—the intensity level of stimulation required to evoke a discernible response to sensory stimuli, environmental objects, and social contacts; (7) quality of mood—pleasant, joyful, friendly behavior as contrasted with unpleasant, crying, unfriendly behavior; (8) distractibility—the effectiveness of extraneous environmental stimuli in interfering with or in altering the direction of ongoing behavior; and (9) attention span and persist-

ence—the length of time a particular activity is pursued by the child (attention span) and the continuation of an activity in the face of obstacles (persistence).

Temperament and adaptation. These temperamental qualities have been scored on a three-point scale, and an assessment has been made as to their consistency over time and their relationship to the presence or absence of behavioral disorders in the study of children. It has been found that over the first 2 years of life temperamental stability is high from the point of view of both qualitative analysis and quantitative statistical assessment. Certain temperamental clusters are associated with stressful parent-child interactions and with a high probability, though not a certainty, of the development of behavior problems. Other temperamental clusters are associated with a high probability of benign child-environment interaction and a low probability of the presence of behavior disorders.

The temperamental cluster most likely to be a nucleus of maladaptation and stressful response to the increasing demands for socialization as a child moves from early to late infancy and through childhood contains the following attributes: high degree of reactivity, a withdrawal response to new situations, slow adaptation, and intensity of mood. Such infants and children respond to new situations, new demands, and new people by withdrawal and negative behavior of an intense degree. When given an opportunity for gradual familiarization, the negative behavior diminishes, and the child may eventually become well adapted to the new demand. For such a child, multiple changes occurring simultaneously are particularly stressful. Also stressful are situations that require immediate adaptation without a period of acclimatization and familiarization. In contrast, a child whose response to new people, places, toys, and schedules is an immediate positive reaction or who is speedy in his rate of adaptation does not find a multiplicity of simultaneous changes at all stressful.

The vulnerable youngster is likely to present behavior difficulties with a move to a new home; with the introduction of a new individual into the household, whether it be a new adult or a baby; with a change in routine procedures, such as a new bed; with his introduction to a new organization of his day and new circumstances of living, such as starting nursery school or play group. Given an opportunity to familiarize himself with the change, the child's behavioral reaction is temporary. However, if these changes succeed each other rapidly or involve losses of important individuals, with uncertain substitutes and arrangements, the reaction may be one of stress and maladaptation.

Parental handling. Consistency in parental handling of children may also have varied consequences, depending on the temperamental organization of the child. The youngster with initial negative reactions, with a long adaptation period—in short, the vul-

nerable child described above—finds parental inconsistency considerably more disturbing than the easily adaptive, positive mood child. The vulnerable child requires consistent, persistent clues in order to react with the appropriately adaptive behavior. If parental demands for performance of specific routines, for behavioral inhibition, for higher level social responses are unclear, the youngster may be unable to develop routine reactions of an acceptable nature. He may, instead, move into negativistic teasing, or he may develop behavioral patterns that reflect his confusion about the signals given to him. For example, the child who has developed an extensive bedtime routine may be faced with a parental demand that he go to bed more quickly and that he omit one of the many stories or one of the many drinks of water. The youngster responds to this new demand initially by loud protest. After a half hour of tantrum, the parent capitulates. The signal to the child now is that he must demand longer in order to maintain his usual routine. Repeated ineffectual disciplinary parent-child interactions have the effect of perpetuating this maladaptive behavior on the part of the child. On the other hand, the child who temperamentally is more quickly adaptive can easily adapt to parental inconsistency with regard to bedtime routine. Similarly, parental inconsistency in regard to availability or nonavailability to the child at certain times and under certain circumstances, in regard to the degree of disapproval expressed toward certain behaviors, and so forth, constitutes a stress for the vulnerable child but does not constitute a stress for a child of other temperamental make-ups.

Other stresses linked to temperament can be summed up as follows. The demand for extended periods of motoric quietude constitutes a stress for the hyperactive child and may result in behavior disorder characterized by disorganized running about. Parental disapproval of the child's inability to carry through tasks set for him constitutes stress for the highly distractible child, who cannot keep in mind the directions given him in the face of other stimuli that compete for his attention. The demand made on a highly persistent child that he shift activities immediately on parental command represents a stressful demand that is more likely to evoke a tantrum or other maladaptive response than it is to bring about compliance.

Physical illness and handicaps. Physical illness and physical handicaps involve special stress situations in childhood. In such circumstances the pediatrician or general practitioner treating the child acts as the preventive psychiatrist by his clarity in interpreting the nature of the acute illness and the degree of permanent handicap if there is a sequela. One need not assume that the need for activity limitation, as in cardiac defect, or the necessity of a permanent medical regimen, as in childhood diabetes, or the inability

to join in athletics, as in postpolio dysfunction, necessarily leads to maladaptation.

Positive adaptation by the child to realistic limitations imposed by illness starts with the comprehension by the child of the precise nature of the illness. This understanding must be in terms appropriate to the child's age and related to his functioning. A 5-year-old can learn that chocolate gives him an itchy rash; the diabetic child can learn to refuse cake at a party; the youngster with cardiac restriction can learn to recognize the first signs of fatigue. Many chronically ill children can be relied on to take their own medication and thus attain a sense of independence despite physical limitation. More severe motoric handicaps, such as cerebral palsy and athetosis, demand an exceedingly careful appraisal of the degree to which nurturance and servicing is required. The key to healthy mastery of the fact of handicap lies in correct parental estimation of the degree of handicap, their orientation to teaching the child techniques for caring for himself to the fullest degree possible, and their matter of fact giving of the help that is necessary. With this attitude as a model, one has the greatest possibility of the child's avoiding the mechanisms of secondary gain, overdependence, controlling behavior, bravado or other inappropriate insistence on being independent, fearfulness, hostility, etc. Where such behavior patterns have become established, redefinition of appropriate parental attitudes and parent guidance is needed, and at times direct psychotherapy with the child is beneficial.

Hospitalization may or may not be a stressful experience for a child. A gregarious youngster with easy adaptability finds a pediatric ward a pleasant experience. With elective hospitalizations, it is possible to acquaint the child ahead of time with the procedures to take place. Stress is more likely to occur with a child who does not adapt quickly to new experiences, who is not placed with other pediatric patients, or whose depth of illness or the emergency nature of the hospitalization makes for the likelihood of apprehension and panic. Under the latter circumstances, the posthospital period may require psychological as well as physical recuperation.

Adoptions. Adoption may require some careful consideration as a possible source of stress. In general, however, behavior problems in adopted children and negative child-parent interactions tend to be the same as would arise in a natural parent-child pair, given the same temperamental and environmental issues. In adoptive situations, the issues that arise may be intensified because of the parents' feeling of the child's specialness; thus, parental tendencies toward indulgence or overprotection may become more pronounced. Child tendencies toward controlling behavior are more potent with the parent who feels uncertain of his right to parenthood. The child who is adopted in an attempt to cement a disintegrating marriage has a high potential for maladaptability; the

same is true of the child conceived in the same vain hope.

Management requires the same diagnostic analysis and handling of the given behavior as would be the case were adoption not a fact.

Presenting Psychiatric Problems in Infancy and Childhood

Since the human organism's ability to react is limited by his developmental level, presenting problems tend to group themselves by age. Just as pain is an expression of diverse organic malfunction, in a similar fashion diverse psychiatric disorders of infancy and childhood have a limited number of pathways of expression.

Infancy (birth to 2 years)

Developmental disturbance. Presenting complaints may pertain to general retardation in all or some developmental areas. These may involve failure to thrive; failure to sit, stand, or walk in accord with the normal time tables; delay in language; absence of age-appropriate affective behavior, such as recognition of familiar people and formation of affectionate bonds. Table I contains a summary of some of the landmarks of normal behavioral development. These time tables may be considered as means or averages, and normal development actually falls within a rather broad range. However, serious deviation from these norms is a sign of developmental retardation.

Management of developmental failures. The decision that failure to thrive or failures to attain normal developmental milestones are psychological in origin is to be made with caution. Organic causation must be ruled out by appropriate medical and neurological investigation. In addition, there must be identification of psychogenic etiologies, which can be determined by careful assessment of patterns of maternal care and a therapeutic trial of extra affection and physical stimuli through cuddling, stroking, and the often prescribed tender loving care.

Motoric delays call for neurological investigation to rule out static or degenerative neurological disease or muscular pathology. In the presence of an adequate nutritive state, one must chart the developmental curve over time in order to decide whether the delay is temporary or a sign of mental retardation.

Delays in language and affective development should be handled by first making sure that the environment supplies the affection and conversation necessary for the optimum development of the child's capacities. Where the delay is a temporary organic lag in maturation, the psychiatric management is directed toward avoidance of secondary defensive behavioral disorder.

Aberrant behavior. A second group of presenting problems in infants pertains to aberrant patterns of behavior. In the motoric area, one may find hyperactivity or hypoactivity; rhythmic activity, such as

TABLE I
Landmarks of Normal Behavioral Development

Age	Motor Behavior	Adaptive Behavior	Language	Personal and Social Behavior
Under 4 weeks	Makes alternating crawling movements Moves head laterally when placed in prone position	Responds to sound of rattle and bell Regards moving objects momentarily	Small, throaty, undifferentiated noises	Quiets when picked up Impassive face
4 weeks	Tonic neck reflex positions predominate Hands fisted Head sags but can hold head erect for a few seconds	Follows moving objects to the midline Shows no interest and drops objects immediately	Beginning vocalization, such as cooing, gurgling, and grunting	Regards face and diminishes activity Responds to speech
16 weeks	Symmetrical postures predominate Holds head balanced Head lifted 90 degrees when prone on forearm	Follows a slowly moving object well Arms activate on sight of dangling object	Laughs aloud Sustained cooing and gurgling	Spontaneous social smile Aware of strange situations
28 weeks	Sits steadily, leaning forward on hands Bounces actively when placed in standing position	One-hand approach and grasp of toy Bangs and shakes rattle Transfers toys	Vocalizes "m-m-m" when crying Makes vowel sounds, such as "ah," "eh"	Takes feet to mouth Pats mirror image
40 weeks	Sits alone with good coordination Creeps Pulls self to standing position	Matches two objects at midline Attempts to imitate scribble	Says "da-da" or equivalent Responds to name or nickname	Responds to social play, such as "pat-a-cake" and "peek-a-boo" Feeds self cracker and holds own bottle
52 weeks	Walks with one hand held Stands alone briefly		Uses expressive jargon Gives a toy on request	Cooperates in dressing
15 months	Toddles Creeps upstairs		Says 3 to 5 words meaningfully Pats pictures in book Shows shoes on request	Points or vocalizes wants Throws objects in play or refusal
18 months	Walks, seldom falls Hurls ball Walks upstairs with one hand held	Builds a tower of 3 or 4 cubes Scribbles spontaneously and imitates a writing stroke	Says 10 words, including name Identifies one common object on picture card Names ball and carries out two directions, for example "put on table" and "give to mother"	Feeds self in part, spills Pulls toy on string Carries or hugs a special toy, such as a doll
2 years	Runs well, no falling Kicks large ball Goes upstairs and downstairs alone	Builds a tower of 6 or 7 cubes Aligns cubes, imitating train Imitates vertical and circular strokes	Uses 3-word sentences Carries out four simple directions	Pulls on simple garment Domestic mimicry Refers to self by name
3 years	Rides tricycle Jumps from bottom steps Alternates feet going upstairs	Builds tower of 9 or 10 cubes Imitates a 3-cube bridge Copies a circle and a cross	Gives sex and full name Uses plurals Describes what is happening in a picture book	Puts on shoes Unbuttons buttons Feeds self well Understands taking turns
4 years	Walks downstairs one step per tread Stands on one foot for 4 to 8 seconds	Copies a cross Repeats 4 digits Counts 3 objects with correct pointing	Names colors, at least one correctly Understands five prepositional directives—"on," "under," "in," "in back of" or "in front of," and "beside"	Washes and dries own face Brushes teeth Plays cooperatively with other children
5 years	Skips using feet alternately Usually has complete sphincter control	Copies a square Draws a recognizable man with a head, body, limbs Counts 10 objects accurately	Names the primary colors Names coins: pennies, nickels, dimes Asks meanings of words	Dresses and undresses self Prints a few letters Plays competitive exercise games

body rocking and head banging; bizarre activities, such as unusual twisting motions of the hands or body. Sleep problems include awakening at frequent intervals, difficulty in falling asleep, nightmares, and night terrors. The management here described is directed toward the diagnostic categories of reactive behavior disorders and mild neurotic traits. The above-mentioned behaviors may also occur in more severe psychiatric disorders which should be considered in the differential diagnosis.

Unusual motoric activities often occur in the hyperactive child who is not provided ample opportunity for motoric expression. There should be an assessment of the degree to which large muscle movement is made possible in the organization of the environment and whether the youngster is confined for long periods to crib, carriage, or playpen. Safe opportunities for active crawling or running about may reduce the abnormal motoric behavior.

Broken sleep may be due to the fact that a child has less than average physiological need to sleep. In such cases, short naps and long periods of wakefulness are present from birth. The frequent awakenings, although inconvenient for the parents, are not abnormal. Children with average sleep needs had previous periods of sleeping through the night. The change in sleep pattern may be initiated by illness that caused discomfort at night. The broken sleep in such a case should be considered a habit pattern. In both these instances, the frequent awakening is not to be construed as a sign of fearfulness or insecurity unless there is independent evidence of anxiety. If parental handling has been punitive, however, the child may have acquired apprehension that the parent will be angry. In such a situation the recommendation is for the parent to eliminate his anger over the fact that the youngster has disturbed his sleep and to refrain from reinforcing the habit of awakening by going in to look at the youngster. This is the type of situation in which the child should cry it out.

The child who has fear at night demonstrates this by nightmares or by being afraid to stay in his dark room alone. Management of this problem requires two phases: (1) comforting the youngster when he is afraid and (2) seeking to determine and remove the source of stress in his daily life. In nightmares the child awakens crying from a bad dream. In night terrors the child does not actually awaken and does not recall a dream; when comforted, he may open his eyes, then fall asleep again with no recollection of the event.

Eating disturbances in infancy may involve refusal of new foods, with a consequent restricted diet; refusal of solids at expected ages, with acceptance at age 1 year, or later, of pureed infant foods only; capricious food acceptances or in the extreme case, pica.

Psychogenic eating refusals in infancy are rare today. The easy availability of a large variety of in-

fant foods and vitamin supplements has so eased this aspect of child care that it is a rare mother who becomes tense over infants' food refusals. The mother-child battle at mealtime is a picture of a past generation.

Odd food tastes call first for investigation of the possibility of organic digestive pathologies. In the absence of an organic basis for a self-imposed restricted diet, the infant may require a period of familiarization with new tastes or new food consistencies before accepting them into his diet. There may have been not enough exposures to the new circumstance to permit acceptance.

Pica is the eating of nonfoods. There may be a selective eating of dirt or plaster, or the pathological eating preferences may involve ingesting any and all substances that can be mouthed. The danger of accidental poisoning with serious consequences is high with such children, and chronic lead poisoning is a particular danger. In the absence of major psychopathology, one strongly suspects affectional neglect. Appropriate management is to supply an abundance of affection and mothering.

Unusual affective behavior may include excessive dependency on one or a few individuals, fear of separation from mother or mother substitute, fears of or unusual seeking out of specific people, places, noises, tactile sensations, or odors.

In the absence of major psychopathology, the most frequent source of such behavior is some traumatic event, a transient situation, or stress that caused strongly conditioned reactive behavior designed to protect against repetition of the event. If a single traumatic event caused the reaction, recovery occurs over a period of time, during which the child is exposed to his usual routine of activities with gradual reduction of the special comforting measures employed while he was acutely distressed. When there was a succession of traumas, such as a series of deaths of individuals important in the child's life, or a number of frightening experiences, active intervention may be required. Opportunity should be afforded the youngster to play or talk out his experiences. A planned schedule of activities in which the new is closely associated with the familiar place, person, or thing may aid the youngster. Direct psychotherapy may be required.

Preschool age (2 to 6 years). In the preschool age, children may present problems that occur during infancy. These problems may have started in infancy and be brought to notice now because of their persistence, or they may first make their appearance during the preschool age period. As the child grows and matures, additional behavior complaints may appear. Ideational components may now characterize the youngster's actions, being at times causative of the problem behavior or secondary to it. In the latter case the conceptualization may represent the child's attempt to understand his own be-

havior. Parental formulations and interpretations, representing their attempts to cope with the behavior disorder, may be the origin of the child's concept of his motivations. Nightmares are now possibly expressed as dreams of burglars, monsters, or wild animals; separation anxiety is expressed as worry of injury to the mother during the child's absence.

Sleep and eating problems. Old behaviors may continue, but they are given new significance and become greater management problems because the older child has more latitude of action. For example, new complaints with regard to sleep are of the following type: the child comes into a parent's bed nightly or does not fall asleep unless the parent is sitting at his bedside; an extensive nighttime ritual is demanded by the child; if this is refused by the parent, there is a tantrum. Self-imposed food restrictions become extreme, and the mother prepares a different meal for the child than for the remainder of the family; the youngster balks at coming to the table and at using prescribed table manners. This type of sleep or eating problem generally represents an arena of dependency-hostility. The antagonism is the basic problem. Often one may find on further history taking that there is a struggle over all or most routines.

Management requires analysis of the parent-child relationship. Guidance is of aid to the parent whose management is inappropriate to the child's temperament or age. Where personality difficulties in the parents are causative or where child reactions have become fixed, psychotherapy of child or parents or all three may be needed.

Compulsive overeating severe enough to cause obesity and not based on endocrine dysfunction calls for careful appraisal of the mother-child relationship, with particular attention to the combination of strong dependency and strong hostility. Simple advice is usually insufficient. A trial at psychotherapy is recommended, but prognosis is poor.

Pica continuing into the preschool age has increasingly morbid connotations and is likely to be associated with mental retardation or brain injury or gross physical and affectional neglect. Measures to be taken must be appropriate to the diagnostic conclusion reached.

Language problems. In the language area, new presenting problems may include stuttering. In many cases the stuttering youngster comes from a family with a history of this disability. Although a familial component may be under suspicion, the precipitating cause is often a traumatic circumstance or the simultaneous occurrence of a number of demands for higher stages of socialization or impulse control. Reducing the sources of stress may be sufficient to decrease or eliminate the stuttering.

Immature speech patterns may persist. If these patterns do not show a strong trend toward spontaneous correction as the child approaches school age,

speech evaluation and possibly speech therapy may be appropriate.

Affective problems. Affective disorders may become more pronounced or first appear in the preschool age period. Unrelatedness or inadequate or inappropriate relatedness to adults, children, or both may be the presenting complaint. The behavior may be described as withdrawal, excessive demands for personal attention, or wild and noisy response to attention. There may be outbursts of silliness, impulsive destructiveness, or rages—all out of proportion to or in the absence of a precipitating event.

When such behavior occurs in a child who is not suffering from major psychopathology, one seeks to find an explanation in environmental stress. The cause may be found in rivalry over the birth of a sibling, profound parental discord, physical or mental illness in a parent that results in uncertainty of daily care and of care-takers. In some cases one may discover cruel and unusual treatment of the child by adults. Management calls for arranging a stable and warm substitute environment for the child.

A host of fears and phobias at times make their appearance in this age group: fears of animals, fire engines, riding in elevators, people dressed in specific fashions. In reaction to such stimuli, the youngster may run away, cry loudly, whine, demand to be held, or hit and attack his would-be protector.

Management of such symptoms requires a determination first of whether the phobic reaction is an appropriate reaction to a traumatic situation. Does the child have many fears? Is the particular phobia symbolic in nature? A traumatic reaction calls for time and reassurance. A basically fearful child or a youngster with symbolic expression of fears may require direct psychotherapy.

Elimination problems. Problems of elimination may present themselves, either because the child maintains earlier behaviors despite advance in age or because of regression from achieved levels. Diurnal enuresis, soiling, withholding of feces, fear of defecation or of strange toilets may occur. The first step in management requires determination as to whether an organic base for dysfunction exists.

Hitherto unrecognized anomalies of the urinary tract may be found. The behavior reaction to large, infrequent, and painful stools may stimulate a medical investigation that identifies megacolon or other bowel disorder. Only after it is clear that there is no organic cause should the issue be approached as a problem of toilet training.

Motor problems. In the preschool age period, tics may make their first appearance. Usually the first tic is ushered in by a related circumstance: an eye blink by eye irritation, a shoulder shrugging by a falling clothing strap. The child is frequently of the high activity type. The tic may shift from one muscle

group to another and lose its correlation with the precipitating stimulus.

Appropriate management seeks to identify stresses in the environment that may be excessive—overly great demands for movement restraint, family dislocation, a new sibling, contradictory parental expectations, etc. Treatment consists of reducing sources of stress. In addition, tranquilizers may be helpful. In extreme cases of multiple tic, there may be flinging of arms and legs, with peculiar barking sounds. This syndrome is termed Gilles de la Tourette's disease. Medicative therapy is called for.

School age through preadolescence (6 to 13 years). Most of the behaviors discussed under presenting problems of infancy and preschool age may present themselves in the school age period.

School and learning problems. Additional behavior disorders typical of this age period include those brought out by the demands of school attendance and of formal learning. Hitherto unrecognized dependencies and separation anxieties appear as presenting problems as a result of the demand for school attendance. There may have been previous expressions of separation anxieties—a preschooler who would visit friends only if mother remained or parental avoidance of going out at night because of the child's crying. When a child is fearful about going to school or develops somatic complaints, such as bellyaches or headaches on school mornings or while in school, parents are advised to bring the child for diagnostic study.

Except under extreme circumstances, management requires that the child be maintained in regular school attendance, thus mobilizing his desire to rid himself of his symptoms. Parental guidance or direct psychotherapy may be required.

Learning difficulties may make their first appearance in the school age period—problems of dyslexia, brevity of attention span, and inability to concentrate. Difficulties in relating to other children or to persons in authority may be recognized for the first time, and the child may be brought for consultation. Often the complaints come from the school, where age-appropriate expectations are clearer and more objective and where deviance from the remainder of the class becomes an interference with teaching. In the child's preschool years, parents often have accommodated to the deviant behavior and have closed their eyes to or explained away the child's isolation from his neighborhood peer group.

Psychopathologies. At times major psychopathologies are first brought to notice when the child enters school. Mental retardation, behavior disorders due to brain damage, and psychoses must be differentiated from reactive or neurotic behavior disorders. Elective mutism, protective inhibition of activity, temporarily disorganized behavior due to multiple simultane-

ous stresses—all may require such differential diagnosis.

Inappropriate attitudes may begin to make their appearance in this age group: dependency, excessive independence, hostility, negativism, excessive teasing, and overly great concern with pleasing. These require detailed analysis of the inappropriate parent-child interaction that initiated and perpetuated the behaviors. Parent guidance and possibly direct psychotherapy with the child may be called for.

Micropsia is a rare occurrence and consists of perceptual distortion in which objects or people appear to shrink or seem to be retreating to a distance. This phenomenon is to be distinguished from hallucination due to (1) organic illness—drug toxicity, hypertension, hyperpyrexia, etc.—or (2) childhood psychosis. The hallucinosis of micropsia is to be found in nonpsychotic children in stress situations, and the appearance of the strange phenomena frightens the children. It is often difficult to determine whether the terror is primary or secondary to the misperception.

Management requires determination of the environmental and interpersonal factors causing the stress, and a decision as to whether environmental manipulation is sufficient to reverse the problem or a psychotherapeutic course is also required.

Antisocial behavior. School age may be the initial period of a host of antisocial and destructive acts—fire setting, stealing, vandalism. It is necessary to determine whether these behaviors are social in origin, are indicative of major pathologies, or represent failure of sufficient training in impulse control. On the other hand, they may represent hostile acting out of attitudes that are felt toward parents but cannot be directed toward them for intrapsychic reasons. Management is determined by the cause and may include direct social training, institutionalization, parent guidance, or direct treatment in whatever combination is required.

Suggested Cross References

See Section 38.2 for further information about normal child development. Further information regarding childhood psychosis and brain disorders may be found in Chapter 42, while the psychoneurotic and personality disorders are discussed in detail in Chapter 41. Sections 40.3, 40.4, 40.5, 40.6, and 40.7 in this chapter deal with children's reactions to hospitalization, speech and language disorders, enuresis, nail biting and thumb sucking, and conduct disorders, respectively. Detailed information regarding the techniques used for the diagnosis of the developmental and reactive disorders that were discussed in this section may be found in Chapter 39, on assessment in child psychiatry. Treatment in child psychiatry is further discussed in Chapter 43.

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40.2 HEALTHY RESPONSES, DEVELOPMENTAL DISTURBANCES, AND STRESS OR REACTIVE DISORDERS. II: ADOLESCENCE

EDWARD J. HORNICK, M.D.

Adjustment reactions of the adolescent are the rule rather than the exception. Disturbed reactions may be expected also from family members and from society at large. All three groups are under stress. As Sol Ginsburg once wrote, "Adolescence is tough on everybody." This ferment is also useful to the adolescent, his family, and society.

Early in adolescence the source of disturbance is more likely to be reactive to physical changes and the intrapsychic meaning of these alterations. Later in adolescence the issue of identity formation is central.

All manner of pathology can be seen in all degrees— anxiety, depression, mania, schizoid and schizophrenic illness, perversions, alcoholism, addiction, behavior disorders, accidents, and psychosomatic affections. It is vital to a valid interpretation of any adolescent behavior that it be seen in its developmental process against a background that includes the physiology and psychology of adolescence, the family dynamics, and the wider scope of culture itself.

Normal Development

At no stage in growth must one be more cautious in assessing disturbances in development than at adolescence. One pitfall is failure to respect the variety of paths taken by adolescents in their interior and ex-

terior journey toward maturity. In a study of teen-aged boys, the Stolzes pointed out that the physical and physiological process occurs over a range of 4 years. However, one boy may complete his entire growth spurt and primary and secondary sexual development in 3 months. Another may change gradually over the 4 years. One boy may grow at 12 and another at 16. Nor is there any regularity in the order in which physical changes take place. This variation is but a shadow of the complexity of the process when psychological, educational, social, and cultural factors are folded into the picture along with the physical ones. There is even the suggestion by Rosenbaum that emotional factors may have some important bearing on the timing of physiological changes.

A second concern is the special reactions of the adult community to teen-agers. It is probably safe to say that adolescents are more commonly scapegoated than any other age group. Professionals, including psychiatrists, are not immune to this practice. The adolescents' preoccupation with themselves, their volatility, their burgeoning sexuality, and especially their negativism and acting out to define societal limits cast them easily into the scapegoat role. Middle-aged psychiatrists, even more than middle-aged parents and teachers, cannot afford the understandable irritability and impatience that beset an adult challenged by living reminders of old conflicts. Santayana once said he wouldn't mind repeating his youth were it not for all those trap doors. There is a special advantage, however, to the role of psychiatrist. He can be a participant-observer in a highly personal adventure in self-realization, an experience that can provide new insights for the examiner as well as the examined.

Changing values in a culture are mediated by ever new generations of adolescents devising differing values from their parents as they mature. This momentum for necessary change has its psychological frictions in disturbed and disturbing adolescents, but not all that is disturbing is disturbed.

This point deserves underscoring. The line between normal and abnormal is very vague. Most adolescents are healthy physically and emotionally, yet *all* adolescents have assorted situational, developmental, and adjustment reactions. Indeed, Anna Freud said, "Adolescence is by its nature an interruption of peaceful growth, and the upholding of a steady equilibrium during the adolescent process is in itself abnormal." One may expect the adolescent to behave in an inconsistent and unpredictable manner, and one may be concerned about the child who shows no alteration in behavior through adolescence. In the same paper she pointed out that it is not yet possible to predict from a knowledge of earlier life development what adolescent development will bring. There are simply too many new variables. The arena of life in which adolescence is played is much larger than the family.

It introduces political, social, and sexual problems of such immensity that they become differences of kind.

Personal Disturbances

Sexual impulses. The awakening of sexual feelings which accompany the development of sexual hormones and organs is usually a source of difficulty as well as pleasure to the young teen-ager. The conflicting and often contrasexual mores of the Western middle class—doctors included—represent the climate in which this development occurs. Puberty follows a relatively peaceful period, in which boys and girls cluster separately around less explosive activities. The poet Yeats described how he would “get up at dawn and having stripped leap to and fro over a stick laid down upon two chairs, and hardly know, and never admit, that he had begun to take pleasure in his nakedness.”

Often there is a preoccupation with the changing parts: the relative size and position of the breasts in girls, the amount of mammary fat in boys, the amount and placement of bodily hair, the size and shape of the penis, the color and droppage of the testicles. Indeed, the whole body is subject to careful scrutiny, and the slightest alteration—such as a mole, a spot of acne, or a cowlick that won't plaster down—comes in for anxious observation. This has its social overtones. There is intense comparison with others in class, club, or showers. When a boy of 14 or a girl of 12 is fearful about handling such marks of growth, he or she may be impelled to avoid members of the opposite sex or may be driven to test out the new equipment. It is important to remember that the teen-aged boy lags about 2 chronological years behind the teen-aged girl physiologically, and this accounts for the dating pattern of older boys with younger girls.

Talk among boys runs to pornography and wild fantasies of what feats of sexual prowess one would like to accomplish. Girls at puberty are more prone to rich private fantasies. Sometimes these preoccupations interfere with learning, especially in the seventh and eighth grades, or lead to mild and usually transient anxieties, depressions, or hypochondriasis. There are periods of frenetic mixing or solitude, both covering a volcano of sexual thoughts and feelings.

Anna Freud described intellectualization and asceticism as two common adolescent defenses to cope with the instinctual forces. Intellectualization is involvement in ideas and books, in debating issues rather than living them, that serves most youngsters to stall direct sexual experimentation and experience until they are ready for it. Asceticism is a strategic retreat into purity, grand ideals, and a renunciation of body pleasure. This usually means giving up masturbation, a practice heavily weighted with forbidden fantasies for both sexes. Both intellectualization and asceticism may hypertrophy to a point where they are disturbing to the adolescent.

A familiar junior high school ritual among boys is clubbing together in secret groups. The secret is that they fear girls, don't trust their parents, and need to lean heavily on each other for reassurance. They indulge in homosexual play, “goosing,” genital pinching, and mutual masturbation, usually scored by themselves as masculine adventure. For some, the fears of heterosexual contact are so great that they remain locked at this stage of development. Persistent preference for homosexual partners after the age of 16 is highly suspect. A boy in the throes of dealing with a homosexual impulse often presents a considerable amount of anxiety, a condition that has been labeled homosexual panic. However, the cause of such a condition may be overdependency, fear of superior force, retreat from real or fantasied heterosexuality, masturbatory panic, or, finally, a true terror of homosexual contact.

Masturbation seems to be universally associated with guilt among adolescents of both sexes. This is true regardless of the educational exposure of teenagers because the guilt is tied to forbidden unconscious fantasies accompanying the masturbatory impulse or act.

Depression and excitement. Mood swings are common at all ages, but they appear particularly rapid and inexplicable in adolescents. It was long believed that true depression only became possible after the teen years, but there are now many documented cases of adolescent depression. Affective changes are likely to follow any disappointment—in oneself, in one's peers, in one's parents, in one's ideals. Bursts of vigorous and even violent activity may alternate with apparent laziness or inability to work or study. By and large, these happenings in the teenager are commonplace. The incidence of suicide does rise in the late teens and then falls off. A very common sign of aggression turned against the self is the high adolescent accident rate—cars, household, and sports—from the combined activity and self-punishment at this age.

Delinquency. Michaels noted that delinquent behavior occurs in a complex psychosociobiological matrix. The earlier and the more persistent its appearance, the more one must consider a constitutional cause. The later and more transient the delinquency, the more it is likely to stem from a neurotic factor. It was also Michaels who differentiated a form of delinquency associated with persistent enuresis, for which he suggested the rubric of impulsive character.

Redl and Wineman provided a careful delineation of the techniques of the delinquent ego, notably an ego whose strength lies in its resistance to change. Among these are the strategy of tax evasion (no guilt), the search for delinquency support (enlisting other peers to shore up the delinquent value structure), and the mechanized warfare with change agents (fighting therapists).

It is certain, however, that misbehavior becomes possible on an enlarged scale at adolescence and that almost all adolescents experiment with it to some degree. The more familiar battlegrounds in middle class youngsters are the curfew, choosing of one's own dress and friends, truancy, and pilfering. Whatever the behavioral component, the youngster must be studied longitudinally and cross-sectionally to determine what developmental task is being solved, however inappropriately, in an antisocial fashion.

Schizoid and schizophrenic manifestations. The total impact of puberty and psychosocial change during adolescence often produces a clinical picture of social withdrawal, depersonalization, and derealization, leading occasionally to full blown dementia praecox. All shades of this symptom complex demand special care in their precise diagnosis, treatment, and prognosis. For many adolescents this venture is an experiment in self-development. French and Kasanin have described two young people who had brief psychotic episodes as they broke out of particularly crippling family situations. What is true for psychosis is all the more true for the adolescent who essays various schizoid maneuvers in his or her search for self.

Identity. Erikson centered his interest in the late adolescent on achievement of ego identity in his book, *Identity and the Life Crisis*. "The conscious feeling of having a personal identity is based on two simultaneous observations: The immediate perception of one's self-sameness and continuity in time; and the simultaneous perception of the fact that others recognize one's sameness and continuity." This identity is the crystallization of innumerable conflicts among ego, id, ego-ideal, and superego achieved by the adolescent through role experimentation.

In defining late adolescent pathology, Erikson added several viable new phrases to the vocabulary. "Identity diffusion" is a failure of the adolescent or young adult to arrive at a cohesive self-and-reflected-self-awareness in his total life scheme. It usually becomes manifest "at a time when the young individual finds himself exposed to a combination of experiences which demand his simultaneous commitment to physical intimacy, to decisive occupational choice, to energetic competition, and to psychosocial self-definition."

The "psychosocial moratorium" is the prolongation of adolescence into the twenties while the individual pauses to form his fragments of identification into a consistent whole. This is societally sanctioned in college and particularly in postgraduate education.

Often parents' conflicts find expression in a "negative identity," "an identity perversely based on all those identifications and roles which, at critical stages of development, had been presented to the individual as most undesirable or dangerous, and yet

also as most real." A mother with unconscious ambivalence toward an alcoholic brother may respond selectively to those traits in her son that tend to repeat her brother's fate, with the result that the son becomes an alcoholic. "Many a late adolescent, if faced with continuing diffusion, would rather be nobody, or somebody bad, or indeed, dead—and this totally, and by free choice—than be not-quite-somebody."

Family Disturbances

Children between 3 and 6 years of age complete one round in the solution of the oedipal situation. At adolescence the problem is recreated with new post-pubertal talents for action, with the actual parents around as tempting objects, and often with parents who react to them, positively or negatively, in a sexual fashion. These include the father who won't let his daughter of 16 wear lipstick when all the other girls in class do and the mother who kisses her son of 15 on the lips. The need of the adolescent to separate himself from his introjected incestuous objects and from their contemporary representatives has been aptly called "object removal" by Katan, and its accomplishment is perhaps the sure mark of maturity.

Johnson centered her attention on how particular character deviations like arson and homosexuality derive from commands issuing from the unconscious wishes of parents. Often a child or adolescent is given the choice of fulfilling the act forbidden to the parent's conscience or of losing the parent's love.

For the necessary and painful separation of adolescents from the nuclear family to occur, the adolescent has to attenuate the close tie he has to both parents. This is usually done by taking apart the parent of the same sex, often by open hostility and certainly by disenchantment with the values, attainments, and restrictions of the older generation. This sets in motion a ricochet from the parents, partly from the resentment of being challenged, partly because the adolescent rebellion coaxes from successful repression the conflicts of the parents' own adolescence. This is what makes it difficult for even the best-intentioned parents to empathize successfully with their sons and daughters.

Recent studies of families as a unit demonstrate repeatedly how the adolescent spurt forces a reshaping of family dynamics. The adolescent is the bringer of new values and new technologies. The adolescent insists on a reappraisal of the power balance within the family. The adolescent demands independence, and parents whose precarious equilibrium has been based on their total control of their children have to find new coping devices. Much pathology in parents in their thirties and forties can be difficulties in handling these problems. More frequently, however, the presenting member of the disturbed family is the disturbed adolescent—with a suicidal gesture when a

parent reacts with withdrawal, with an episode of pilfering when a mother refuses her care. These incidents must be seen in the wider context of a family coping with change.

Social Disturbances

It is insufficiently appreciated in the psychiatric literature that crucial issues are rooted in larger issues of society. Youth is characteristically a period of revolutionary ferment, which often finds expression in political, social, and asocial behavior. More recent interest has shifted to the relation between certain disjunctive groups of youngsters and these broader questions. Goodman suggested that the beat, the delinquent, and the nonconformist youth are responding, with imagination, to an adult world that fails to provide decent jobs, homes, and values into which they may grow. In the current national concern over civil rights and poverty, the much larger incidence of addiction, delinquency, and schizophrenia among the disadvantaged youth is noteworthy. On the other side of the coin, young people, both black and white, who are meaningfully engaged in effective protest have a much lower incidence of emotional disturbance.

Suggested Cross References

Psychiatric disorders that often become manifest during adolescence are discussed in this section. Further information regarding these may be found in Chapters 15 and 42 which deal, respectively, with schizophrenia and with the psychotic disorders of childhood; in Sections 26.3 and 41.6 on homosexuality and on the sexual deviations of children; and in Sections 41.4 and 41.5 on juvenile delinquency. The psychiatric treatment of adolescents is discussed in greater detail by Masterson in Section 43.7.

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40.3 CHILDREN'S REACTIONS TO ILLNESS, HOSPITALIZATION, AND SURGERY

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In order to consider disease states, one must also consider the state of health, now recognized as more than the absence of disease. The modern unitary view, as articulated especially by Engel, regards health and disease as phases of life. Health represents the phase of successful adaptation and, in children, of growth and development. Disease represents the phase of failure in adaptation or of breakdown in the attempt of the human organism to maintain an adaptive equilibrium or dynamic steady state; during this phase disturbances or failures may occur in the growth, development, or adjustment of the organism as a whole or of any of its systems.

Physical, Psychological, and Social Factors

Stressful stimuli of a physical, psychological, or social nature may impinge on the child to bring about a derangement of his adaptive equilibrium and the appearance of illness or a disease state. However, stress is relative, not absolute. The individual's genic endowment, his constitutional characteristics, his developmental capacities, and the nature of his past experience, including experience with disease—all contribute to his adaptive capacity. This capacity, the noxious stimuli, and the current circumstances determine the degree of stressful significance and the adaptive outcome.

In this unitary view, the organism can be said to be made up of three basic levels of organization—physiological, psychological, and social. They constitute open systems that communicate, in complex feedback operations, through the neuroendocrine system and its interrelationships with the brain and mental apparatus as well as the various organ systems. Stressful stimuli of a physical, psychological, or social nature, impinging originally on the corresponding level of organization, may produce alterations in function, bringing about feedback reverberations at other levels. Physiological and psychological defenses as well as behavioral or social adaptive devices may be called on to help maintain the adaptive equilibrium.

Depending on the child's adaptive capacity at the time of stressful experience and the nature, duration, and intensity of the stimulus, a new and more successful adaptive equilibrium may result, representing a state of physiological or psychological immunity. Conversely, temporary decompensation, chronic restriction in growth, development, or function, or serious adaptive breakdown may ensue. Many of the

symptoms or signs associated with any disease state, from fever to regressive behavior, may actually be the result of attempts by the organism to maintain adaptation or to achieve compensation, rather than the specific results of the stressful stimuli.

In designating disease states as predominantly physical or somatic or as principally psychological in character, the experienced clinician takes into account the level of organization most heavily involved in the decompensation, restriction of function, or adaptive breakdown. He recognizes that multiple etiological forces of a physical, psychological, and social nature are involved in predisposing, contributing, precipitating, and perpetuating any disease. Rather than adopting an "either-or" approach, he weighs both the somatic and the psychological components in the clinical picture and arrives at a treatment plan that takes these and the social factors into consideration.

The social field of illness includes both the effect of interpersonal forces on the child's adaptive equilibrium, with reverberations at the psychological and physiological levels, and the impact of predominantly physical illness in a child on the most important social unit—the family. A child's illness may bring about a family crisis. Families with healthy adaptive patterns may respond with behavior leading to a new and different family adaptive equilibrium, representing a type of family development. In less well balanced families, parental patterns of handling the ill child may be significantly altered because of more than usual anxiety or guilt, causing further changes in the behavior of the child or occasioning rivalrous or other responses in siblings. In seriously disturbed families, the child who falls ill may be made a scapegoat for family tensions, may be treated unrealistically as a chronic invalid, or may be handled in other ways that reflect the unconscious tendency of the parents or other family members to respond to his illness in terms of their own needs rather than his. Families from differing socio-economic and ethnic backgrounds may respond quite differently to the illness of a child and may react positively or negatively to the need for dependence on medical personnel or other helping agencies.

The importance of all these considerations renders it vital that the clinician accept the *family* rather than the individual as the essential unit for the study and treatment of disease. The illness of a child with acute or chronic disease both affects and is affected by the interpersonal family equilibrium in the particular community, society, and culture.

Some difficulty is encountered in separating the reaction to the illness or injury, representing the effects of the stressful stimuli at the physiological level, from the reaction to hospitalization or other treatment measures, representing stressful stimuli at the psychological or social level of organization.

The reactions discussed here may occur with any illness. They are largely nonspecific responses related

to the way in which the environment—parental, family, social, and physical—helps the child deal with the physical consequences and the symbolic meaning of illness or injury. Frequently, such responses can also be seen in children encountering psychological or social stresses. They are principally situational or reactive disorders, although continuing developmental deviations, structured psychoneurotic disorders, chronic personality disorders, or even psychotic disorders may be touched off or exacerbated by such stresses in biologically or experientially predisposed children. Within broad limits, however, the nature of the illness and its attendant treatment are of significant influence. This is particularly true in catastrophic or overwhelming types of illness. In such situations, there is a generic type of human organismic response related to the adaptive mechanisms involved in the handling of the phases of impact, recoil, and restitution. Such phasic response may be seen most clearly in children of school age and beyond; preschool children tend to show similar but less clear cut patterns.

With serious burns, spinal cord injuries, and respiratory polio, the phase of impact involves initial realistic fears, followed by marked regression, sweeping denial, and the use of primitive fantasy. The phase of recoil includes a lessening of regression and the appearance of depression, warded off for a time by eating disturbances or hostile, demanding behavior. The phase of restitution permits beginning adaptation to and attempts at mastery of the situation, during which individual patterns, related to premorbid personality trends, emerge.

In addition to contributory and perpetuating roles, psychological and social factors may act as predisposing and precipitating forces. Certain active children with inadequate parental supervision or with conflicts over acceptance of parental controls may be involved in frequent accidents or other self-injurious situations. Maternal deprivation may lead to failure to thrive or to delayed development, or both. Parental problems in impulse control may produce the battered child syndrome or drug intoxication of the child from repeated use of sedatives. Finally, although the mechanisms are unclear, stressful stimuli of a psychological or social nature, such as competitive pressures or the loss or threat of loss of a parental figure, seem to be involved in the precipitation of various illnesses, ranging from the common cold and tuberculosis in individuals undergoing emotional conflict to streptococcal infections in families experiencing stressful events.

Within the family equilibrium, specific reactions of parents to serious or disabling illnesses tend to parallel the phasic responses in children. Initial realistic fear is often followed, as Richmond has indicated, by: (1) a phase of denial and disbelief, persisting for weeks or, at times, months; (2) fear and frustration, associated with depression, guilt, and self-re- crimination, with intensified marital strife occurring

in some families as the parents attempt to deal with such feelings by blaming each other, the physician, or others; (3) intelligent inquiry and planning, involving the need to live with some uncertainty.

Whether a child's illness or injury produces a deleterious effect on his adaptation or the family equilibrium depends on: (1) the developmental level of the child; (2) the child's previous adaptive capacity; (3) the prior nature of the parent-child relationship; (4) the existing family equilibrium; (5) the nature of the illness or injury, including the organ system affected, the degree of prostration or pain, the type of treatment or home care, and any residual defect or handicap; and (6) the meaning of the illness to the child and his family in terms of immediately antecedent events and their actual or fantasied connection, the previous experience with such illness, the effect on the child's social, academic, and athletic capacities, and the reverberations on siblings.

Reactions to Acute Illness or Surgery

The immediate response to acute illness or injury may vary somewhat according to the organ systems affected and the corresponding reverberations at the psychological or social level. Thus, the local and systemic effects of acute rheumatic fever may have a more severe temporary impact on the psychological and social functioning of the child and produce greater anxiety in the parents than a simple green-stick fracture. Certain broad patterns of response are characteristic of children in general, with some differences related to individual variations and to developmental level.

Direct effects. Malaise, discomfort, or pain may produce listlessness, prostration, disturbances in sleep and appetite, and irritability in children, much as in adults. However, restlessness is more common in children, and hyperactivity with milder illness is frequently seen, particularly in preschool children. Anorexia and refusal of food may be marked in younger children; well meaning but anxious parents may urge food, and the child's negativistic responses often lead to feeding problems that persist long after the illness subsides. Difficulties in falling asleep, nightmares, and night terrors are common; sleeping problems also may continue as struggles for control between young children and parents.

Reactive effects. In addition to such direct effects, which may closely resemble or overlap disturbances in behavior from primarily psychological or interpersonal sources, other responses may occur.

Regression. A ubiquitous pattern in children is that of emotional or behavioral regression, seen most strikingly in older infants and preschool children but encountered also in school age children and adolescents and, for that matter, in adults to a lesser degree. In infants and young children, this regression may take the form of the reappearance of thumb sucking; return to the bottle; more demanding, clinging, nega-

tivistic, or aggressive behavior; and the temporary giving up of recently learned patterns, such as speech, walking, and bowel or bladder control. In older children, the regression occasions the reappearance of more immature social patterns, including greater dependence on the parents, particularly the mother; demanding or aggressive behavior; limitations in the capacity to share with siblings or others; and difficulties in concentration and learning. Such regression appears to stem partly from the direct effects of the illness on the child's ego and partly from the temporary falling back on earlier, more familiar modes of satisfaction or the giving up of more highly developed functions in an adaptive retreat and regrouping of forces.

Depression. Another pattern of response to illness is depression, which takes different forms in infants, children, and adolescents from those seen in adults. Depression may arise partly from the direct effects of the illness, as in infectious mononucleosis or infectious hepatitis, and partly from discouragement or restriction of activity involved, as well as the separation from the parents resulting from hospitalization. Eating and sleeping disturbances are frequent in young children as depressive equivalents, as are changes in motoric behavior from hypoactive to hyperactive. Wide mood swings often appear in older children and adolescents. Other emotional responses, often related to regressive trends, include the reemergence of primitive fears and feelings of helplessness or inadequacy. Stereotyped behavior of a compulsive or ritualized nature may be seen, as may transient hypochondriacal concerns.

Misinterpretation. Misinterpretation of the meaning of illness or injury is a common phenomenon. It is related to the child's limited capacity for intellectual understanding and testing of reality and his tendency toward magical or animistic thinking, particularly in the young child. Younger preschool children ordinarily view pain or discomfort arising from illness or accident as punishment for real or imaginary transgressions. Older preschool and early school age children show fears of bodily mutilation related to treatment procedures. Such fears are more intense when sensitive areas, such as the head or the genital organs, are involved; fears of harm to the genital organs are related to sexual differentiation and psychosexual development.

Physiological concomitants of anxiety. Psychological conflicts about the meaning of illness, enhanced by regressive trends, may result in the appearance of the physiological concomitants of anxiety. Tachycardia, palpitation, hyperventilation, diarrhea, or other signs and symptoms may be exhibited. Such physiological changes, ordinarily reversible, may compound the effects of the predominantly physical illness, as in the deleterious effects on diminished cardiac function in congestive failure or the perpetuation of diarrhea originally arising from bacterial infection or parasitic infestation.

Conversion reactions. Other psychological reactions seen frequently in school age children or adolescents in relation to physical illness include conversion reactions. These disturbances affect the voluntarily innervated striated musculature and the somatosensory apparatus, with their unconsciously symbolic expression of emotional conflict. They are to be distinguished from psychophysiological disorders, which affect involuntarily innervated systems and visceral end organs, without symbolic significance.

Conversion disorders are manifested in a variety of personality pictures, ranging from the relatively normal child to the classical hysterical personality. Transient, mild to moderate symptoms of this nature are frequently encountered during convalescence from a predominantly physical illness. Such an illness may temporarily block a child's intense developmental need to achieve scholastically, athletically, or socially. Or the illness may precipitate conflict between a regressive wish to continue to be cared for by the mother and guilt over such wishes as the result of the pressure to return to the competitive arena. Frequently, the symptoms of the physical illness are unconsciously incorporated into the conversion symptomatology, as in the continuance of pain, vomiting, headache, and dysphonia or, in a more general sense, weakness and easy fatigability. At times, other symptoms, such as certain types of syncope or disturbances in gait, may appear. Many of these conversion reactions are resolved in a few days or weeks, but they may persist chronically in a child with limited adaptive capacity or one whose family encounters special difficulty with the convalescent phase of the illness.

Dissociative reactions. Dissociative reactions, such as amnesia or pseudodelirious states, may also occur. These may compound or be compounded by the actual delirium, which is often of a subclinical nature. In children, delirium may arise in response to drug administration, or it may accompany systemic diseases with marked fever, even in the absence of any direct insult to the central nervous system. Catatonic behavior without the significance of psychosis may be seen temporarily in normal or mildly disturbed children if the physical, psychological, or social circumstances are sufficiently stressful.

Perceptual-motor lags. Other direct and indirect effects on behavior may be manifest in the convalescent phase. Meyer and Crothers have described children who have exhibited lags in perceptual-motor functions following systemic illness, such as pneumonia. The lags may persist for several weeks or months without apparent damage to the central nervous system. Such children, who may have experienced a temporary disturbance in cerebral metabolism—often with delirium, compounded by regressive tendencies—may exhibit learning difficulties after returning to school. These difficulties may become chronic, resulting in resistance to learning or other behavioral

disturbance if they are not recognized so that the parents and teacher can help the child return gradually to full academic performance.

Reactions to Chronic Illness or Handicap

Many of the considerations mentioned for acute illnesses and injuries are applicable to chronic illness and handicapping injury. Although serious repercussions on the child's personality development and family functioning are frequent, many children with chronic disease or with congenital or acquired handicaps make a surprisingly adequate adaptation to or compensation for their disabilities. Those variables relating to the child's previous adaptive capacity and the parent-child-family balance appear to be of more importance than the nature of the specific disease or handicap.

Special challenges to development do exist for children with blindness or deafness, with some differences in responses to congenital versus acquired defects. Problems in sexual development are present for children with pseudohermaphroditism or extrophy of the bladder. Difficulties in adaptation arise for the child whose movements are restrained in an orthopedic cast and for the handicapped child who requires special prosthetic devices. The debilitation and discomfort produced by certain diseases certainly have an effect on the child's social or academic functioning and on the parents' responses. Different children and parents may respond differently to such situations, however. The concept of specific personality malformations resulting from particular diseases or handicaps has been largely abandoned. Even a small and virtually unnoticeable defect may carry overwhelming significance in certain families for unconsciously over-determined reasons. Although visible cosmetic defects may be most troubling in some families, in others a hidden metabolic defect may be more mysterious and threatening, without relation to its actual severity.

Effects on personality. The personality pictures seen in children with various diseases or handicaps appear to fall along a continuum, ranging from over-dependent, overanxious, and passive or withdrawn patterns—with strong secondary gains from illness—to overindependent, aggressive modes of behavior—with strong associated tendencies to deny illness, even to markedly unhealthy extremes. A middle group of children show realistic dependence and acceptance of their limitations, with adequate social patterns and compensatory outlets and with no more denial than is consistent with the maintenance of hope.

Parental reactions also fall along a continuum, ranging from overanxiety, overprotectiveness, and overindulgence—often with difficulties in setting limits on the child's demands—to problems in acceptance of the child's disability—frequently with denial of its extent, projection of guilt onto the medical staff, reluctance to accept recommended treatment, and occasional rejection or isolation of the child within

the family unit. A middle group of parents can, after the initial phases of response, accept comfortably the child's limitations, permit him appropriate dependency, and help him exploit constructively his capacities and strengths.

Little correlation appears to exist between extremes of unhealthy parental and family response and specific types of personality distortion on the part of the child. Chronic personality disorders of overdependent, inhibited, aggressive, or pseudoindependent patterns occur commonly in such situations, but such disorders may also be seen in children without physical disability. Conversion mechanisms or other psychological reactions may lead to invalidism in slightly handicapped children. Marked depression and hopelessness have been observed by experienced clinicians to affect detrimentally the course of chronic diseases, such as leukemia.

Effects on body image. Difficulties in the establishment or maintenance of the body image are present for most children with a chronic illness or handicap, but they may also be seen in children without physical disfigurement. Size, strength, and attractiveness do play some role in the child's confidence and social adjustment, but only in very severe cases or in individual family situations do these factors appear to be of the utmost importance. In adolescents, who need acceptance by the peer group, reactions to a damaged body image may interfere with rehabilitative procedures.

Reactions to treatment. Although most children with chronic diseases or handicaps respond positively to the effect of recent drugs and surgical procedures, a small group may show paradoxical responses, with psychological decompensation, conversion, and other symptomatic reactions. In an unhealthy family situation in which the child's role as an invalid has become central, the precipitation into health of the child by the treatment may upset the tenuous balance of adaptive forces, making it difficult for the child to return quickly to a healthy role within the family and outside.

In adolescents, as in adults, psychotic reactions occasionally develop in response to adrenocorticotrophic hormone or cortisone during treatment for rheumatic fever or other diseases. In addition to the direct effect of the drug on the brain, problems in realignment of intrapsychic and interpersonal balance may also be involved.

Reactions to Hospitalization

Hospitalization, with its separation from home and family and various treatment procedures, may cause reactions in a child according to his development.

Short term hospitalization. Most, if not all, infants and children show some reaction to the experience of hospitalization. Infants in the 1st half year of life exhibit temporary and rather global responses, arising from different methods of feeding and han-

dling. Infants in the latter part of the 1st year experience stranger anxiety and separation anxiety, often with some regression and depression.

Children under 4 years of age are most vulnerable to separation from the mother. This separation is often interpreted as punishment or desertion, resulting in feelings of helplessness or fears of attack related to the child's limited capacities for reality testing. In addition to regression and various symptomatic reactions, the phasic sequence of protest, despair, and detachment—the last often associated with withdrawal and depression, as described by Robertson—is frequently seen after a few days of hospitalization, even in well adjusted children, and may be troubling to parents.

For the child from 4 years through the early school age period, the psychological meaning of the illness and its treatment appear to have greater potential effects than the actual separation from the parents. Fears of bodily mutilation and the tendency to misinterpret painful treatment procedures as punishment often invoke anxiety, regression, and the other manifestations mentioned earlier; boys ordinarily exhibit more aggressive responses than girls do.

Older school age children, who can comprehend the reality of the experience more fully, may show mild regression and anxiety over the functioning of certain organs, related to incomplete body images. Fears of genital inadequacy, muscular weakness, and loss of body control or mastery contribute to the feelings of anxiety and inferiority characteristic of this stage. In adolescents, many of the same trends are seen in more muted fashion. There are also struggles to establish a sense of identity and independence, which sometimes interfere with the teen-ager's cooperation in treatment programs.

Parental reactions show some similarity to the patterns seen during acute illness. Denial and disbelief is less marked with less serious illness, with significant exceptions. Many parents fear criticism from the hospital staff regarding their role in the illness or their effectiveness as parents. Some may show strong rivalry with nurses or physicians, interpreting professional competence in handling the child as a threat to their own parental capacities. Feeling left out or unwanted is also common among parents. A few may project their own guilt onto the hospital staff and blame them for minor difficulties. Difficulty in accepting recommended treatment occasionally leads to their signing out the child against advice.

Posthospitalization reactions may occur, even in children who have been able to maintain control throughout the hospital experience. Regressive tendencies, outbursts of anxiety, and fears of doctors or needles may appear in children after they return home. When parents are unprepared for such behavior, overprotective or overrestrictive tendencies may cause significant interpersonal reverberations within the family unit.

Although some reactions of the types described are virtually universal, the majority of children are able to adapt successfully to the experience of hospitalization, showing self-limited reactions that ordinarily subside after several weeks to several months. But the possibility of emotionally traumatic reactions is great enough, particularly in preschool children and in previously disturbed children, to require careful thought about the indications for hospitalization and to warrant the use of psychological preventive measures.

Long term hospitalization. With modern treatment measures, long term hospitalization or institutionalization is rarely necessary for the chronically ill or handicapped child. The studies of Bakwin and Bowlby, in particular, have indicated the likelihood of serious emotional deprivation for such children. In large institutions, especially, children exhibit chronic depression and detachment, often leading to shallow social relationships, distorted time concepts, limited capacities for learning, lowered resistance to disease, and rebellious or antisocial behavior. A few children, because of specially appealing qualities, can reach out to the often limited staff in such settings to meet their emotional needs, but significant personality distortions have resulted for many from such hospitalization.

Reactions to Surgery

Many of the observations on hospitalization are pertinent to surgical experience for the child. Special problems may arise in regard to operations with necessarily mutilating effects, such as amputation. If a young child misinterprets the procedure as punishment or a hostile act, he may, as with certain other procedures, become aggressive in fantasied self-defense: fear, withdrawing, or other types of behavior may result. Phantom limb phenomena, as seen in adults, are rare in children; but strenuous denial may lead to difficulties with prosthetic devices. In older children and adolescents, particularly those with hysterical personality structures, an unconscious need to suffer, arising from guilt over hostile or sexual feelings, may produce recurrent pain.

Anesthesia may evoke fears of loss of self-control. And older children may have fantasies about what might be done under narcosis to various bodily organs. Children of differing developmental levels respond differently to preoperative sedation; preschool children are often stimulated rather than sedated by certain barbiturates. Marked anxiety over operative procedures may significantly raise the sedation or anesthetic threshold, at the same time reducing the margin of safety in patients with serious heart disease or other debilitating conditions.

Treatment and Preventions

In the management of physically ill children, the physician can himself offer effective help of

a supportive and preventive nature to child and parents. In addition, he has the responsibility to act as the coordinator and integrator of the diagnostic, therapeutic, preventive, rehabilitative, and educational skills of many medical subspecialties and numerous other highly trained professional persons available to the child and his family in hospital and community. In so doing, he must draw on the principles of continuity, communication, consultation, collaboration, and coordination in order to render such help most effective to the child patient and his family.

Treatment and prevention of unhealthy psychological reactions to illness or injury begin with the diagnosis and are importantly involved in the interpretation of diagnostic findings and treatment recommendations to the parents. Anxious, confused parents need careful explanations and opportunities to ask repeated questions and to air their misconceptions. The physician also must avoid critical, judgmental attitudes toward the parents, and he should minimize their guilt and self-recrimination.

Acute illness or injury. When a child has an acute illness or injury, the physician should carefully explain each procedure in advance to him, using terms and concepts appropriate to his developmental level. Preparing the young child for elective hospitalization for tonsillectomy, for example, involves a brief discussion of the concrete details of the hospital routines and anesthetic procedures and a truthful statement that his throat will be sore afterward. Ideally, the parents should be prepared in order to prepare the child. For the preschool child, his mother's overnight stay in the hospital with him is the most valuable preventive and supportive measure. For the older child, daily visiting is important, whatever his illness.

Special recreational programs in the hospital, permitting the child to play out his anxieties before and after treatment procedure, have real value. Also valuable is schooling, available on a flexible basis even to the briefly hospitalized child. The combined observations of the physician, nurse, recreational or occupational therapist, teacher, and other personnel on a hospital ward have great diagnostic value.

Children should be cared for at home whenever possible, and due thought should be given to the contraindications as well as the indications for hospitalization. When hospitalization is indicated, every effort should be made to cooperate with the parents in a therapeutic alliance, and their concerns and needs, as well as the child's, should be kept in mind during hospitalization. If such an approach is adopted, most parents can make vital contributions to the hospital program through their participation in the care of their own—or at times other parents'—children. The handling of crucial phases in convalescence should be worked out cooperatively with parents. Explanations of regressive or other posthospitalization behavior should be given in advance so that they will see this

as a characteristic of childhood and not as a personal failure.

Chronic illness or handicap. For children with chronic illnesses or handicaps, a variety of treatment measures apply. The use of a supportive psychotherapeutic relationship with child and parents underlies all other therapeutic steps. Without such a positive relationship, other treatment is less than optimally effective. The physician should call on the skills of other members of the rehabilitation team, including the child psychiatrist, the psychologist, hospital nurses, social workers, school teacher, recreational and occupational therapists, public health nurse, and other professional persons in the hospital and the community. In the hospital, a social group worker can be effective with groups of chronically ill or handicapped children. Group discussions among parents of children with particular kinds of disabilities are also helpful.

The chronically ill or handicapped child should be cared for in the home whenever possible. Sometimes he can be handled in a regular class in school, with the addition of special classes where necessary. If placement in an institution is necessary, the smaller institutions or group foster homes with medical and nursing facilities are best.

For the chronically ill child undergoing surgery, the principles already mentioned are vital. With a very young or seriously disturbed child, special arrangements to have the mother in the child's room when he undergoes preoperative sedation and to have her there when he awakens can afford continuity for the child. This may also avoid confused battles on the way to the operating room. Opportunities to ask questions after as well as before such procedures can help children work through their misconceptions and anxieties.

Although ill children need some rest and quiet, their natural tendencies toward activity and the hyperactivity engendered by illness and by restriction of activity should be taken into account. In the hospital, a regimen of moderate activity is helpful. Advice about absorbing but quiet activities can be most constructive for the potentially harassed and anxious mother taking care of the child at home. Such an approach can minimize struggles over inappropriately enforced bed rest, which can spread into other behavioral areas and stimulate hyperactivity of a physically and psychologically detrimental nature.

Terminal Illness

The child's concept of death is not fully developed, in the sense of realistic comprehension, until he is about 10 years old. Therefore, children can quite adequately deny fears of death, but show other, more immediate, fears of pain or treatment. Even in adolescents, fears of death are often expressed in terms of fear of pain or of need for someone to be with them to help them in difficult moments. Parents may carry out mourning in advance, sometimes seeming somewhat

detached from the child at the end, but then reexperience depression or guilt after the child's death. Physicians are often disturbed by their own feelings during the child's terminal illness. The important thing is for the child and parents to have someone to whom they can express their feelings, rather than maintain an unrealistic silence. Psychiatric consultation may be helpful in understanding such situations and in working out a plan for supportive help. Parents often require support after the child's death, and opportunities for this should be routinely available to them.

Suggested Cross References

More information regarding the effects of separation from the mother may be found in Yarrow's section on maternal deprivation (Section 44.1). Children's reactions to dental disorders and treatment are discussed by Ewen in Section 31.4. Section 28.1 contains further information regarding psychological reactions to gross stress, and Sections 31.2 and 31.3 discuss adult reactions to medical and surgical illness and treatment.

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Special Symptom Reactions

40.4 LANGUAGE DISTURBANCES

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Language in its different forms—spoken, written, and printed—is a system of communication among human beings who comprehend and use symbols possessing arbitrary meanings, according to the rules established by a given community. Impairment of language, then, consists of partial or total failure to comprehend or use such symbols for effective communication.

In every case of a language dysfunction, a variety of interrelated factors are operating. To begin with, there is the young organism with its constitutional strengths and weaknesses, and there are reasons for believing that linguistic endowment varies in different individuals. There are the adjustments that the organism makes to its constitutional or acquired deficit and the defenses that it develops, which determine much of its functioning. There is, finally, the emotional climate in which it makes this adjustment, which, in turn, modifies the organism's response to its original difficulty. None of these can be viewed in isolation; each language dysfunction has to be evaluated within the framework of all three.

This presentation does not discuss voice disorders or communicative difficulties related to the instrumentalities of language (sensory deficits as in loss of hearing), structural defects (as in cleft palate), or neurological disorders interfering with the peripheral speech mechanisms (as in dysarthria). The following discussion is limited to noninstrumental aspects of language disturbances.

Disorders

Aphasia. In the acquired aphasia of adults (defined by Schuell et al. as a generalized language deficit that crosses all modalities and that may or

may not be complicated by other sequelae of brain damage), both decoding and encoding processes are disordered in varying degrees. Acquired aphasia in children is rare. If it occurs in association with infectious processes, it usually results in only a temporary lowering of functional competence and is frequently, therefore, a transient symptom.

The term "congenital aphasia" has been used to describe failure to develop language due to demonstrable central nervous system impairment and not related to limitations in intellectual potential, sensory deficit, or severe psychopathology. However, not all children at relatively advanced ages who are unable to comprehend or use symbols have a verifiable history of brain injury or show positive signs on the classical neurological examination or the electroencephalogram. Some of them present "soft" neurological signs and are thus suspected of minimal brain injury; this would be an inferential diagnosis and one for which the criteria differ from one clinical setting to another.

Orton coined the term "developmental word deafness" for children who show severe difficulties in language reception and expression along with a markedly positive family history of language disability. He felt, as does Bender, that this syndrome belongs in the category of developmental language and learning disturbances. Since investigation of the linguistic dysfunction itself does not necessarily permit deductions as to etiology, it may be preferable to use a descriptive term, such as "communicative disorder of early childhood," which implies a continuum of language deficits, rather than a label like "aphasia," which has etiological connotations.

Clinical characteristics. The features of early, severe communicative difficulties in children are profound inattention to auditory and specifically to verbal stimuli and inability to assign symbolic significance to input events. Children with such difficulties hear, but they do not necessarily apprehend. They have trouble with what Hardy calls "auding"—that is, with perceiving, processing, storing, and re-

calling the serial order of information received through auditory pathways. Their auditory memory spans are short, and their auditory discrimination defective. In such children, the perceptual field seems to be unstable, and they have trouble separating the auditory figure from the background of irrelevant stimuli.

The degree of expressive impairment varies and is usually secondary to the receptive deficit. Speech, if it is present at all, mirrors the diffuse reception: it may be severely limited in quantity and primitive and undifferentiated in quality. Echolalic responses or jargon may be substituted for meaningful communication.

During the past 15 years attention has been drawn to the fact that children with early communicative disorders frequently show pervasive deviations in non-linguistic areas: primitive postural reflexes, global motility patterning, dyspraxic features, defects in body image, crude visuomotor responses, and, among behavioral signs, impulsiveness, distractibility, hyperkinesis, and response variability.

In these children, the absence of serviceable language tools tends to interfere with developing ego functions of mastery, impulse control, and the ability to postpone gratification. The fact that they are unable to discharge tension by way of words, that they cannot verbally express anger and aggression, often results in severe emotional problems. The intensity of psychological disturbance depends not only on the degree of impairment, but also on the ability of the environment to tolerate and support this kind of child, whose difficulties with control may be severe and whose infantile needs are often far greater than those of others. Eventually, and with the help of appropriate therapy, a number of such children do learn to use words, although paucity of verbal output, primitivity of sentence construction, and learning disabilities usually follow in the wake of severe retardation in the acquisition of language.

Dyslalia. The early language development of dyslalic children, who between the ages of 4 and 7 have difficulty in making themselves understood, is often somewhat delayed. Their severe articulatory difficulties; their inability to pattern phonemic detail, as described by Masland and Case; their tendency to omission, substitution, and distortion of sounds; their telescoping of words—all tend to obscure more subtle receptive language deficits: short auditory memory span, diffuse auditory discrimination, trouble with the sequential ordering of incoming information. While dyslalic children grossly understand language of others, they may be unable to interpret the small, grammatical words that represent spatial, causal, and temporal relationships.

It is essential to make a distinction between articulatory difficulties per se and disorders of a primarily linguistic nature. A child may, for instance, correctly produce an "F" or a "V" in isolation yet confuse the two sounds in the pluralization of nouns.

The dyslalic child may have trouble evoking words, he may have difficulties with syntax, and he may fail to incorporate basic morphophonological rules. Intelligibility often fluctuates; it decreases with the length of units and the complexity of content, and verbal communication sometimes breaks down completely when the child has to cope with intricate syntactical structures and the organizational load thus becomes too heavy.

The dyslalic child's infantile sound substitutions and his occasionally primitive sentence construction may suggest regressive modes of functioning. It is true that a number of such children are as immature psychologically as they are physiologically. Some find it hard, for instance, to give up lisping, which is often a residual of dyslalia. Secondary emotional problems, moreover, tend to arise as the result of difficulties with expression and communication. As dyslalic children mature, their speech generally improves. However, subtle articulatory immaturities and residual problems with formulation and organization of language can be observed at later ages.

Cluttering. Cluttering, like dyslalia, is one of the constitutionally determined linguistic disturbances, and severe difficulties with the organization of language often persist into adulthood. The syndrome was first described by Weiss in the early 1930's. Cluttered speech is characterized by excessive rate, fluctuations in rhythm, monotony, frequent repetitions of syllables and sounds, articulatory instability, and a tendency to reverse the order of sounds and words. On the receptive side, one finds disorders of auditory attention, severely deficient auditory discrimination, and sometimes diminished psychoacoustic ability.

Specific reading and spelling disabilities. A significant number of clutterers are found among children with severe reading and, above all, spelling disabilities. These difficulties, like the communicative disorders of early childhood, may occur as the result of encephalopathies. The term "specific dyslexia" is best reserved for cases which present demonstrable evidence of central nervous system dysfunction. However, not all children suffering from reading disabilities have positive signs on the classical neurological examination and/or the electroencephalogram or have verifiable histories of brain injury. Severe reading and spelling disorders frequently occur in given families and are thus assumed to be genetically determined. Such difficulties are primary only when not related to psychopathology, limited intellectual endowment, or extraneous factors (such as illness, poor teaching, frequent changes of school, or deprived environmental conditions) and when the child's performance in reading and spelling is substantially below his achievement in other academic subjects and not commensurate with his intellectual potential.

Clinical characteristics. Like children with massive oral-language deficits, subjects with severe reading and spelling disabilities show a fluid, diffuse mode

of perceptuomotor organization. Their responses in most areas of functioning may reflect a maturational lag, sometimes so severe that it seems to be rooted in the very biological matrix. Bright and highly motivated children whose self-image has not been damaged as a result of early failure may, with the help of contextual clues, compensate spontaneously for their early perceptual fluidity and, after an initially slow start, do well in reading. In more severe cases, however, intensive and long term remedial reading therapy is indicated. With such help, the large majority become fairly adequate, if not fast, readers. In extreme cases, the goal is only functional reading.

In cases of severe spelling disabilities, remedial help is a necessity; however, it is usually of limited effectiveness, and a large number of children remain poor spellers. Spelling requires ability to reproduce not only the over-all gestalt of the word but also its precise internal design. Children who are suffering from severe language disturbances are unable to maintain a linguistic gestalt. This is clearly evident in poor spellers: although they may remember the way a word looks when it is printed in bold black letters on a white card since the figure clearly stands out from the ground, they are likely to lose the configuration when required to reproduce the same word in context. Poor spellers perceive words as only vaguely structured wholes; on the way from perception to graphic representation, they lose important gestalt attributes, so that the end product usually bears little or no resemblance to the correct pattern (de Hirsch). For these individuals, words have no physiognomy and never become familiar.

Severe spelling disorders are often complicated by writing disabilities; added to the children's basic trouble with the formulation and organization of content, this results in overwhelming difficulties with written composition. These children's jerky dysrhythmic handwriting mirrors their dysrhythmic speech. Their compositions, characterized by omission of sounds and words and the telescoping of long configurations, reflects their cluttered, disorganized verbal output. Nearly all clutterers are poor spellers; both show striking difficulties with auditory discrimination.

Stuttering. Stuttering is closely related to cluttering, but physiological signs, as they have been discussed in the case of other language disturbances, are often absent. Weiss considers stuttering to be a neurotic manifestation, superimposed, in many cases, on cluttered, disorganized speech.

Stuttering is a highly controversial subject. Earlier researchers related it to neurological dysfunction. Froeschels, who has contributed an excellent description of the evolution of the syndrome, calls it an aphasic-like disorder. The psychoanalytical school is impressed with the significance of early oral- and anal-sadistic features. Johnson, whose theories have been widely accepted in America, maintains that stuttering is a semantogenic disturbance and results from

the erroneous labeling of early nonfluency as stuttering. The position taken here is a modification of Wyatt's.

Stuttering in young children well illustrates the complex, dynamic interrelationships among the neurophysiological, linguistic, and affective aspects that are typical for all language dysfunctions. Stuttering is usually first noted between the ages of 2 and 4, when the child has to struggle with complex grammatical forms and, in the short span of 18 months, passes from a primitive to a highly integrated form of language organization. At that age his neurophysiological maturation may lag far behind his emotional and intellectual need to express relatively complex and differentiated content. This happens at the time in the child's life when he has to renounce early instinctual gratifications, when aggressive impulses are being discouraged, when a new sibling often threatens his place in the family, and when, finally, in one way or another, his ties to his mother are being loosened. When the two crises—the neurophysiological-linguistic and the emotional—coincide, stuttering may first become apparent. Primary stuttering—with its easy, effortless repetition of syllables, sounds, and words—disappears as the child's neurophysiological maturation enables him to cope with a heavy linguistic load, provided there are no valid psychological reasons for the perpetuation of the symptom. In older subjects, however, stuttering—with its severe blocking, tension, and avoidance rituals—has very different implications. In most cases it becomes part of the ego's defensive system; it is rarely amenable to treatment by the speech therapist and should be regarded as a psychiatric disorder.

Differential Diagnosis

It is essential to distinguish between emotional difficulties that are secondary to language deficits and those primary psychological disturbances that are at the very core of some communicative and learning disorders. The dividing line is not always sharp. An intelligent boy, for instance, who has consistently failed in reading and spelling may show phobic attitudes that complicate and obscure his original language problem. Such a boy's ability to invest effort in a subject like science suggests that his phobic response to reading may be a reaction to his specific weakness in the language area. However the learning difficulties of children whose failures extend to all areas of functioning have psychiatric implications—all learning experience remains meaningless and fragmented. Such children may be so involved in fantasies that, as Pearson and de Hirsch have pointed out, they have no psychic energy available for academic requirements; their difficulties are usually related to ego impairment, and prognosis tends to be poor.

The differential diagnosis between specific language disorders and psychiatrically determined ones

may present considerable difficulties. Severely limited speech output, fluid perceptual experiences, defects in body image, and often overwhelming anxiety are characteristic both of schizophrenic children and of those suffering from early and severe communicative disorders. Bender maintains that in both groups one is dealing with a delay in neurological integration and with the persistence of infantile neural patterning. In schizophrenic children, however, fluidity is pervasive and involves the total personality organization, including the establishing of ego boundaries; in children with specific language deficits, on the other hand, instability seems to be confined to the perceptual motor and linguistic realm.

Psychotic Language

The formal testing of the language reception of psychotic children is difficult because they are hard to reach, they are usually more responsive to stimuli from within than from outside the organism, and they perceive the world in very primitive organizational schemes. Hoberman and Goldfarb's experiments have shown that auditory discrimination of psychotic children is defective, and it can be assumed that their feedback experiences are diffuse and unstable.

The bizarre and idiosyncratic character of the verbal output of psychotic children has received considerable attention. A number of striking features can be observed in their verbalizations. The first of these is the often total absence of communicative intent. Communication requires a complicity between partners, as it were, and psychotic children are not in on this arrangement. Language, as it is used by normal individuals, has to be consensually validated; it is, among other things, an instrument of interpersonal behavior. The failure of psychotic children to establish stable object relationships is reflected in their echolalic speech, with its mechanical, birdlike quality which has a very different flavor from the occasional echolalic utterances of children with severe communicative disorders. The latter may echo words, but they do so for purposes of clarification, to try out words for size, as it were. Pitch and inflection, which carry the emotional and communicative as opposed to the conceptual load, are usually normal. In psychotic children, sentence melody and pitch are inappropriate.

In schizophrenics, as Freud pointed out, words are no longer referents but instead become the things themselves and, as such, acquire magic properties. Werner and Kaplan spoke of a "thinglike" handling of linguistic forms. As described by Laffal, words in such subjects do not necessarily refer to communal experience, nor do they follow established sets of conventions. As in dreams, words may be distorted or telescoped; a whole train of thought may be condensed into a single word. Language in psychotic children is not necessarily in the service of ego and reality; it more often expresses primary processes. A schizophrenic boy, for instance, will say, "There is

no use learning to read the letter K; it is not sympathetic; it has too many spikes." For this boy, the letter has not acquired objective conventional significance but is experienced in terms of primary processes. In this instance, it reflects his primitive fears of aggression and retaliation.

Some children are, of course, damaged on several levels of integration. There are autistic children who are clearly brain-injured; their dysfunctions are apparent in both physiological and psychological aspects of functioning. In some learning disabilities that appear to be related to psychopathology, neurological examination points to diffuse organicity. Some children with specific language difficulties show signs of withdrawal which are secondary to their communicative disabilities. A prolonged diagnostic investigation is sometimes required to determine the relative contribution of affective, neurological, and sociological aspects of communicative failure.

Suggested Cross References

Language disorders may occur as separate entities, or they may occur in the context of other clinical pictures. For more detailed discussions of these, see the sections on developmental disturbances and reactive disorders (Section 40.1), childhood psychoneurosis (Section 41.1), psychosis (Section 42.1), organic brain disorder (Section 42.3), and mental retardation (Section 22.1).

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40.5 ENURESIS

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From antiquity, physicians in a diversity of civilizations have been baffled by the problem of enuresis. As is always the case when doctors are perplexed, one can find catalogues of the most astonishing treatment techniques, since the physician makes valiant efforts to master the problem by means of empirical approaches. As late as the time of Pliny, there were prescriptions to eradicate enuresis by means of consumption of wood lice or swine's urine. In the first pediatric textbook, which appeared during the Renaissance, enuresis was discussed. However, even in the 19th century, many an enuretic received prescriptions not unlike those which Pliny listed. Today there is still a plethora of treatment approaches for enuresis, with enthusiastic claims and counterclaims for all, proving only that the ancient problem of enuresis is still unsolved.

Definition

Officially, enuresis is classified as a habit disturbance under the special symptom reactions. Thus, it is regarded as a transient reaction, manifesting itself primarily as a habit with repetitive symptoms, the inappropriate and involuntary passage of urine.

Operationally, enuresis can be defined as bed wetting or clothes wetting in persons over the age of 3 who fail to inhibit the reflex to pass urine when the impulse is felt during waking hours and those who do not rouse from sleep of their own accord when the process is occurring during the sleeping state.

Epidemiology

The chronological antiquity of enuresis is matched by its geographical ubiquity. No country and no class of citizen in any country seem to be totally exempt from enuresis. Enuresis is found in the developing nations as well as in highly developed countries. The disorder seems to be more prevalent in socioculturally disadvantaged individuals. For this reason, one finds a greater proportion of enuretic Negro youngsters and youngsters who make low scores on psychometric testing.

Enuresis occurs twice as frequently in males as it

does in females. The reason for this ratio is thought to be the result of such factors as increased effort by the girls and their mothers to banish the habit, easier submission to training by young females, etc.

At present it seems that enuresis occurs with greater frequency in combination with one or more of the following disturbances: (1) passive-aggressive or passive-dependent reactions; (2) sleep-walking; (3) delinquency; (4) inferior dentition (as measured by decayed, filled, or missing index); (5) chronic genitourinary tract complaints (urgency, frequency, nocturia, precipitancy); (6) speech disorders. A family history of enuresis is related to enuresis in most studies. In addition, a statistically significant number of adult enuretics give a family history of sleep-walking, as compared with the lower incidence of sleep-walking history given by the patients used as controls in the study.

Eighty-eight per cent of children have ceased enuresis by age 4½. By age 7½ about 93 per cent of all children are dry. Of the remaining 7 per cent, almost all have ceased wetting by age 17. Yet the magnitude of the frequency of the symptomatic habit is seen from an abundance of military statistics, which indicate that between ½ and 2 per cent of all who enter the service are enuretic. Even allowing for the youth who wets to escape his enlistment, there can be no doubt that there are a significant number of adults in the general population, probably more than 1 in 100, who have a problem of wetting the bed at least several times a month.

Etiology

Both investigators and practitioners view the etiology of enuresis as due to contributory components of an organic, intrapsychic, or social nature. In some cases one of these components may be the total cause; in other cases, two or three reasons are intertwined.

Organic causes. In about 10 per cent of cases of enuresis, an organic defect involving the genitourinary tract can be located. When there is only nocturnal enuresis, the likelihood of organic etiology is small. The combination of nocturnal and diurnal enuresis, especially in a patient with frequency and urgency, is highly suggestive of an organic basis for the complaint.

Some of the genitourinary tract causes of enuresis are genitourinary infections, trigoneurethritis, vulvitis in girls, meatal stenosis in boys, and anomalies of the posterior urethra and urethral valves. Phimosis is rarely a cause of enuresis.

The family history of enuresis found in enuretics has suggested that a gene may be influential in determining enuresis. This theory is hard to prove or disprove. It is striking, however, that many persons cease to wet at about age 20, at the same age as some of their blood relatives did. It is suggested that the enuretic may inherit a slowly maturing neural apparatus and that, as a result of this inheritance, he

does not sense bladder fullness or cannot act on the signal if it is received. Since enuretic children and adults are much more likely than the control subjects to have abnormal brain wave patterns, further research may show a central nervous system relationship to enuresis.

Another hypothesis on the connection of the nervous system with enuresis is that dryness is a result of self-acquired control over the levator ani muscles to inhibit the micturition reflex and thereby increase the bladder capacity. To micturate, one willfully contracts the abdominal muscles and relaxes the levator ani. Enuresis is seen as a failure in attaining bladder enlargement. Another theory is that since bladder distention is a stimulus for micturition during sleep, the incidence of deep sleep or hypersomnolence by enuretics may be related to enuresis.

Social factors. Numerous social factors are probably of importance in enuresis. Some authorities interpret the family history data as indicating that the parents may be permissive and unperturbed by enuresis. They, therefore, allow it to continue for longer periods of time. The enuretic may have failed to get proper and consistent training in the habit of dryness. There may be some significance in living in a cold house and not wishing to get up to go to the bathroom or in not having convenient bathroom facilities. Since the enuretic uses his symptoms to express aggression and hostility and to get attention, enuresis may be a manifestation and a reflection of psychopathology in a family.

In enuretic boys there is often found a mother-son relationship in which the child continues his enuresis because of the unconscious expectations and wishes of the mother. The mother often has depreciatory attitudes toward males that make her demand that her son be both ineffective and rebellious. Since the child comes to fear women as dangerous and disappointing if he is active in the male role, he adopts a passive attitude and avoids the masculinity that would both threaten and displease the mother. The development of a passive-aggressive personality and the use of enuresis as a symptom serve the needs of both mother and son. That is, the son maintains worth to the mother because he is not growing to true masculine maturity. The family constellation is such that the father also rewards the son because the boy does not constitute a threat to the father. Not surprisingly, therefore, a young adult male who still wets the bed is found to view his home as an idyllic place, despite what he regards as excessive bickerings between his parents, often over issues of the mother's seductiveness. This young adult seems to prefer to be a Peter Pan who does not have to assume grown-up responsibility.

Female enuretics, on the other hand, have a very strong attachment to their fathers. Just as the male enuretic may be a mother's boy, the female enuretic may be a father's girl. Unlike her male counterpart,

however, the female is found to be a leader of her peers in social and scholastic achievements and interests. Theoretically, the female enuretic may resort to bed wetting as a means of reducing penis envy problems, which are prominent in these subjects.

Pathophysiology

Recent investigations have considered the enuretic process as a sleep disturbance. Research has been conducted by having enuretics and control subjects sleep in laboratories equipped to record such data as the moment of bed wetting, the changes in heart rate, perspiration, respiration, and muscle tension. The dreams of the enuretic have been recovered by awakening the subject while he is dreaming. This material has been correlated with bladder volume changes through the night and the ability of an enuretic to sleep through a measured amount of noise.

When the enuretic is compared with control subjects, he seems to have different physiological responses. The enuretic child sleeps very soundly. During enuresis, there may be tachypnea, tachycardia, and compensatory bradycardia. The enuretic boy frequently has an erection during micturition. On the nights that he wets, an enuretic child often dreams of hostile and aggressive actions, such as witnessing a gun fight, an accident, or a fire. The young adult, however, on the nights that he wets, dreams of dependent activities, such as a mother preparing a feast or a joyous reunion with a loved one.

Clinical Description

The observation of clothes wetting or bed wetting is made very easily. However, the observer cannot tell whether there is deliberate wetting for some secondary gain; whether there is an organic etiology, as in neurogenic bladder or spina bifida defects; or whether the individual is enuretic. Usually the person who brings the chief complaint can offer testimony as to the wetting episodes and their pattern of occurrence. In the majority of cases, there is no difficulty deciding that the wetting is a case of enuresis.

There are two general categories of enuretics. The primary, also called persistent, enuretic and the secondary, also called transient or neurotic, enuretic. Four fifths of the cases are primary, which means that a period of sustained dryness has never developed and the patient has never known the confident feeling of retiring without worry of enuresis. The secondary enuresis appears after a person has stopped wetting. A neurotic conflict, such as the birth of a sibling, or a transient emotional stress, such as making an adjustment to military service, may precipitate enuresis. Here the enuresis is a regressive phenomenon.

The physician must note whether the enuretic episodes are diurnal, nocturnal, or both diurnal and nocturnal. Although nocturnal enuresis is by far more frequent, a history of occasional diurnal lapses occurs in about 40 per cent of child enuretics. It has been

estimated that at least 1 out of every 1,000 enuretics has an associated encopresis (involuntary passage of feces).

Differential Diagnosis

Usually, the pattern of enuresis is clear cut, and the doctor has no trouble deciding that there is no demonstrable pathology. For instance, the patient remains in good health, he may wet selectively (e.g., at home but not on trips), there are no laboratory or physical findings, and there may be a family history or past history of enuresis.

Epilepsy can usually be distinguished from enuresis by the presence of other stigmata of paroxysmal cerebral dysrhythmia, such as auras, tongue biting, convulsions, and postictal states. Less frequently, one must differentiate sleep-walking, with concomitant urination, and enuresis. However, since enuretics are more likely to be sleep-walkers, the differentiation, if it exists, may be of only academic importance.

Treatment

The time-honored counsel to parents that the enuresis will cease when the child grows up seems, with certain exceptions, to be true. Although most children are dry by age 10, any child who is enuretic should be treated early, since at present it is impossible to distinguish the child who will continue to suffer enuresis into adolescence and adulthood.

General treatment. Although the treatment of enuresis depends on the individual factors in each case, some general measures should be observed in all cases.

First, the patient must have a thorough physical examination, a urinalysis, and a family history study. In cases of both diurnal and nocturnal wetting where there is urgency and frequency, the doctor may wish to observe the patient pass his urine. Some cases may require additional procedures, such as x-ray or brain wave studies.

Second, the therapist must do all he can to promote trust, confidence, and respect. The patient must wish to correct his problem. Often the therapist, by indicating his confidence that the patient can accomplish such a correction, overcomes the largest barrier to successful treatment. The rapport between therapist and patient doubtlessly accounts for the marvelous success that all sorts of therapies have had on enuresis throughout history. Yet, since success is inconstant, unpredictable, and uneven, better treatment methods are necessary.

Third, in the case of child patients, the therapist must reassure the parents concerning the frequency and possible course of the disorder. The doctor must help the parents, particularly the mother, to truly want the child to be rid of the complaint. Usually, it will be necessary to have some sessions with the mother to allow her to ventilate her feelings and to receive psychotherapeutic support. The parents must learn to deal consistently with the patient and to

convey to him, in a gentle but definite manner, that they wish him to stop bed wetting.

Specific treatment methods. The therapist may elect to use one or more specific treatment methods, including psychotherapy, drugs, conditioning devices, bladder-training exercises, hypnosis, and sleep interruption. If there is no response to the treatment within 3 months, the therapist must consider a reevaluation of the case. Although in nearly one half of such reevaluations an organic lesion is found, the lesion may not be the entire cause of the enuresis.

Psychotherapy. When psychotherapy is the selected treatment, individual therapy for the patient is enhanced when the mother or spouse is also in individual or group psychotherapy. Especially in pediatric situations, the results depend a great deal on the response of the mother to the treatment process—both hers, if she is in treatment, and the child's. Psychotherapy is an especially effective treatment with young adult females.

Drugs. A great variety of drugs has been used in the treatment of enuresis. The current armamentarium includes the following: (1) anticholinergics, such as tincture of belladonna and atropine sulphate, which inhibit the detrusor muscle during the night and may lead secondarily to an enlarged bladder capacity; (2) central nervous system stimulants, such as amphetamine and caffeine, which promote a lighter sleep, enabling the patient to awaken to void; (3) antidiuretics, such as posterior pituitary snuff, which reduce urinary output and thus aid nocturnal polyuria or diminished bladder capacity; (4) psychotropic drugs, such as chlorpromazine and meprobamate, which lessen anxiety and help break the cycle of worry over failure to be dry, and increasing enuresis; (5) hormones, such as chorionic gonadotropin and methyltestosterone, which increase genitourinary tract maturation; (6) antihistamines, such as benadryl, which are used where enuresis may be due to a specific allergy that produces a hyperirritable bladder mucosa with resultant urgency and involuntary urine passage; and (7) imipramine hydrochloride (Tofranil). As with all drugs, conflicting results with Tofranil have been reported. The mechanism of action is not clear and may involve the drug's effect on delaying micturition.

Conditioning device. In most cases the most effective way to banish the symptom of bed wetting is to employ a conditioning device that awakens the subject by an alarm bell or a buzzer as soon as a drop of urine contacts a wire pad on which the subject sleeps. The conditioning process quickly leads to cessation of bed wetting, since the patient learns to awaken and void before the stimulus of the bell or buzzer. Although relapse may occur, it is handled easily in most cases by another brief retreatment with the conditioning device. Although no substitute symptoms develop following conditioning, adjunctive psycho-

therapy is often helpful to correct serious family psychopathology when conditioning devices are used.

Bladder training. In cases of primary enuresis, bladder training exercises designed to increase the vesical capacity are successful. The patient may force fluids, wait as long as possible before voiding, and record the volume of urine excreted. Drugs such as oxyphenecyclimine, an anticholinergic, may supplement the voiding charts and bladder training.

Hypnosis and sleep interruption. Hypnosis is effective as a treatment for enuresis and can even be used in children. Sleep interruption by a parent or an alarm clock is useful if the individual is fully awake when he voids. This interruption does not interfere with the patient's health, since the enuretic usually has no difficulty returning to sleep after being aroused.

Suggested Cross References

For information about fundamental concepts of sleep and of conditioning see Sections 2.4 and 3.3, respectively, in Area B, on the basic behavioral sciences.

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40.6 NAIL BITING AND THUMB SUCKING

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Thumb Sucking

Thumb sucking, like nail biting, is commonplace in our society. It is classified under special symptom reactions as a habit disturbance and is a common habitual body manipulation.

Epidemiology. Thumb sucking is physiological during the first months of life. At about age 1 year the habit ceases. During moments of stress or at nap time and during sleep, thumb sucking may be considered normal until the child is 3. When the activity continues into early childhood, it is considered an indication of emotional turmoil. A fifth of all children past age 6 continue to suck their thumbs.

Etiology. Sucking is a basic physiological need

that has survival value for the human being. In addition, sucking activity is important in the development of the face and jaws and the development of speech.

Thumb sucking may be resorted to as a means of tension release when a person feels tired or insecure. The sucking relieves anxiety by providing an autoerotic oral gratification. Thus, one gains comfort and solace without the presence of another person, such as the mother.

Pathology. There is considerable controversy as to whether or not problem sucking leads to dental pathology. Most authorities believe that, if a person has a good bite and has been provided good dental structures through heredity, the chances of developing malocclusion from thumb sucking are slight. Further, if the deciduous teeth do not become displaced, spontaneous correction of the bite takes place after cessation of the habit.

Management. If an individual sucks his fingers beyond infancy to such an extent that it becomes a problem to his environment and to himself, treatment is indicated. Such problem suckers should have the benefit of dental consultation. Often, for instance, a dental device can aid in reducing sucking through the night.

The parents should be reassured as to the relatively benign nature of the disturbance. It is helpful to secure the child's interest in the success of the treatment to eliminate the symptom. However, the major therapeutic effort must be directed to the general emotional problems that the patient demonstrates. The specific thumb sucking difficulty can be minimized if not ignored.

Nail Biting

Epidemiology. Nail biting or onychophagia is also a means of discharging inner emotional tension. Many adults give a past or present history of nail biting.

Studies indicate that two fifths of all children between the ages of 5 and 18 are nail biters. Girls bite their nails somewhat less frequently than boys. At age 18, the number of nail biters diminishes to about one third of the population studied. Roughly, a fifth of college students are still nail biters. In one study about 10 per cent of graduate students continued the habit.

Etiology. According to the psychoanalytic school of thought, nail biting is generated by intense hostile or competitive impulses toward a parent. Yet, if such impulses were actualized, the nail biter would destroy his dependency gratification source. To resolve this conflict, the patient bites his nails thus denying his hostility, injuring himself, and demonstrating his punishment. At the same time he is able to express aggression but spare the object of his aggression. Nail biting is an oral, sadistic, tension-reducing impulse that is most likely to occur when the patient is bored or anxious.

Management. With young children who do not bite their nails too severely, techniques relying on suggestibility or self-reliance have been successful in eliminating nail biting. The child recognizes that the family is interested in him and that they have confidence that he can master a large problem. Thus, the child may participate in the treatment by means of placebo tasks, such as taking the responsibility to soak his nails daily in olive oil.

In the case of adults or children who have more obvious emotional illness, placebo tasks or studied but supportive indifference to the problem will not be sufficient. In these cases the therapist must attend to the more urgent and more pressing life stresses that result in nail biting.

Suggested Cross References

For a more detailed discussion of the treatment of special symptom reactions that were discussed in this section see Chapter 43, on psychiatric treatment of children, in this area.

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40.7 CONDUCT DISORDERS AND NEUROTIC TRAIT REACTIONS

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Conduct Disorders

Definition. Traditionally, the term "conduct disorder" has been used to refer to manifest behavior disturbances in childhood which are a persistent source of difficulty in the home and/or the school and community. As such, this diagnostic entity is considered to include the entire gamut of behavioral disorders, ranging from extreme provocativeness, dis-

obedience, negativeness, temper tantrums, and cruelty, to asocial behavior, such as precocious sex activity, stealing, truancy, lying, and cheating. The atypical child usually manifests a constellation of such disorders. However, they may also appear as transient phenomena in the course of normal development. Conduct disorders may be adaptational or reactive; they may be neurotic or psychotic; or they may be organic in origin.

Etiology. These disturbances have been attributed to a wide range of etiological factors. For the most part, conduct disorders are considered to represent a failure on the part of the parents with respect to the socialization of the child, which, in turn, has given rise to poor impulse control. However, conduct disorders may also represent neurotic formations, such as counter-phobic aggression or compensation for ego weakness. Thus, many varied and complex hypotheses may be advanced to explain the psychodynamics of a single disorder. For example, a temper tantrum may represent an overt expression of aggression, due to poor ego or superego control; rebellion against authority; an attempt to control the mother; compensation for low self-esteem; or a desire for punishment, due to poorly warded off guilt feelings. Any one of these explanations may be appropriate in a specific case; but it would be fallacious to ascribe all temper tantrums arbitrarily to the same etiological factor.

Accordingly, within this volume, discussion of the etiology and treatment of conduct disorders in childhood will necessarily vary, depending on whether such disorders are classified as "healthy responses," i.e., transient reactive disturbances; as special symptom reactions; or as indicative of underlying personality disorder or brain damage. Clearly, this diagnostic category, per se, is too broad to be meaningful, except for descriptive purposes.

Neurotic Trait Reactions

Definition. The category of neurotic trait reactions is equally ill defined, in that it encompasses such diverse phenomena as somnambulism, tics, stammering, habit disturbances, hyperactivity, and phobias. On another level, neurotic traits are described as pre-neurotic symptom reactions (which may, or may not, signal the onset of an organized neurosis or psychosis).

Etiology. Like conduct disorders, each of the specific neurotic trait reactions listed above may be attributed to one of several etiological factors. For example, in this volume, phobias in childhood are discussed in relation to psychoneurotic disorders, on the one hand, and the significance of school phobias as transient atypical phenomena is explored in another section.

Diagnostic Classification

Both conduct disorders and neurotic trait reactions are included in the American Psychiatric Association's

standard nomenclature under "Adjustment reactions of childhood." However, as indicated above, this category has long been recognized as unsatisfactory. In their report on the proposed reclassification of psychopathological diseases of childhood, the Committee on Child Psychiatry of the Group for the Advancement of Psychiatry (GAP) has wisely eliminated "conduct disorders" and "neurotic trait reactions" from their diagnostic schema and substituted the nosological designation of "tension-discharge disorder" instead. Relevant passages from the detailed discussion in the GAP report of the considerations which precipitated this decision, together with a description of the new clinical entity, are quoted below:

Children in this category exhibit chronic behavioral patterns of emotional expression of aggressive and sexual impulses which conflict with society's norms. They act out directly their feelings or impulses toward persons or society in antisocial or destructive fashion, rather than inhibiting or repressing them and developing other modes of psychological defense or symptomatology. The terms, *antisocial personality*, *psychopathic personality*, *impulsive character*, and *sociopathic personality*, as well as *dysocial personality*, *affectionless character*, *acting-out personality*, *neurotic character disorder*, *primary behavior disorder*, *neurotic behavior disorder*, and *conduct disorder*, have been used by different workers to designate differing individuals in this category, suggesting several subcategories.

In considering carefully this broad category, the Committee drew upon the basic conceptual framework set forth earlier. The terms, *psychopathic*, *sociopathic*, and *antisocial*, were felt to imply too fixed a pattern to apply to many children, even though such personality disorders may become chronic and difficult to treat by the late school age or early adolescent period. "Acting-out" seemed too broad a term; this pattern may occur in a variety of personality pictures or in different developmental phases, and the term is used differently by professional persons from differing conceptual backgrounds. To some, the term *character disorder* is inextricably entwined with moral judgments, which may not be appropriate clinically. *Conduct disorder* and *behavior disorder* seemed such broad terms as to have little meaning. *Primary behavior disorder* implied a type of distinction between primary and secondary etiological factors that may be difficult to support in individual clinical situations.

Aggressive, destructive, or antisocial behavior may of course be seen in many children exhibiting reactive disorders, developmental deviations, or developmental crises in adolescence. Such behavior may occur as part of a picture involving brain damage, mental retardation, or a psychosis. Furthermore, some children in economically deprived urban areas may show behavior which is in conformity with the group code or mores of the neighborhood or gang but which is regarded as antisocial by society at large. Such children may function adequately in certain ways, however, and may show evidence of some conscience formation in their loyalty and codes of honor within their own groups. Many of them in later life can adjust their moral code, within limits, to that of society, although the possibility of continuing antisocial behavior is of course greater than in other categories.

Despite its dissatisfaction with many of the terms discussed in the foregoing, as they apply to children, the Committee felt that certain concepts were valuable and pertinent. The term *impulsive character* touches upon the central problem of difficulty in establishing impulse controls characteristic of certain of these children. The concept of *neurotic personality*, implying the existence of neurotic conflict underlying the behavior of other children, also seems clinically relevant, despite some terminological limitations. *Dysocial* or *asocial*, while constructively implying the discrepancy be-

tween the child's local environment, where his behavior is appropriate, and that of society at large, seems to imply also some lack of capacity for socialization which may not at all be the case in terms of the child's relationships within his own subcultural group. Furthermore, the term *dysocial* leaves little room for the child whose personality functioning is different from the majority because of his particular ethnic, racial, or other subcultural background—as in the child of a family from a society which utilizes magical concepts in its everyday thinking.

Tension discharge disorder. For these and other reasons, the Committee determined to employ the term *tension-discharge disorder* for the major category, with two subcategories subsuming the impulsive or impulse-ridden group and the group of children in whom neurotic conflicts seem to play so large a role. Tension-discharge disorder, while having limitations (as with any term), seemed to the Committee to convey best its conceptual recognition of the central tendency of these two groups, albeit from different sources, to discharge, rather than to delay or to inhibit, impulses unacceptable to the larger society. The group exhibiting deviant behavior on a subcultural basis was put into a separate major category of personality disorder (sociosyntonic); this was done to permit classification of children with various kinds of deviant personality patterns, over and beyond aggressive ones, and to emphasize the "fit" between the individual personality and the subcultural group, rather than the lack of capacity for socialization.

1) *Impulse-ridden personality*: These children show shallow relationships with adults or other children, having very low frustration tolerance. They exhibit great difficulty in control of their impulses, both aggressive and sexual, which are discharged immediately and impulsively, without delay or inhibition and often without any regard for the consequences. Little anxiety, internalized conflict, or guilt is experienced by most of these children, as the conflict remains largely external, between society and their impulses. (Some internalized conflict may be present, and some overlap exists among children with neurotic personality disorders.) The basic defect in impulse controls appears to be reinforced by a deficit in conscience or superego formation, with failure to develop the capacity for tension storage and for the postponement of gratifications. Such children ordinarily exhibit primitive defense mechanisms, with strong denial of dependent or other needs, projection of their hostile feelings onto adults or society, and rationalization of their own behavior.

Children in this category often have a history of extreme emotional deprivation during infancy and early childhood, marked by frequent and prolonged separations from mothering figures. A large number of them come from lower socioeconomic or social class groups, although they may be found at any level of society. Some constitutional tendencies toward motoric discharge of tension rather than other avenues of handling tensions may be noted. A number of these children show abnormally dysrhythmic electroencephalographic tracings, usually without evidence of true epileptic patterns, and a certain group may show a high association between enuresis since infancy and fire setting. Stealing, fire setting, vandalism, destruction, aggressive attack, and other antisocial acts may frequently occur, and behavior may shift at times from one to another or several others; addiction is not infrequent in older children and adolescents. Although their judgment and time concepts are poor, they usually have adequate intelligence and their reality testing in certain areas is quite effective.

Children who have chronic brain damage without emotional deprivation may show a somewhat similar picture, so far as difficulties in impulse controls and judgment are concerned. They usually have adequate capacities for relationships, however, and may show marked guilt, with evidence of true conscience formation.

In recording this diagnosis, the specific behavioral manifestations should be drawn from the Symptom List.

2) *Neurotic personality disorder*: These children may show

behavior superficially similar to that of the impulse-ridden personality as they act out or discharge tension arising from conflict. They appear, however, to have reached a higher level of personality development, revealing strong influence from earlier repressed neurotic conflicts. Their behavior often assumes a repetitive character, with unconscious symbolic significance to their acts, rather than the predominance of discharge phenomena. Evidence of some conscience formation is manifest from the presence of conflict, accompanied by some apparent anxiety and guilt, the latter leading them at times unconsciously to invite limits or punishment. Impulse controls appear to operate to some extent in the absence of exacerbations of conflict. Their antisocial action, when it occurs, is predominantly a reaction to intensification of conflict rather than the sudden discharge of impulses, as in the impulse-ridden type, or the result of limitations in ego controls, which at times are noted in certain brain-damaged children. Relationships are warmer and more meaningful, although often highly ambivalent. Some overlap with the impulse-ridden disorders of course exists. Many of these children during middle or late adolescence have been referred to as neurotic characters or neurotic criminals. As with the impulse-ridden group, the specific behavioral manifestations should be listed with the use of the Symptom List.

Finally, one consideration, implied in the GAP report and throughout this section, must be emphasized. The fact that the same symptoms may belong to different categories of disturbances in childhood is not of central concern in this context. Rather, the purpose of this discussion is to underscore the importance of

diagnostic accuracy, which depends on the careful evaluation and differential classification of behavior disorders which, at first glance, may appear to be similar.

Suggested Cross References

The manifestations of conduct disorders and neurotic trait reactions that have been described in this section may also occur in other categories of childhood psychiatric disorders which are described more fully in Chapters 40, 41, and 42 in this area.

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Chapter 41

Psychiatric Disorders of Childhood. II: Psychoneurotic, Psychophysiological, and Personality Disorders

41.1 PSYCHONEUROTIC DISORDERS

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It seemed paradoxical to Malamud, considering the widespread incidence of psychoneurosis in the population and the glib use of the word "neurotic" not only in academic vocabulary but in everyday conversation, that there was "a surprising lack of unanimity and clarity" as to what was meant by the concept of psychoneurosis.

This "lack of unanimity and clarity" is even more striking with regard to children, so that prevalence figures are well nigh impossible to obtain. Specific reasons for this have been ascribed to the antidiagnostic attitude of the child guidance movement as a whole, to resistance against using nosological entities derived from adult classifications (rather in the way of "hand-me-downs") and to a repugnance to the categorizing of a child "permanently" during years of development and change. In addition, in many clinics there appeared to be an implicit concept of children as more reactive than introversive, leading to a prepossession in favor of such nondescript categories as "behavior," "conduct," "habit," and "situation." In the few surveys which have been carried out, psychoneurotic reactions have shown a frequency ranging between 5 and 20 per cent of all cases, the figure reflecting the orientation of particular clinics rather than an actual indication of incidence. It seems possible that a potent reason for the relative neglect in the use of this particular category of disorder might be attributable to the absence of a systematic delineation in terms pertaining to childhood.

The failure to recognize psychoneurosis in preadult life is also part of the age-old scotoma for serious emotional disturbances in children. For example, in

1798, in his classification of mental disorders, the philosopher Kant found it possible to state categorically that there was no such thing as a disturbed child. The view was generally accepted for the next hundred years against all evidence of experience, and it was not until Freud that the question was reopened.

In a brilliant series of logically linked clinical and theoretical inquiries, Freud gradually demonstrated the scientific validity of the poetic truth that the child was father to the man, and the neurotic child father to the neurotic man. In the first instance he found that adult neurotic patients almost invariably gave a history of having undergone a similar type of disturbance at some time during their childhood. At this period, the behavior was more likely to be referred to as "naughtiness" and, as he put it, to be "shouted down in the nursery." As he came to scrutinize the childhood situation retrospectively and then directly, he began to recognize the disturbance for what it was, an authentic psychoneurotic reaction. As a result of still further investigation, this clinical neurosis of childhood was seen to be an exaggeration of an underlying developmental conflict that was less discernible. Freud called this disturbance the Oedipus complex and looked upon it as crucial in the development of both childhood and adult neurosis.

This concept of "infantile neurosis" has since occupied a central position in the psychoanalytic theory of neurosis, but, as Hartmann has pointed out, it is not so easy to specify its actual nature. It was Hartmann's view that the pendulum has swung in the opposite direction from there being no recognizable neurosis of childhood to the point when "every naughtiness, actually every behavior of the child that does not conform to the textbook model, every development step that is not according to plan, is considered as neurotic," as a result of which "the broad range of normal variations of behavior is not recognized, and the specific features of . . . a neurosis get lost." He was also of the

opinion that many of the very early neuroses were really different from what occurred in the adult and were usually limited to a single functional disturbance. "The way from conflict to symptom seems often to be shorter than in adult neurosis."

Etiology of Psychoneurotic Reactions

The normal developmental conflict is at first largely external, stemming from incompatibilities between the child's needs and the external demands of the environment. Gradually, the external demand is internalized, and the developmental conflict disappears, since the balance has shifted from the need to gratify pleasurable impulses to the need to comply with the new internal representatives of the external order. With each resolution of conflict in the child, there is a further step towards the formation of the normal adult personality, but when the conflict is unresolved two forms of neurotic disturbance tend to occur. The first is circumscribed and restricted to the phase of the conflict, i.e., the premorbid history seems relatively peaceful, the parents are more helpful than harmful, constitutional factors are slight, and the prognosis fairly good. The second and more common form is a diffuse neurotic disturbance which presents itself as a polymorphous mixture of two or more neuroses. The clinical picture lacks definition, and the pathological processes seem potentially capable of developing in several different directions which are difficult to predict. There is often gross familial pathology with a plethora of constitutional dispositions. In contrast to the first form, the defense mecha-

nisms employed tend to be more various and primitive. As a result of the multiple fixation points, a sequence of different psychoneurotic reactions appears during the course of development.

Clinical Features of Four Types of Childhood Neuroses

In his classical studies, Freud described four different types of childhood neurosis, three of which had later neurotic developments in adult life. This well known series of cases is shown in tabulated form in Table I, exemplifying some of Freud's important conclusions that: (1) psychoneurotic reactions in the adult are associated frequently with psychoneurotic reactions in his childhood; (2) the connection is sometimes continuous, but more often separated by a latent period of non-neurosis; (3) infantile sexuality (both fantasied and real) occupies a memorable place in the early history of the patient.

There are certain differences worth noting in the four cases shown in Table I. First, the phobic reactions tend to start at about 4 or 5, the obsessional reactions between 6 and 7, and the conversion reactions at 8. The amount of background disturbance is greatest in the conversion reaction and the mixed neurosis, and it seems only slight in the phobic and obsessional reactions. The course of the phobic reaction seems little influenced by severe traumatic factors, whereas traumatic factors (e.g., sexual seductions) play an important role in the three other subgroups. (It was during this period that Freud had elaborated his "seduction hypothesis" for the etiology of the neu-

TABLE I
Classical Psychoneurotic Reactions of Childhood^a

	Conversion Reaction (Dora)	Phobic Reaction (Hans)	Obsessive-Compulsive Reaction (Rat Man)	Mixed Psychoneurotic Reaction (Wolf Man)
Family history	Striking family history of psychiatric and physical illness	Both parents treated for "neurotic conflict" but not severe	No family history of mental illness	Striking family history of psychiatric and physical illness
Symptoms	Enuresis and masturbation 6-8 yrs. Onset of neurosis at 8. Migraine, nervous cough, and hoarseness at 12. Aphonia at 16. "Appendicitis" at 16. Convulsions at 16. Facial neuralgia at 19. Change of personality at 8 from "wild creature" to quiet child	Compulsive questions at 3-3½ yrs., regard to sex difference. Jealous reaction to sibling birth at 3½. Overt castration threat. Overt masturbation at 3½. Overeating and constipation at 4-5. Phobic reaction at 4-5. Attack of flu at 5 worsens phobia. Tonsillectomy at 5 worsens phobia	Naughty period at 3-4 yrs. Marked timidity following beating by father at 4. Recognizing people by their smells as a child ("Renifleur"). Precocious ego development. Onset of obsessive ideas at 6-7	Tractable and quiet up to 3¼ yrs. "Naughty" period at 3¼-4 yrs. Phobias at 4-5 with nightmares. Obsessional reaction at 6-7 (pious ceremonials). Disappearance of neuroses at 8
Causes	Seduction by older man. Father's illness. Father's affair	Seductive care by mother. Sibling birth at 3½	Seduction by governess at 4. Death of sibling at 4. Beating by father at 4	Seduction by older sister at 3¼. Mother's illness. Conflict between maid and governess

^a Adapted from Freud.

roses in terms of which the obsessive-compulsive and hysterical reactions were alleged to originate in active and passive sexual experiences.)

Classifications of Neurotic Reactions

Since these classical descriptions were made, clinicians working directly with children have made many attempts to classify the psychoneurotic reactions of childhood in accordance with their experience, and Table II summarizes the more significant attempts at this. It will be noted that the classification tends to vary with both *time* and *country*. The diagnoses of neurasthenia and psychasthenia have given place to anxiety and obsessive-compulsive reactions. Phobias are the most commonly represented, and hysterias are sometimes excluded. Such labels as "hypochondriasis," "tics," "psychosomatic states," and "depression" are peculiar to certain authors. The inclusion of depressive reactions appears to be gaining ground.

In the report by the Group for the Advancement of Psychiatry (GAP) on the classification of psychopathological disorders in childhood, an attempt has been made to define the psychoneurotic reactions in childhood in terms acceptable to anyone working broadly within the psychoanalytic frame of reference. According to the definition offered by the committee, *psychoneurosis in childhood* is said to occur as a result of unconscious conflicts over the handling of sexual and aggressive impulses which, although repressed, remain active and unresolved. These conflicts derive from the relationship of the child to significant family members and belong almost exclusively to the pre-school years. During early childhood such conflicts may be expressed in various symptomatic reactions, but in older children they become internalized and relatively encapsulated and tend to be chronic. Many of the milder reactions may resolve spontaneously as the child reworks the conflicts at a later stage of development and higher level of maturation. The response to treatment is also generally good. The symptomatology is composed of both positive and negative phenomena, the former comprising such reactions as obsessions, conversions, dissociations, and depressions, and the latter being manifested by the absence of a demonstrable organic pathology, a consistent and lasting deterioration in intellectual function, a primary disturbance of mood, and a persistent distortion of external reality. The differential diagnosis includes reactive disorders, developmental deviations, crises within healthy development, and certain predominantly physical disorders which have a symptomatic resemblance to the psychoneurotic picture. These various conditions may also act as precursors in the development of a full psychoneurosis, depending on an intensification and internalization of the conflict. In certain instances, the precipitating situational stress may be so overwhelming and unexpected to the child as to produce a "traumatic neurosis" which may

TABLE II
Various Classifications of the Psychoneurotic Reactions of Childhood

Year	Author	Classification
1920	Pearson (U. S. A.)	Disturbances of sociopsychological adjustment due to emotional conflicts. 1. Anxiety, acute and chronic. 2. Psychoneurosis: gastrointestinal dysfunction, upper and lower; urinary dysfunction
1932	Henderson and Gillespie (Britain)	Anxiety psychoneurosis, hysterias, phobias, obsessions, compulsions, tics (some)
1933	Krasnogorski (Russia)	Subcortical type: neurasthenia, psychasthenia. Hypodynamic (an- ergic) type: hysteria
1936	Miller (Britain)	Subjective disorders: overt anxiety, phobias, compulsions, nocturnal disturbances
1937	Brown (U. S. A.)	Hysterical, psychasthenia, neurasthenia and anxiety types
1937	English	Acute diurnal and nocturnal anxiety attacks. Chronic anxiety states and phobias
1947	Gerard (U. S. A.)	Nocturnal anxiety, phobias, compulsions, depression, chronic anxiety states
1948	Pacella (U. S. A.)	Acute and chronic anxiety states, phobias, compulsions, conversion phenomena, tics, psychosomatic states
1955	Cameron (Britain)	Anxiety or phobic states, obsessive-compulsive state, hysterical state, alternations in mood
1966	GAP Report	Anxiety, phobic, dissociative, obsessive-compulsive, conversion and depressive types

be either a severe reactive disorder or a sudden crystallization of a latent, or subclinical, psychoneurotic state. In certain cases, for reasons not completely clear, symptom formation may not occur. Instead, the personality structure of the child may be affected by neurotic conflicts, altering the patterns of reaction to internal demands and adaptations to the environment, and these may assume the character of personality traits which cause little or no conscious (ego-syntonic) anxiety. When these seeming "personality traits" become fully crystallized, they coalesce to form a personality disorder.

In the milder cases, the differentiation of abnormal from normal reactions presents some degree of difficulty, since various investigations have shown that almost every child manifests various symptom constellations at different stages of his development, and that these include neurotic traits which, if transient, do not require treatment. For example, sleep disturbances may occur in the 2nd and 3rd year, phobias in the 4th and 5th year, obsessional "games" from the

6th to the 8th year, and a large assortment of anxieties involving disease, disfigurement, disability, and death, from the 9th year onwards.

Role of Anxiety

There have been more recent attempts to base an understanding of psychoneurotic reactions on the modes of adaptation of the individual to such primary disturbing affects as anxiety and depression. Adaptation has been viewed from various theoretical positions in terms of defense, avoidance, and problem-solving techniques. Freud himself came to regard anxiety as playing a primary role in the development of all other types of disordered behavior, the elements of which could be regarded basically as techniques for reducing or avoiding anxiety. In the second of his theories concerning anxiety, it was anxiety which led to repression and not the reverse. Freud also began to see the intimate connection between special forms of defense and particular types of psychoneuroses as, for instance, between repression and hysteria.

The vicissitudes arising from the emergence of anxiety may result in a variety of counteractions on the part of the individual. For example, the anxiety may remain undefended, without an object, and experienced both psychologically and physically, as in the typical anxiety reaction; or it may be displaced onto some symbolic object or situation, as in the phobic reaction. It may be converted into various somatic symptoms as in conversion reactions; or it may overwhelm the individual and cause aimless activity or "freezing" as in dissociative reactions. It may be transposed by means of various repetitions, rituals, and reactions, as in the obsessive-compulsive reactions; or, finally, it may allay itself by self-depreciation, as in the depressive reaction. These techniques are all available to children from a very early phase onwards, and clinically one may see the reaction in relatively pure form or accompanied by one or more of the other neurotic reactions.

Role of Depression

There has been a more recent tendency to treat another basic psychobiological affective reaction, depression, in a similar style. Both anxiety and depression are appropriate reactions under normal conditions of danger and desertion, but both can become abnormal when they occur in inappropriate circumstances, when they persist for an undue length of time, or when the child is unable to make a developmentally appropriate adaptation to them (in this context, Rado interpreted many of the symptoms of neurosis as a misuse of "emergency" mechanisms).

Depression can be viewed as an affect, as can anxiety, and allotted a similar conceptual state. As with anxiety, the individual develops various mechanisms for dealing with depression. Whereas *repression* is one of the psychoneurotic's main modes of defense with

anxiety, in the case of depression with its core feelings of unworthiness and helplessness, *regression* is often the mechanism of choice. The other defenses mobilized against the danger of its emergence include obsessive-compulsive reactions (which magically compensate for loss of self-esteem), reversal of affect (characterized by excitement and clowning), identification with idealized objects, acting out (in the form of delinquency), and the development of psychosomatic states. All these defenses are means of averting the passive experience of helplessness in the face of frustration or disappointment.

Relationship between Anxiety and Depression

The fundamental relationship between depression and anxiety is not perfectly clear. Freud had postulated that, whereas anxiety occurs as a reaction to the prospective danger of losing the object, depression develops with actual or fantasied loss. In the situation of separation, the anxiety reaction is evoked by any threatened removal of the mother, but once she leaves, the child, who cannot as yet distinguish between temporary absence and permanent loss, behaves as if he were never going to see her again, until he eventually learns that her disappearance is inevitably followed by her reappearance. The separation syndrome, therefore, contains elements of both anxiety and depression in varying mixture. At an early stage, loss may be felt in terms of need, and the situation is, therefore, a traumatic rather than a dangerous one. Later on, experience teaches the child that the mother can be present but angry with him, and then loss of love becomes a new, and much more enduring, determinant of anxiety and depression.

Anxiety Reaction

Definition. Anxiety is a form of fear reaction that is different from normal object fear in the following ways: (1) it is diffuse or "free-floating" and not restricted to definite situations or objects; (2) it is not accompanied by any degree of insight into its immediate cause; (3) it tends to be experienced in terms of its physical manifestations, but these are not recognized as such by the individual concerned; (4) it is prompted by anticipation of future threats against which current avoidance responses would not be effective; (5) it is not controlled by any specific psychological defense mechanisms as are the other psychoneurotic reactions.

The term "anxiety" is synonymous with the earlier phrase "anxiety state," and the more recent phrase "stress reaction." The still older term is "neurasthenia" in which the emphasis was on the functional disorders of various organ systems and the hypochondriacal preoccupations associated with them. The chief symptoms were of irritability, fatigue, and exhaustion. Hypochondriasis is now regarded as a symptom which can accompany almost any psychiatric disorder.

Epidemiology. Anxiety and fear, varying in degree and nature, are encountered in all young children. Anxiety neurosis has been referred to, not only as *the* neurosis of childhood, but also the form of neurosis which is most commonly reactivated in adult life.

Most of the fears of small children can be traced directly to fears expressed by their mothers, and it is only the occasional fear that seems derived from personal experience. The same was found to be true of fear reactions under conditions of severe external danger, such as bombing raids in London. In situations where the parents felt safe or were not frightened the children remained equally calm.

With regard to chronic anxiety, apprehensiveness on the part of the mother is often clinically correlated with anxiety in the child, sometimes objectless, sometimes well defended, and sometimes wholly denied. The communication of anxiety within families proceeds on both verbal and nonverbal levels, but there is a tendency for anxiety to obtain overt expression at the upper and more articulate levels of social class, and for the "bound" forms to affect the lower echelons. Certain autonomic and endocrine measures, acceptable as indices of anxiety, have shown significantly higher mean values for "neurotic" as compared with control families. Anxiety-prone individuals ("over-reactors") have been roughly estimated to make up between 5 and 10 per cent of a general population. At the level of the child, this would comprise the small percentage of vulnerable children who respond to the "challenge" of "ordinary" experience (sibling birth, illness, hospitalization) with anxiety and regression rather than with growth and maturation.

Etiology. In ontogenetic studies of anxiety, it has been found that the majority of "anxious" children start as early as the 1st month of life to show behavior patterns which later develop into frank expressions of anxiety. The children show stress sensitivity from the very beginning, over-reacting to both internal and external stimuli. They are easily startled and take poorly to change.

The anxious child in a family is often regarded as *different* from his siblings, and the parents usually insist that this quality has been present since birth. Infantile reactions considered indicative of anxiety (apathy, motor excitement, sleeplessness, refusal to eat, and autonomic disturbances) have been related to gross rejection and neglect on the part of the mother. There is also some suggestion that prenatal maternal anxieties, translated into muscular tensions, involving the birth canal, may increase the frequency of abnormal birth conditions which, in turn, enhance the disposition to anxiety subsequently in the child. The anxiety proneness has been followed into the pre-school and early school years. This "constitutional" factor could play a part in determining the clinical picture in later neurotic conflicts.

In addition to physical birth trauma, the tendency

to surplus anxiety has also been linked to the physiological economy and psychological meaning of the birth process. It has been suggested, for example, that the sensorimotor imbalance involved in parturition may be also implicated in the genesis of the later anxiety, but these views are speculative and controversial. Freud, at his most pragmatic, felt that there were many anxieties "without a prototype in birth" and that, in general, the "birth trauma" assumption was entirely unproved and very improbable, since it was hardly credible that the child had preserved, from the act of birth, any other than tactile and general sensations. He did allow, however, that birth might be responsible for a certain predisposition to anxiety and that this might persist over the period of childhood. The neurotic anxieties originating from this predisposition did not seem to be clearly or closely related to the "developmental" neuroses of later childhood stemming from the lack of resolution of the Oedipus complex.

The "predisposition" is further evident in the amplification of the so-called "universal" anxieties—separation anxiety, stranger anxiety, and nocturnal anxiety—normally associated with the early anaclitic relationships.

At the later stage of development, the clinical reaction becomes more complex, the anxiety being generated from three different sources. First, there is contagious anxiety, which is communicated to the child by any neurotically fearful adult with whom he is in close contact. Second, there is traumatic anxiety, resulting from some unexpected fright which overwhelms the child's defenses. Third, there is conflict anxiety, which arises out of the intrapsychic sphere and is the most important source of neurotic anxiety. The three types of anxiety intertwine with one another in a series of relationships or syndromes. There are still unanswered questions as to why only certain anxieties get communicated to the child, why some traumata prove so upsetting and persistent while others have only a minimal and short-lived effect, and why conflict anxiety is often able to resolve itself with the passage of time without treatment.

The transmission of contagious anxiety is governed by such factors as the age of the child, the degree of dependency and suggestibility, the sex in relation to that of the anxious parent, and the closeness of identification. The onerosness of a trauma depends on its intensity, unexpectedness, and significance relative to current conflicts. For a traumatic disturbance to resolve itself, four conditions must be fulfilled: (1) the "environment" should not over-react; (2) the frightening experience should not dovetail into some basic conflict in progress; (3) the secondary gains in the way of solicitude and concern should not be excessive; and (4) the child should be in a state of relative stability in his development.

The resolution of conflict anxiety depends on a

more complex set of factors, especially on the backlog of disturbance built up during the whole course of psychosexual development. There is some evidence that conflict anxiety, insurmountable at one stage of development, may be more easily relieved by more competent ego functioning at the next stage of maturing.

The average neurotic anxiety in children contains elements from all three sources (contagious anxiety, traumatic anxiety, and conflict anxiety), the external factors often having lasting determining effects on the configuration of the basic neurotic conflicts.

Clinical description. The symptomatology of the anxiety reaction includes both psychological and physiological symptoms. The principal psychological symptom is a diffuse and vague feeling of apprehension as if something terrible was going to happen. The anxiety attacks sometimes begin after some manifest trauma, but this is found to be a relative latecomer in the causal chain of events, serving the purpose of externalizing an accumulation of latent, but already existing, anxieties. The trigger events are various and may include a bout of illness, a surgical operation, an exposure to death, or a failure at school. Having their hair washed is apparently a sufficient stimulus for some sensitive young girls.

In addition to the anxious expectation, the children are generally irritable, worried about their health, and prone to episodes of acute anxiety. During these acute attacks, physical symptoms may come to the fore and dominate the clinical picture. These may include disturbances of the heart's action (palpitation, precordial pain, and cardiac symptoms on effort); disturbances of respiration (nervous dyspnea, pseudoasthma, and hyperventilation); gastrointestinal disturbances (nausea, biliousness, diarrhea, and abdominal pain); and attacks of giddiness, trembling, sweating, and paresthesias. Urinary urgency and frequency are also usually present.

Against this background of hypersensitivity and apprehensiveness, it is possible to differentiate three symptomatic groups.

Nocturnal and diurnal anxiety attacks. These attacks are localized at various points on the sleep-waking cycle and are all characterized by acute terror or panic with cataleptic features, profuse sweating, disorientation, and visual hallucinations. A waking terror may be brought about by visual illusions elaborated in the dark; a half-waking terror is often triggered by hypnagogic or hypnopompic hallucinations occurring during the twilight phase between sleeping and waking; a sleeping terror is brought about during light to moderate sleep, when anxiety dreams have their greatest incidence; a sleep-waking terror (the classical "night terror") occurs when the predisposed individual is roused from very deep sleep into half-wakefulness; and finally, at apparently no specific point in the waking portion of the cycle, a "day terror" can occur. This is typically very similar

to the night terror in its clinical picture and may even alternate with it.

The anxiety attacks in these cases are associated with such factors as interparental aggression, mental illness in the family, sleeping in the parental bedroom, undue parental pressures, traumatic experiences, and phobic, anxious mothers who constantly generate an atmosphere of pervasive anxiety in the household by their hyperalertness to threat from any quarter. These sensitive, suggestible, and imaginative children tend to resonate sympathetically in tune with the mother's anxieties.

Chronic anxiety reaction. In certain immature children, there is a permanent attitude of apprehensiveness and an over-reaction to almost every unexpected environmental stimulus. This combination of a lowered stimulus threshold, a tendency to generalize responses, and a protracted lability of affect, causing the child to reverberate for long periods after a disturbing experience, produces a clinical picture of a timid, undecided, withdrawing child who has "always been afraid of everything" and who, through the course of development, has been overwhelmed in turn by separation anxieties, stranger reactions, animal fears, dread of going to school, and general social anxiety. There are no specific attacks of any kind, nor do they confine themselves to any particular object or situation. Darkness, being alone, people, storms, insects, noises are all included in the apprehensions of the child who is sometimes so afraid that he cannot talk above a whisper (Cimbal referred to this reaction as *lebensfeigheit*, meaning cowardliness with regard to living). Nightmares are frequent, enuresis not uncommon, and anxious preoccupation with bodily functioning almost the rule. The child tends to be "delicate" and finicky about food to the constant concern of his equally nervous mother.

Hypochondriacal reaction. A chronic hypochondriacal attitude in the child is made up of current complaints of vague ill health and anxious anticipation of future illness. A variety of factors in the child, the family, and the caring physician may contribute to the genesis of hypochondriasis. Factors in the child include identification with ill parents and siblings and the adoption of familial somatization techniques for dealing with stress; self-mothering in the absence of parental figures; attention seeking aimed at obtaining a greater acceptance and approval within the family; a "flight into sickness" to avoid threatening situations or pressures; reactivation of the sickness role which once obtained for the child a suspension from regular routine and the loving solicitude of the parents; a compensation for social and educational failure linked to a lowering of self esteem; a need to ward off indefinite formless anxiety by the adoption of a definite form of sickness that might be cured; the effect of naive infantile theories of disease that "logically" systematize bodily discomforts; and

above all the atonement for guilt feelings in relation to hostile and sexual impulses and acts.

The parents of such children, particularly the mothers, may be grossly hypochondriacal themselves and may treat the child as a somatic extension of themselves. Their oversolicitude and protectiveness may thinly veil strong feelings of rejection, but, more frequently, the dislike and hostility is relatively unmasked. From time to time, the overprotective mother may "decompensate," giving the child a glimpse of her real attitudes and feelings, and these exposures may in turn set off a reaction of invalidism. Where there is much family history of disease, the anxious anticipation of the parents may fill the child with foreboding about his "inheritance." There is no doubt that some mothers, not necessarily nurses by profession, are at their best in the sick room and enjoy the acts of ministration. The child's "sickness" then becomes an essential part in the relationship with the mother and he literally becomes her "patient." A sick room atmosphere is created around him almost from birth, and he may never have seen himself as a healthy child. The children vary in their reactions; they look and act worried. Hypochondriasis is very much a family disturbance, and the various members seem to understand unconsciously the child's need to be surrounded by as much somatic anxiety as possible. The family may react, in fact, calmly and unconcernedly in the presence of actual illness.

Differential diagnosis. In the child, an anxiety neurosis sooner or later tends to crystallize into one of the anxiety-bound neurotic reactions. The diffuse reaction needs to be distinguished from the reactive disorders and the psychophysiological disturbances. Although physiological concomitants of anxiety are commonly present in varying degrees, they do not ordinarily lead to structural changes in the organ systems involved. Various habit disorders are often associated with anxiety reactions, and these include sleep disturbances, eating problems, temper tantrums, enuresis, nail biting, masturbation, and stuttering.

Prognosis. The prognosis is related to the stress sensitivity and the predisposition to anxiety accompanying it. Where the development of anxiety has been late, the constitutional factors slight or absent, the birth history uneventful, and the first 2 or 3 years relatively peaceful, the anxiety reaction can be treated as a developmental neurotic conflict with relatively favorable prognosis. On the other hand, where chronic insecurity dates from infancy, and one or both parents are chronically anxious themselves, the possibility of frequent relapses throughout development must be borne in mind, even though the prognosis for the current attack may be good.

Management. A careful physical examination may be reassuring to some anxious and hypochondriacal children, but the dangers of iatrogenesis must be constantly kept in mind, if new complaints and new anxieties are to be avoided. The physical examination is

undertaken to assure the doctor that he is not dealing with organic disease and to assure the child that his body is in fact a well functioning entity that might be best left alone to its own "wisdom." Like many other psychiatric disorders of childhood, the conflicts of the child are often maintained and magnified by the anxious intrusions of the parents. Psychotherapy with the child should, therefore, be coupled with guidance for the parents and, if necessary, psychiatric treatment when anxious concerns have reached neurotic proportions. The parents particularly need help when the repressed hostility of the anxious child comes to the surface with psychotherapy and is carried back into the home. With hypochondriacal children, a necessary maneuver, early in treatment, entails a cutting down on medication. This should be done gradually and carefully, since the child has come to rely on its magical efficacy and the support should not be removed too hastily. When anxiety is acute and disruptive and sleep much disturbed, the tranquilizing group of drugs may tide the child over a rough period before psychotherapy is able or available to control his anxieties.

Phobic Reaction

Definition. In this category, the child displaces the content of his original conflict onto an object or situation in the external environment which has some symbolic significance for him. Among the feared external objects or situations frequently chosen by children are animals, school, dirt, disease, high places, elevators, and dying. This condition was formerly classified as "anxiety hysteria."

Epidemiology. It is difficult to assess the incidence of phobic reactions, because they are so often confused in clinics with the presence of fears. Fears occur regularly during the development of a normal child, and certain types of fears are characteristic of certain stages of development. The infant is frightened by any intense, abrupt stimulus and loss of support; between 5 and 9 months, he shows fear of the unfamiliar in terms of persons, things, and situations; between the ages of 2 and 3 years, animal fears are predominant; fear of the dark does not usually begin until the 3rd year, and, as the child grows older, darkness becomes a contributing factor, if not the main cause, in a great many fears. Since a state of darkness is often equivalent to a state of being alone, regardless of presence or absence of others, darkness makes the child feel more vulnerable and less able to cope and thereby stimulates his basic anxiety with respect to separation from the mother. According to Gesell, between the ages of 3½ and 4½ years, the child wakes in fear from an animal dream, "specially of wolves" (as in the case of the Wolf Man). During the pre-school years, there is a gradual increase in animal fears, first of eating and biting animals, and later of overpowering and destructive animals. Many of the fears of children at this age also pertain to possible

injury through drowning, fire, and traffic accidents. As the child grows older and is increasingly able to take account of the past and anticipate the future, his fears are formulated increasingly in terms of remote or imaginary dangers or in terms of misfortunes that do not immediately threaten him but might befall him at a future time. Finally, during the adolescent period, fears and anxieties relating to physical inadequacies and asymmetries, intellectual inadequacies, and sexual functioning may arise.

The problem of differentiating fears from phobias, or healthy from morbid fears, becomes increasingly difficult as one finds that many of the normal developmental fears of children have never been experienced and are often quite irrational. In addition, the reaction of the child to a simple fear often seems to be disproportionate, persisting for long periods of time. It would, therefore, seem as if many of the simple fears of the preschool child may actually represent phobias in which an apparent "neurotic anxiety" is hidden behind an apparent "object of anxiety" the internal danger being transformed into an external one. If this is true, then phobic reactions are probably much commoner than would be supposed from examination of clinical records. As transient reactions, they may never be referred beyond the pediatrician. In guidance clinics, the phobic reaction is seen most frequently between the ages of 4 and 7 years, and equally in boys and girls.

Etiology. In the normal process of development, children outgrow their susceptibility to the anxiety-producing situations of being alone, of being in the dark, and of encountering strangers. Later the animal phobias also gradually disappear. It is, therefore, the *persistence* of this infantile phobic tendency that characterizes the neurotic in the making.

In the immediate premorbid history of the phobic child, one frequently encounters a period of "objectless anxiety" marked by restlessness, irritability, and "naughtiness." Then comes an incident (for example, the horse falling down in the case of Little Hans), and almost immediately there is a restructuring of internal forces leading to a diminution of general anxiety and to the formation of a phobia. In Freud's account, the boy's anxiety begins as a "free-floating" disturbance. Gradually, this diffuse anxiety focuses around questions involving differences between the sexes. Even after the outbreak of the street phobia, Hans is unable to say what it is that he fears. He only admits that in the street he misses his mother and does not want to be away from her. However, when he goes with her for his next walk, he still suffers from generalized anxiety, making his explanation manifestly inadequate.

The next thing, as Freud put it, is "for his anxiety to find an object," and this happens when he later confides to his mother his fear that a horse would bite him. Still later, in the evening, he expresses his further fear that a horse would come into the room. At

this point, the average parent might have justifiably become impatient with such "foolish fears," but, as Freud remarks, "a neurosis never says foolish things." The clarification of this very meaningful "nonsense" occupies the next few months. It is possible that the choice of phobia has some relation to a frightening, infantile experience, but more often than not, the connection between phobia and the primary fear has been lost. Relations between the inner conflict and the specific content of the phobia is also obscure and complex but may be discovered after prolonged clinical study.

In a quite different frame of reference, that of avoidance learning theory, a noxious object or event may acquire aversive properties (fear arousal), and responses which appear in an attempt to avoid the stimuli are reinforced by fear reduction. The anxiety-provoking stimuli associated with the particular stimulus can become generalized to other stimuli in the patient's everyday life and result in a general emotional instability.

Clinical description. The clinical picture presented by the phobic child is markedly different from that of the fearful child (see previous section). Constitutional and hereditary factors are generally insignificant. The children are described as physically well, cheerful, amiable, active-minded, with a suggestion of emotional and social precocity.

Three phobic states which frequently present themselves to the clinician as demarcated entities are the following.

Animal phobia. This has been described in various parts of this chapter in relation to Hans and the Wolf Man. As previously pointed out, animal fears and anxiety dreams about animals are frequent between the ages of 3 and 5, and it may also be true that frightening experiences with animal pets are not unusual in this age group. It would, therefore, seem "natural" that in the search for an external object upon which to displace internal danger, the animal would be a first choice.

In his discussion of animism and totemism, Freud observed that a sense of kinship existed between children and animals, as if they were not too far apart in their thinking and feeling, except for the fact, as noted by the child, that animals seemed much freer in their sexual and aggressive behavior and much less hampered by social restrictions. Animals could therefore serve admirably for the projection of unacceptable feelings. Occasionally, the animal phobia may give place to a different type of phobia and, in some cases (the Wolf Man), may be replaced by obsessive-compulsive reactions.

School phobia. Many of the circumstances affecting a child's self-esteem arise in connection with his life at school. Here the child is exposed to failure or threat of failure in both the academic and social spheres. With its traditional focus on competition, the school becomes the situation in which children try

themselves out in many different ways, realizing both their strengths and their weaknesses. The "organism" of the school, as with animals, offers an appropriate and convenient symbol for displacement.

The school phobia proper represents only one type of response within the general category of the child's refusal to attend school. At one extreme, there is truancy, which can be regarded as more a psychosocial than a neurotic problem. The school phobia proper is now regarded as a variant of the separation problem based on neurotic conflicts originating within the home, but sometimes precipitated by something happening in the school, which then serves as a "transference" situation. It has been said that "all of a child's worries, fears, anxieties, self-consciousness, feelings of inadequacy, his relation to his parents, to his siblings, to himself tend to gain reflection in the school situation" (this would also be an apt statement of the therapeutic situation, and it is not unusual for "treatment phobias" to develop, leading to "drop outs"). The crucial psychopathology in these cases has been attributed to an anxiety over separation from the mother and to a concomitant anxiety on the part of the mother with regard to separation from her child, with the establishment of a "symbiotic" relationship in which the two partners are dependent on, demanding of, and dominating each other in turn. At first sight, this would appear to be a "pregenital syndrome" in psychoanalytic terms, but a more careful analysis of some of the cases leads to the suspicion that behind the anxiety of separation from the mother lies, in Freud's terms, "the next transformation of anxiety," castration anxiety, which involves a danger of separation from the genital that is "tantamount to a second separation from the mother" because possession of the genital organ contains a guarantee of reunion with the mother, and the loss of the organ would mean a loss of this guarantee. In this context, it will be recalled that the first explanation put forward by Hans for his street phobia was a fear of separation from his mother, and it was only subsequently in the course of his treatment that the underlying castration anxiety was revealed.

From an examination of a large number of such cases, it becomes apparent that these cases do represent a heterogeneous group, and that the school phobias which begin early are different clinical entities from those beginning, for instance, at puberty or in early adolescence. The latter group tends to comprise severe character disorders and borderline psychoses, and there is often an associated family pathology of some severity, particularly depression in the mother. There is some suggestion, too, that the more "external" types of precipitating factors, involving disapproving teachers, poor grades, bullying, or shameful incidents in which the child "loses face," may all carry a more favorable prognosis than those which are connected with home and fam-

ily, such as illness in the child, illness or death in the family, an accident involving the parents, or the development of mental illness in some crucial figure such as the mother. Often, as if to supplement the phobia, the child may show psychophysiological reactions as well, such as abdominal pain, diarrhea, vomiting, and headache.

Death phobia. This might be referred to as "8-year anxiety," since it tends to occur very regularly at about that age. In his earlier work, Freud referred to the "eight-year boundary line" that seemed to separate childhood. For a while, he believed that anyone who had not been subjected to seductive sexual experiences before 8 years could not develop hysteria. In his case of Dora, neurosis began in her 8th year, and, in the case of the Wolf Man, his "infantile neurosis" ended abruptly around the 8th year. In the earlier studies of Piaget, the 8th year also formed a boundary line between the egocentric child with his magical, animistic, "realistic" tendencies associated with a precausal, prelogical mode of thinking and the "operational" child who sees the world logically and rationally. In many children, at about this time, there occurs what can be described loosely as an "existential crisis." The child becomes preoccupied with ideas of death and dying either about himself or about his parents. Once again, separation anxiety is brought to the forefront; the main presenting fear is that the mother will die; but, again, there is more to the phobia than just this. The child's concept of death, like many of his other concepts, develops gradually during the whole period of childhood. At an early stage, death is thought of mostly in animistic terms in which the dead see, hear, and feel. Later it is viewed as separation, or rather desertion, and, still later, death becomes personified as a dreaded figure removing the loved person. Before the age of 7 death is reversible. At about 8 years, death, for many children, becomes irreversible, and, therefore, death wishes, both conscious and unconscious, take on a new emotional coloring. At the time of the crisis, the child becomes aware of a peculiar kind of helplessness in the face of the inevitability of death, with the additional feeling that no one can help, since everyone else is in the same predicament. An experience of death will sometimes precipitate the crisis or bring it out at an earlier age, but on closer analysis, it soon becomes clear that the emotional conflicts have been growing uninterruptedly since preschool days and that the fear of death is frequently a fear of punishment and retaliation. A coexistence of death wishes with an experience of actual death, coupled with the sudden realization of the irreversibility of the death process thus proceeds to a state of acute panic that leaves the child for a while poorly organized in his defenses and prone to extremely primitive behavior. In fact, at times this panic may take on the appearance of a traumatic neurosis. As the condition improves, the sense of personal immunity to death reasserts itself, and what ex-

istentialists refer to as the nonauthentic position becomes reestablished.

Differential diagnosis. Developmental crises involving separation anxiety with concern for the whereabouts of the mother should be distinguished from phobic disorders with their internalized and structured character. The mild fears and transient phobias of the healthy preschool child and the fears of specific stressful experiences in reactive disorders should also be recognized as distinct from neurotic phobic disorders.

Prognosis. Freud referred to the phobic neurosis of childhood as the model for all repressive disturbances. He was not certain as to the prognosis without treatment. To quote from his *Collected Papers*, Vol. 3, "phobias are well known to be quite extraordinarily frequent, even in children the strictness of whose upbringing has left nothing to be desired. In later life, these children either become neurotic or remain healthy. Their phobias are shouted down in the nursery because they are inaccessible to treatment and are decidedly inconvenient. In the course of months or years, they diminish, and the child seems to recover; but no one can tell what psychological changes are necessitated by such a recovery, or what alterations in character are involved in it." He goes on to point out that in the adult neurotic patient, one frequently finds a residue of the childhood phobic reaction, as if there were a continuous, undisturbed thread of mental activity stretching between the two neurotic disturbances. The symptom is, therefore, transient, but one cannot say the same for the neurotic substratum.

Management. Phobic children are often a pleasure to treat in that, like Hans, they are generally alert, inquisitive, and resourceful in the therapeutic situation and make full use of all the symbolic equations in play, both consciously and unconsciously. In the classical phobic reaction, one is often able to follow the line of displacement back into the central neurotic anxiety that is in part related to troublesome, aggressive wishes, and in part to erotic impulses most often revealed in the dream material and in masturbatory fantasies. For the analytic therapist, Freud's dictum still holds true: "Sexuality is the key to the problem of the psychoneuroses...no one who disdains the key will ever be able to unlock the door."

The child's phobia, especially his school phobia, may create serious problems for the family as a whole. The parents are often understandably concerned as to how far they may proceed with the child in his avoidance behavior, and to what extent they can allow the household to be dominated by the restrictions imposed by the phobia. In most of the phobias, other than the later school phobias, the prognosis for symptomatic cure is reasonably good within a short period of time, and the parents can, therefore, be prevailed upon to resist forceful and punitive measures during the period of therapy. In instances of the

later school phobias, the mother may often be as disturbed as the child, and her disturbance may be aggravated by her knowledge that the child is missing out on schooling. In all cases of school phobia, the parents form an integral part of the treatment program. The current practice is to try to return the child as rapidly as possible to the school environment, since the longer he is away, the more difficult it will be to get him back.

In the case of the death phobia, a tranquilizing agent may relieve the panic that besets the child prior to sleep in the acute stage. This period of time is especially troublesome for children with neurotic problems, since sleep may represent the threat of frightening dreams and possible bed wetting, and being alone in the dark may stimulate conflicts around masturbation. For the child with a fear of dying, falling asleep has special problems in itself, since sleep may both consciously and unconsciously be associated with separation and death. With some acute phobias of recent onset and a clear cut precipitating trauma, Levy's "release" therapy may be highly effective, especially if this is followed up by more traditional psychotherapy. More recently, Wolpe's method of systematic desensitization has been employed in the treatment of child phobic patients with good reported success.

Conversion Reaction

Definition and history. Freud first introduced the concept of "conversion" as a mechanism for transforming anxiety into a dysfunction of bodily structures or organs supplied by the voluntary portion of the central nervous system, involving the striated musculature and the somatosensory apparatus. The symptoms serve to lessen conscious anxiety and to symbolize the underlying mental conflict. Since they also meet the immediate needs of the patients, they serve as a source of "secondary gain." The term "conversion reaction" is synonymous with "conversion hysteria."

Toward the end of the 19th century, the work of Charcot stimulated a great deal of interest in hysteria, and the Nancy School fostered this interest through its work on hypnosis. Freud was in touch with both groups, which prepared him for his subsequent collaboration with Breuer, culminating in the publication of "Studies in Hysteria" in 1893. This contained Breuer's theory of "hypnotic states" and his method of abreaction whereby the original psychic trauma was reproduced in *statu nascendi* under hypnosis. Both theory and method were later disavowed by Freud who preferred the "talking out" of reminiscences. He also rejected Janet's theory that dissociation was the primary mechanism, maintaining that it was effect not cause.

At this stage Freud still believed that the causal trauma was of recent origin, and that once the treatment was applied the hysterical symptoms "disap-

peared forever." He mentioned, for example, the case of a little girl with attacks of general convulsions who had an immediate convulsive attack under hypnosis when she "saw" a dog coming at her. It seemed that her first attack had occurred soon after she was chased by a mad dog. The abreaction was followed by the disappearance of the symptom, confirming its hysterical nature. That dog was a prelude to many theoretical shifts in the years to follow, but at this stage Freud seemed satisfied with its immediate and manifest significance as a causal agent.

In 1894, Freud stated that the crucial mechanisms at work in hysteria included the presence of an unbearable idea, the capacity for conversion, and the readiness to dissociate.

In 1896, he felt that the *character* of the traumatic event helped to shape the quality and intensity of the symptom that followed, but his vision was now focused beyond the traumatic incident and led him to memories that antedated the abreacted trauma and linked it to a series of disturbing events not strung together simply like the pearls on a necklace but much more like a genealogical tree containing ramifications of memory chains branching at nodal points. As he followed the chains, he made two discoveries: (1) that it led him back to the time of puberty; and (2) that the original experience turned out to be a sexual one.

In continuing this investigation, Freud soon found himself looking beyond puberty into the dark period of childhood. Now he was confronted by a dilemma. Since children at this time in history were by definition asexual, it will seem that he must either abandon his sexual hypothesis or his childhood hypothesis. He decided to abandon neither, but rather to incorporate both in a fresh theory that attributed the development of hysteria to the occurrence of actual sexual experiences in childhood below the age of 8 years, which coincided, he noted, with the development of the second dentition. He was now convinced that hysterical symptoms began almost without exception in the 8th year and had to be preceded by a passively endured, unpleasant seduction experience.

He was soon faced with another critical decision when he found that many of the seduction stories told him by patients had never, in fact, taken place, and that he had to either sacrifice his theory of neurosis based on childhood sexual experience or take a closer look at the "lies." It was at this historical point that he reached his "Copernican" conclusion that fantasies were as potent as facts in generating the psychoneurotic reaction and had their own "psychic" reality. In his final etiological step, he brought the infantile sexual fantasies into the overall framework of the Oedipus complex and traced the development of hysteria to the repression of unresolved oedipal wishes. He decided that the wishful fantasies occurred during the early phase of masturbation, and, in conjunction with this, he made the

important clinical observation that the onset of neurosis coincided with the cessation of masturbation, as in the case of Dora.

Childhood hysteria as a clinical condition was first mentioned by Lepois in 1618. From 1873 until 1915, there were 36 publications devoted to the topic; from these it is clear that nearly every conceivable form of disturbed behavior was being included in the concept and that it was used to cover almost any kind of emotional instability. From 1915, the subject almost disappeared from the literature until a special number of *The Nervous Child* was devoted entirely to it. It was apparent that the confusion as to what might be included or excluded from the diagnosis still persisted.

Epidemiology. As Kanner points out, one finds in the literature statements that hysteria is an everyday phenomenon in childhood, as well as contrary assertions that it is most unusual. The gross manifestations of hysteria in the adult have considerably diminished in the Western world, although they can still be seen in primitives and adolescents. About three to five cases of hysterical contractures, aphonias, and amblyopias can be expected in the out-patient department of a children's hospital every year. The milder forms of conversion seen today are usually part of a mixed neurotic disturbance with phobic, obsessional, depressive, and sometimes even psychotic elements. Various authors have also suggested that hysteria is not so phase-specific as was once thought and that it might well have its roots in a primary disturbance at the oral level, which furnished it with a paranoid substructure, and lent "malignant" aspects to the hysterical personality.

At one time, it had been thought that hysteria was restricted to upper class females, but Charcot was able to demonstrate that it also occurred in lower class men, although the rest of Europe felt that this was true only of France, and the rest of France felt that this was true only for Charcot's cases. Conversion reactions still occur predominantly in adolescent girls, but there is no appreciable sex difference during childhood. The incidence below school age is negligible, although cases have been reported as early as 1 to 3 years of age.

In the course of time hysteria has evidently undergone a "downward mobility" through the social classes, since it is now more frequent in working class children and adults. The fact that very few cases of pure conversion hysterias are encountered in guidance clinics has given rise to the erroneous conclusion that the condition is largely nonexistent; but this is far from being the case, since it now appears to occur in milder and more transient forms that are dealt with by the pediatrician. In a study of childhood hysteria in which the diagnosis was made on the basis of multiple symptoms persisting over long periods of time accompanied by the somatic symptoms of anxiety, pseudoneurological symptoms, and/or ab-

dominal pain and vomiting, it was found that hysteria was unusual before the age of 9 and rare before the age of 5, that there was no occurrence of monosymptomatic hysteria, that no males with hysteria were found at follow-up, and that anxiety was a constant manifestation of the condition, suggesting that conversion was not as highly effective in defense as it was classically made out to be. Whether this study by general psychiatrists without training or experience with children actually dealt with childhood hysteria is open to question.

Etiology. In the historical development of psychoanalytic theory, as delineated above, the original neurotic conflict was located successively in adult, adolescent, and infantile periods of life, and the "unbearable idea" was reduced first to a sexual act, and then to a sexual fantasy. At every stage of Freud's theorizing, however, the mechanism of "conversion" was judged to be primary for the hysterics.

For Janet, the primary mechanism was that of dissociation, the dissociated function operating in co-existence with normal consciousness or to the exclusion of other functions. He also called attention to the calm mental attitude, "*la belle indifférence*" which is not so common in childhood but makes its appearance in early adolescence.

So-called naive or common sense psychological theory (as propounded by Heider) might help to explain some of the curious pseudoneurological findings that occur in hysteria. The hysteric behaves symptomatically as if he were totally ignorant of anatomy, and his physical symptoms tend to correspond strikingly to the usual lay concepts of disease. For example, hysterical paralysis shows an exact delimitation and an excessive intensity and is more frequently accompanied by sensory disturbances than organic paralysis. The naive theory of illness would tend to incorporate infantile theories of disease within its framework so that the young child's conception of the body and its relationship to the mind governs the symptomatic picture. In the Ganer syndrome (which may occur occasionally in older children and adolescents) the child's naive concept of insanity is at the basis of the peculiar behavior in which absurd, whimsical, and approximate replies are given to simple factual inquiries. The hysterical attack may be precipitated associatively with the content of the unconscious complex if stirred by a conscious occurrence; organically, if for any reason the emotional investment in a particular part of the body reaches a critical level; in the service of paranoic gain, as a flight into illness when reality becomes too painful or too frightening; and in the service of epinoic gain to achieve some secondary benefit. The choice of the afflicted region is determined by the unconscious sexual fantasies and the corresponding erogeneity of the area, somatic compliance (the point of least resistance), the situation in which the decisive repres-

sion occurred, and the ability of the organ to symbolize the unconscious drive in question.

Clinical description. There are no physical symptoms in the conversion reaction which cannot be produced by volition or by emotion, although it may be possible to maintain these symptoms for only a short time. The motor symptoms include paralyses, tics, and tremors; the sensory symptoms include anesthetics, paresthesias, and hyperesthesias (the distribution is not according to anatomical lines, varies at different examinations, and is susceptible to suggestion); and the visceral symptoms include anorexia, vomiting, bulimia, hiccups, respiratory tics, and various abdominal complaints.

Ocular hysteria occurs in children about as frequently as in adults, with peak frequencies in the 9- to 10-year and the 13- to 14-year groups, and in a sex ratio of 3 girls to 1 boy. In an experimental sampling of patients, vision varied between 20/70 and 20/200, a few individuals having only light perception. None of the children examined experienced any difficulty in getting about, and all showed the constricted tubular peripheral visual fields pathognomonic of hysterical amblyopia.

Hysterical contractures have been reported as "not infrequent" in the 10- to 15-year age group, again with a female predominance ratio of 5 to 1. Precipitating factors include minor trauma or orthopedic procedures. There is usually evidence of secondary trophic changes such as cyanosis and coldness of the part. Psychological factors include disturbed parents and parental relationships, rigid authoritarian attitudes towards the child, and early feeding and behavior difficulties in the child. A period of severe emotional stress coincides with the onset of the symptoms. There are two hysterical syndromes encountered fairly frequently in childhood:

The tic syndrome. Like school phobias, the symptom of tics may be found against several different backgrounds of disturbance. Tics are not uncommon in the postencephalitic syndrome; they may occur with severe character disorders as in the Tourette syndrome, and they may be included in a psychoneurotic reaction. The tic syndrome can be roughly differentiated into two groups. In the first of these, the tic represents a conversion symptom in a "genital" syndrome, and in these cases, tics are usually single and simply patterned. There is often a history of psychological trauma at the onset, and the psychopathology evoked has an oedipal configuration with associated castration anxiety. The family history, apart from mild neurosis, is relatively clear, and there are no conspicuous disturbances in the premorbid history. The child often occupies a special position in the family, such as being the only boy, and his parents, especially his mother, are inclined to pressure and restrict him. From early life, he has shown a tendency to hyperactivity, and the parents have had difficulty

keeping him quiet and still. The EEG is normal. The prognosis with psychotherapy is favorable, and some of the milder varieties may clear up spontaneously within weeks or months.

The second type of tic disturbance has a mixed clinical picture and is generally associated with a neurotic character disorder, sometimes close to a borderline psychotic state. This disturbance has been referred to as a "pregenital conversion reaction," and the psychopathology displays both oral and anal features. Anal sadism, exhibitionism, and voyeurism are prominent, and the symptoms may include coprolalia. Attempts have been made to separate the various parts of the symbolic movement into components representing pantomimes of unconscious, aggressive, and erotic wishes. Whereas the hysterical convulsion appears to be a gross translation of the unconscious wish and fear, the hysterical tic is more in the nature of a compromise movement in which only a fractional part of the impulse gains expression.

Hysterical paresis. This type of conversion response is not uncommon at puberty and is sometimes brought about by a strongly worded suggestion from a parental figure indicating possible loss of function or disability. In the female, there is often a marked ambivalent attitude towards the male, alternatively rejecting and inviting. The girl is usually highly contemptuous and disparaging of boys, refusing to associate with them, and her crude and rough demeanor overlies a masculine identification. She is also outspokenly envious of boys and may list their many unfair advantages. The precipitating factors are often menarche, which serves as a reality conformation of her no longer deniable femininity, and exposure, even indirectly, to some violent sexual incident which may weaken the defense of masculine identification and necessitate the conversion of the emerging anxiety. In the boy, the background is usually one of a passive, feminine character configuration with a submission to parental expectation. The conversion symptom is usually precipitated by a mobilization of anxiety in reference to guilt and punishment associated with pubertal masturbation and an excessively harsh superego structure leading to a marked inhibition of any form of aggression. The biological thrusts of puberty resulting from endocrinological changes often upset the neurotic equilibrium, and previously successful defenses such as masculine identification in the female and feminine identification in the male are no longer adequate.

Differential diagnosis. In adolescents and adults, conversion disorders frequently occur in hysterical personalities, but this is not always the case in childhood. It is also unusual to see a purely hysterical disorder in children, and "combined disorders" are more common, in which a conversion reaction exists along with other neurotic, or sometimes psychotic, disturb-

ances. Conversion disorders must be distinguished principally from symptoms of predominantly physical illness and psychophysiological disorders. Occasionally the psychophysiological disorder and the conversion reaction may be so mixed, as in certain cases of vomiting, encopresis, hyperventilation, and enuresis, that it is difficult to decide to what extent the habit disorder has been drawn into the service of conversion.

Prognosis. The "purer" the conversion reaction and the freer the personality from character disorder, the better is the prognosis. The absence of gross pathology in the parents is also more conducive to a favorable outcome. In a 9-year follow-up of 37 children diagnosed as having hysteria, hypochondriasis, and mixed psychoneurosis, 5 cases presented hysteria at the time of follow-up and 5 anxiety neurosis. The remainder had physical and mental symptoms of various kinds apart from two patients who seemed to be completely well. (However, the terminal comment at the end of the section on epidemiology applies here as well since both refer to the same study.)

Management. Since the time of Charcot, many different treatment procedures have been tried successfully with hysteria, most of them incorporating some mode of suggestion. These have aimed at removing symptoms, but they leave the underlying conflict unresolved. The use of hypnosis with children, especially with girls at puberty or approaching puberty, has iatrogenic dangers attached to it. It is certainly possible to let the child relive hypnotically the episode responsible for the conversion, but it is inevitably treated by some children as a seduction, and they react accordingly. Furthermore, the mere removal of a conversion symptom with all the primary and secondary gains attached to it can bring about resentment at the act of deprivation.

Insight therapy is aimed at uncovering the neurotic conflict that has led to the conversion and at helping the child to "reconvert." In the psychoanalytic mode of treatment, the decoding of the unconscious meaning of the conversion symptom through interpretation induces progressive alterations in the transference relationship and in the symptomatology, until the work of reconstruction pieces together the historical development of the symptom, making use of dreams and fantasies as an adjunct.

As Kanner has pointed out, environmental manipulation is sometimes more successful with hysterical children than with hysterical adults, and he has even suggested the exploitation of such sublimatory activities as dramatics so that the child can learn that "exaggerated acting is bad acting!"

Dissociative Reaction

Definition. Neurotic anxieties belonging to this category may bring about temporary disorganization of the personality which culminates in such aimless

behavior as fugue states, catalepsy, amnesia, twilight states, narcolepsy, and pseudodelirious and stuporous states. Self-representation may be disturbed, with the development of personality dissociation and multiple personality formation. Formerly, this reaction was classified as a type of conversion hysteria.

Epidemiology. This is perhaps the most dramatic of the group of hysterias. At first sight, it appears to involve a process of decompensation and a failure of defense, but on careful inspection it is seen that the fugue states, dream states, somnambulism, and stupor are fairly structured entities which operate behind a curtain of amnesia, so that the conscious ego of the patient is able to state quite blandly that he has no knowledge whatsoever of what he is supposed to have said or done in his other condition. Fugue states have been described in girls around the age of 8 and again at puberty. Somnambulism also is rarely found below the age of 8 and increases in frequency toward the end of childhood. In one series of 193 children, 13 per cent of the cases were diagnosed as having hysteria, 20 per cent showed dissociative reactions, and 80 per cent combined dissociative and conversion reactions. The girls outnumbered the boys about 3 to 1. The incidence appeared higher in children coming from subcultural areas.

Etiology. Janet's theory of hysteria is especially applicable to the dissociative reaction. He regarded the main factor as a disturbance of the synthesis of the personality, characterized by a restriction of consciousness and a tendency to dissociation. Certain functions and ideas are "split off" from the conscious personality, and the more they have been involved in a major affective experience, the more they are apt to become dissociated. Unlike Freud's theory of the repressed conflict, the theory of dissociation does not help to explain why dissociation takes place. It was possible for Janet to cite heavy neuropathic tainting as predisposing to the disturbance, as this was found in many of the cases, especially the more serious. There is sometimes a dissociative tendency in the family, so that the pattern for the symptom can be copied from observations made within the family. The loss of personal identity entailed in this type of reaction is commonly accompanied by amnesia, which is different from organic amnesia in that it occurs suddenly and without trauma and is usually recoverable spontaneously or with the help of therapy. There is no recorded case of a child demonstrating multiple personalities, but fugue states and somnambulism are not uncommon. The predisposition to gross reactions of the dissociative kind includes heavy constitutional factors (although not neurosyphilis in the parents as Freud once thought), disturbed family relationships, and unfavorable environments. Mental or physical illness in the family can act as a powerful model for abnormal behavior in a hypersuggestible, predisposed child.

Clinical description. Children with a tendency to

dissociation seem fairly well adjusted in their normal states though somewhat shy and subdued. More than with the other hysterias of childhood, the dissociative type tends to be monosymptomatic, massive, and acute. Janet has attempted to describe two forms of dissociated state, using somnambulism as a model. In one form, the monoideistic, there is a striking poverty of content, and this is the form characteristically found in children. The "poverty" is in fact relative to the depth and intensity of the treatment process. The deeper the process, the "richer" the clinical content.

Two of the dissociative reactions are among the more frequent in childhood:

Somnambulism. This can be defined as a fugue state which begins during sleep and is usually of shorter duration than a fugue. The movements of the somnambulist seem to be in response to the manifest or latent content of the dream, and the meaning may be an escape from the temptation of the bed or a movement towards a particular goal which represents gratification or reassurance. It becomes increasingly common after the age of 8, reaching a peak frequency around middle adolescence. At the earlier ages, the motivation often appears on the surface such as the acting out of some unconscious wish. In some cases, the approach behavior is prominent, and in others avoidance, but in the majority of cases there may be a combination of approach and avoidance. At the point of greatest ambivalence, the patient may wake up. Compared with children who suffer from night terrors and nightmares, the sleep walker appears to be less intelligent, less imaginative, less prone to conscious anxiety but more suggestible. It has been referred to as a "motor syndrome," sometimes associated with other motor disturbances such as tics. The patient tends to express himself more frequently through activity than in words, and dreaming is somewhat sparse and poorly recalled.

Twilight states. The typical history of a child, typically a female, manifesting twilight states is as follows. The early childhood is usually described as easy and uneventful with a close relationship with both parents. A sibling is born when the child is about 3 or 4 years of age, and soon after, the child, almost predictably, undergoes some traumatic sexual experience with an older person, which the child at first keeps secret but about which there are considerable guilt feelings. At about the 5th or 6th year, there is a realignment in the family. The child begins to show an exaggerated affection toward her mother and alienates herself from her father (in one case the alienation was increased to the point of not recognizing him). The child appears to become increasingly disturbed, and about her 8th year, she begins to suffer from twilight states in which she both reenacts her sexual seduction and at the same time shows marked hostility to the mother. As soon as the attack subsides, she once again reverses her behavior and clings affectionately

to her mother pleading for protection. Afterwards, she shows complete amnesia for the whole event.

Differential diagnosis. Like conversion disorders, the dissociative reaction often occurs in hysterical personalities but may appear in other psychopathological disorders as well. In its gross form, it needs to be differentiated from psychotic disorders, epileptic equivalents, and from analogous symptoms in some other types of neurotic reactions.

Prognosis. The prognosis for any particular dissociative state may be good, since they often disappear spontaneously in the course of a few months, to be replaced by some other symptomatic expression, usually from the same reactive group. One occasionally sees alternations of fugue states, somnambulism, and twilight states. The prognosis is less favorable for reactions beginning in childhood and reactions associated with personality disorders or with dissociative tendencies within the family. The dictum that hysterical parents have hysterical children is probably truer for this group than for any other one of the hysterias.

Management. There is a tendency to treat children belonging to this group like psychotics or borderline psychotics and to hospitalize them for long periods of time. When the reaction takes the form of stupor or catalepsy, the need for hospitalization is understandable. The dramatic and unusual symptoms usually obtain a great deal of professional attention and interest for the child, and one of the epinoic gains is to become an "interesting case." Once again, psychotherapy should be aimed at the underlying conflict situation, rather than the symptom itself. The therapist must strive to remain unimpressed by the symptomatic repertoire of the patient, while giving every consideration to the very real problems engendered by the illness. Hypnosis or Amytal abreaction is often successful in relieving the acute symptoms.

Obsessive-Compulsive Reaction

Definition. In these disorders, the anxiety aroused by the unconscious conflict is counteracted by the occurrence of thoughts (obsessions), acts or impulses to act (compulsions), or mixtures of both which are all isolated from the original, unacceptable impulse. The child often recognizes his ideas or behavior as unreasonable but is, nevertheless, compelled to repeat his rituals. Often the external behavior represents the opposite of the unconscious wish, as with excessive orderliness and washing compulsions overlying impulses to soil and mess. Counting and touching ceremonials or recurrent thoughts appear frequently, resulting in marked anxiety if these are interfered with by the parents or other persons. This category includes many cases formerly classified as "psychasthenia" (Janet) in which phobias, compulsions, and obsessions were accompanied by doubts, timidity, and depressions. Janet considered that a general lowering of "psychological force" was the basic cause of the difficulty, and he felt that the condition had some relation to epi-

lepsy, of which it was perhaps a milder form. Early in his studies, Freud began to notice connections between hysteria and obsessional neurosis. In the first place, he accorded the anancastic reaction full recognition as an illness entity and then drew it into a grouping with hysteria. In the earlier work, he referred to them both as defense neuroses, and later they became the transference neuroses. He regarded the transposition of affects that brought about the clinical picture in obsessional neuroses as equivalent to the conversion of affects that operated in hysteria. He very soon related them both as originating from infantile sex experiences, and in the seduction hypothesis he outlined a schematic relationship in which the premature exposure to sexuality, if passive and unpleasurable, led to the development of hysteria, whereas if active and pleasurable, it gave rise to an obsessional neurosis characterized by self-reproach for the sexual aggressiveness entailed. With his discovery of the Oedipus complex, Freud attributed the development of hysteria to a direct repression of oedipal wishes, and the development of obsessional neurosis to a regression to anal-sadistic levels. Eventually, he delineated the psychopathology of the obsessional neurosis in terms of anal erotism and sadism (which he linked together); bisexuality; defense mechanisms of isolation, undoing, and reaction formation; unusual intellectual drives; and premature ego development.

Epidemiology. About 20 per cent of all cases of obsessional neurosis begin under the age of 15, and 50 to 60 per cent earlier than the age of 20. Of the childhood cases, about half have an acute onset, and the other half develop insidiously. There is a slight preponderance of females, but by no means as marked as in hysteria, and females are more inclined to have an acute onset. About a third of the cases present a mixed clinical picture involving obsessional thoughts, acts, and phobias; about a third are mainly represented by thoughts and acts; a sixth of the cases are predominantly phobic, and another sixth of the cases are also atypical in that the obsessional condition is complicated by the presence of other psychopathological states. The condition, in general, tends to occur in the upper brackets of social class, intelligence, and education. An appreciable number of parents of obsessional children also suffer from obsessional illness (about 10 per cent), and between 40 to 60 per cent show obsessional traits. There is a general consensus that obsessional illness is frequent in the family of obsessionals, and also that more familial pathology is present than is the case in other psychoneuroses (from 4 to 15 per cent of the parents may be psychotic). None of these findings can be offered as proof of heredity, since the effect may well be the result of social conditioning. No twin control studies have as yet been carried out. In a California survey of obsessive-compulsive reactions in children, it was found that the sample group comprised 1.2 per cent of the total adult

and child psychiatric load, that there were equal numbers of boys and girls, and that the average age of onset was 7½ years. The group as a whole showed a better than average intelligence.

Etiology. Obsessions and compulsions of a minor kind begin early in life and persist through childhood. These disturbances are first seen in the elaborate bedtime and feeding rituals set up by the toddler, without which he cannot function comfortably. Rituals are frequently associated with rigid routines on the part of compulsive parents who, while not initiating the behavior, often seem to do their best to keep it going. A little later, obsessional fears, often recognized as unreasonable and absurd, lead to the use of magical counter-measures and are continued still later in the form of obsessional "games" such as the avoidance of cracks on the pavement ("Step on a crack and break your mother's back!").

According to psychoanalytic theory, obsessions are the consequence of release of repressed instinctual impulses and wishes from their unconscious representation; the released elements are then transferred to the sphere of consciousness in conjunction with some idea or set of ideas that has no presumptive relationship to the unconscious impulse, so that the child is unable to understand why he should be obsessed in this way. The reaction is interpreted as a defense against aggressive and sexual impulses particularly in relation to the Oedipus complex. The initial defense is by regression to the anal-sadistic level, but the impulses at this level are also intolerable and must be ward off by reaction formation, isolation, and undoing. Because the use of these defenses renders superfluous the use of repression proper, the offensive impulses can exist in consciousness, although when they do, they are divorced from their affective significance and so remain meaningless to the patient.

Because of the familial tendency, several investigators have assumed a specific constitutional predisposition, and terms such as "ideo-obsessive constitution" and "obsessive psychopathic constitution" are defined as an inherent tendency towards an abnormal persistence of responses in conjunction with autonomic lability. The child rearing of obsessional parents is rigidly scheduled, and the child is brought up with what Kanner refers to as "an overdose of parental perfectionism." The child learns early that strict adherence to what he is taught is "right" and to do otherwise is "wrong." The child's world is inevitably clean, neat, and orderly, and it is equally inevitable that the child of such an environment develops "just so" attitudes. It is not clear to what extent obsessional neurotic and personality disorders can be related to difficulties in sphincter training, nor are there any conclusive research findings to confirm or refute the connection. An investigation of 5-year-olds showed no behavioral differences in those who had been trained early or punitively, as compared with those trained late and permissively. It is possible that the cause lies

not in a particular sphere, but in the total training experience given to the child, whereby every aspect of his developmental world becomes infused with inflexible concerns. Sullivan has pointed to "preoccupation" in childhood as a precursor to later obsessional development.

Children who develop obsessional neurosis in late childhood or adolescence have often exhibited a variety of symptoms during the course of their development. These include phobias (40 per cent), hypersensitivity (35 per cent), anxiety (32 per cent), inhibitions (25 per cent), obsessiveness (22 per cent), shyness (20 per cent). Eighty-three per cent of such children can be regarded as "nervous." In contrast to the extroverted personality of the hysteric, introversion is found more commonly, although it is not marked prior to the onset of the illness.

The premorbid personality has been investigated from the psychoanalytical and clinical points of view. Clinicians, describing the obsessional personality, have pointed to the cautious, deliberate, persistent, conscientious, dependable, dogged, austere, and perfectionistic person, whereas psychoanalysts, elaborating on the original anal-erotic triad of Freud (orderliness, frugality, and obstinacy) have emphasized the stubbornness, egocentricity, and inflexibility of the person in general, and in particular portray such individuals as tyrannical, power-loving, dictatorial, hypercritical, vindictive, avaricious, parsimonious, irritable, malcontented, and hypochondriacal. The positive and negative pictures also seem to depend on the degree of adjustment shown by the obsessional individual, whether his management of his life situation indicated a successful or unsuccessful obsessional. If the child is doing well at school, his ambitious and intellectual parents will be inclined to treat his obsessional traits with respect, whereas the child with a school problem may be described in similar terms, but the wording of the complaint will be more negatively phrased.

The classical triad may exist in different proportions. In a typical group of obsessional cases, 72 per cent will be orderly, 4 per cent disorderly, and 24 per cent in between; 50 per cent will be frugal, 6 per cent extravagant, and 44 per cent in between; 40 per cent will be obstinate, 20 per cent compliant, and 40 per cent in between. There is a tendency for some children to maintain "leakage" symptoms, so that they show dirtiness, disorderliness, and compliance in the setting of a "perfect" obsessional personality. This is especially characteristic of certain cases of encopresis in which a scrupulously clean child will show a psychological "leakage" in addition to his physical leakage.

As in the case of the Rat Man, the child begins his obsessional illness with the emergence of unacceptable thoughts, sometimes blasphemous, sometimes sexual, and sometimes aggressive. He may try hard to think of something else and shake off the disturbing thoughts, sometimes even literally by means of tic-

like movements. Unlike the adult obsessional, the child usually cannot keep his thoughts or ruminations to himself and may force his parents to participate in his rituals, answer his repetitious questions, and cater to his obsessional wants as punctiliously as he does himself. The mother's compulsions may not fit those of the child, and she consequently tends to become increasingly impatient with his insistence and may attempt to turn him aside from his demands, first by reason and argument and finally by punishment, so that child and mother are soon locked in an interminable "somasochistic battle." The child finds himself caught between two wrongs: his unconscious wishes are "wrong," and his conscious defenses are also "wrong." Invariably, anxiety and depression may supervene, together with vague psychosomatic symptoms of various kinds.

Differential diagnosis. These disorders must be distinguished from normal, compulsive rituals of the toddler around training situations, or the obsessional "games" of the early school child carried out in the service of mastering aggressive impulses.

Prognosis. Recent studies of the natural history of obsessional neurosis as it extends through the lifetime of the individual seem to indicate that the prognosis is not as unfavorable as was once thought and that spontaneous remissions are fairly frequent. The factors influencing prognosis in an unfavorable direction are existence of obsessional symptoms in early childhood, the occurrence of a premorbid obsessional personality, the occurrence of obsessional acts, and a severe clinical picture on first admission. Although obsessional symptoms starting at about 6 years of age may clear up spontaneously in 1 or 2 years (see Wolf Man), Kan-ner has stated that he has never known pathological obsessions of children to subside without outside therapeutic help. Sometimes the obsessional symptoms subside, but the background of anxiety, sensitivity, and inhibition may remain with the result that the child continues to be "nervous." Sometimes, the child may begin to hide or camouflage his symptomatic acts. The prognosis, with treatment, of childhood obsessional states is fairly good, especially after prolonged, intensive psychotherapy. About 30 to 40 per cent of the cases become completely free with another 40 to 50 per cent "much improved" or "improved." About 10 to 15 per cent of the cases apparently do not improve (the adult cases do less well if one takes the average of five well known studies: 27 per cent are free of symptoms, 37 per cent are improved, and about 36 per cent remain static or grow worse).

Management. Therapy with an obsessional child takes place in a series of stages. In stage one, the child is relieved to talk about his peculiar symptoms without being mocked, criticized, or punished; within this therapeutic setting, he is enabled to bring his whole repertoire of symptoms into the open. He can also express his anger at the repercussions his illness brings about in his home environment. In stage two, the child

attempts to use the therapist in the same way he uses his mother, as a participant in his ceremonials, and, when the therapist balks at assuming this particular role, a stormy situation ensues. In stage three, which is often heralded by "freer" dream material, the child's defenses appear less inflexible, and a greater amount of "leakage" enters into the treatment. The stage that follows is characterized by messiness and aggression, and the child seems for a while to wallow in his regressions. As this stage abates (to the relief of the parents who are, at this point, constantly threatening to take the child out of treatment), frank oedipal wishes and thoughts begin to emerge, and from then on the treatment resembles that of other neurotic children.

Depressive Reaction

Definition. Psychoneurotic, depressive disorders involve internalized conflicts in relation to deeply ambivalent feelings and are not commonly seen in their fully developed adult form in children, although what have been referred to as "depressive equivalents" may take the place of the depression, varying in their composition with the child's stage of development. The conflict anxiety is said to be mitigated by self-depreciation and the sagging of mood. In older children, as in adults, a loss of self-esteem, associated with feelings of guilt and ambivalence toward loved persons have been reported. Psychomotor retardation and agitation are occasionally present, but are much less marked than in adults.

The fully developed depressive syndrome in the adult psychotic can be said to have three classes of symptoms: primary (sad affect, reduction of drive and productivity, and psychomotor agitation and retardation); secondary (feelings of helplessness, hopelessness, and worthlessness); and tertiary (obsessional reactions, hypochondriacal preoccupations, delusions and hallucinations, suicidal thoughts and tendencies). The neurotic reaction borrows a little from this general picture, although excluding the more malignant tertiary components and adding a neurotic conflict and neurotic personality to the clinical picture. The depressive reaction in children in turn borrows something from the neurotic depression of adults (the sadness, helplessness, loneliness, homesickness, and inadequacy) excluding, to some extent, the structured, internalized conflict in relation to ambivalence, and adding phase-characteristic depressive equivalents.

The difference between the child and adult picture can be attributed in part to the inability of the child to verbalize his affective state, to the incomplete development of the superego, and to the absence of consistent self-representation. The difference between neurotic and psychotic depression is that in the former, the individual attempts to force external objects to replenish his reduced "narcissistic supplies," and in the latter, the individual withdraws from and incorporates the unsatisfying object, attempting to reestab-

lish his self-esteem in the intrapsychic sphere. Many psychoanalysts have stressed the fact that the child, by virtue of his indispensable need for an object relationship, is compelled to direct his attention toward external, substitute objects. In addition, his weak superego prevents typical depressive clinging to lost objects in the form of protracted mourning, at the same time permitting replacements and substitutes. It does not encourage assaults on the ego in the form of self-reproach and pervasive pathological guilt. The rapid regressions of childhood also imply quicker restitutions.

The depressed child experiences a feeling of pain over real or supposed deprivation and may resign himself in a helpless, impotent way to the painful situation or react with aggression against the source of pain. The depressive response is always associated with undischarged aggression, and fear of superego sanctions leads to repression or displacement of the aggression onto the self. The defenses against the depressive affect are similar to those used to withstand anxiety.

When depression is carefully defined in adult terms, it is difficult for some investigators to acknowledge its occurrence before puberty. When the investigator is prepared to compromise with the criteria and accept the "depressive equivalents" in the child equally with depression in the adult, it is possible to regard certain clinical states, such as school phobias, as manifesting depression. It is generally agreed that transient, depressive feelings are frequent in childhood, but this does not represent a psychopathological state, and some clinicians have questioned whether "depressive equivalents" do not represent a potpourri of childhood psychopathology rather than the syndrome of depression.

Epidemiology. Bearing in mind the controversial nature of the evidence offered for the existence of this reaction as an entity, it is almost a hopeless task to attempt to ascertain its prevalence. The few studies in the literature are merely descriptive of a small number of cases.

Etiology. From an etiological standpoint, it would seem important to differentiate among psychotic depressions (which do not appear to occur during childhood), reactive depressions in response to loss (seen in anaclitic depressions, grief reactions, and in the rudimentary mourning of older children), and depressive reactions linked to neurotic conflicts. Within the framework of psychoanalytic theory, the nuclear conflict of the psychoneuroses would be expected to operate similarly in the case of the depressive reaction. The crucial question would then be that of the circumstances under which one would expect depression to ensue from the oedipal disturbance. The complex contains within it affects of fear and anxiety as well as reactions of guilt, love, tenderness, hostility, and aggression. It involves the fantasied loss of one or both parents, the renunciation of one or both parents,

jealousy, envy, and death wishes. In the face of competition with the adult, the child may experience strong feelings of inadequacy and inferiority.

There seems little doubt that the depressive reaction, when it occurs, must have a close relationship to the aggressive feelings directed toward the loved parent of the same sex, thereby generating a conflict of ambivalence. Even the resolution of that conflict and the preservation of the rival involves some degree of loss in the renunciation of the basic desires. It is not surprising that some children, "predisposed to depression," react to the dilemma with depressive feelings, the castration anxiety in such cases remaining relatively mild. Again, whereas many children awake from oedipal dreams containing death wishes in a state of great anxiety, demanding reassurance, these susceptible children continue to lie sadly in their beds, full of remorse and often weeping uncontrollably.

Clinical description. The depressive picture in children between 8 and 11 years includes the following characteristics: weeping bouts, some flatness of affect, fears of death for self or parents, irritability, somatic complaints, loss of appetite and energy, varying degrees of difficulty in school adjustment, and vacillation between clinging to and unreasonable hostility toward their parents. Self-deprecation is often marked. In appearance, the child may look sad and depressed, talk in a low, weak voice, turn his head to the wall, cry frequently, and constantly iterate his loneliness. Nothing appears to cheer him up, and he seems to have all the energy drained out of him. The precipitating factors are usually specific events such as accidents and physical illnesses but not the real loss of either parent.

Instead of depression, a child may present with "depressive equivalents," which can include eating and sleeping disturbances, antisocial behavior, accident proneness, running away from home, boredom and restlessness, fatigue, difficulty in concentration, and sexual acting out. These also represent modes of defense adopted to ward off feelings of depression, isolation, loneliness, and emptiness.

The occurrence of depressive feeling and depressive equivalents is not unlike the occurrence of free-floating anxiety and the anxiety equivalents before they have been counteracted by mechanisms of displacement, conversion, dissociation, etc. Objectless depression, like objectless anxiety, occasions a certain degree of perplexity, because the child is not sure why he is depressed when there are no current reasons for the response. With objectless depression, too, as with objectless anxiety, there exists a feeling that something unpleasant is going to happen in the future, giving rise to a sense of foreboding and doom coupled with pessimism.

The wish to die may stimulate suicidal ruminations, suicidal attempts, and actual suicide. There exists a great deal of untenable statistical data regarding sui-

cide in childhood. The figures are based on notified cases, and there is a growing belief that a number of cases are never reported or are disguised as accidents. It is not surprising that incidence figures not only vary from one report to the next but may be contradictory. Suicide is said to be rare under 10 (only three children reported in this group in 1958), varying between 35 and 60 each year in the age group of 10 to 14 years, and between 250 and 300 each year in the age group of 15 to 19 years. This is out of the total child population of the United States until 19 years. Girls outnumber boys in attempting suicide 3 to 1, and boys outnumber girls in successful suicide 3 to 1 (the proportion of attempted to successful suicide is approximately 100 to 1). In one study of attempted suicide in adolescence, it was found that 15 per cent had a previous history of major accidents, and 6 per cent had made previous suicide attempts. In 8 per cent the father was dead. In half the cases, there was no adult figure in the house at the time of the attempt, but in 29 per cent of the cases the mother was at home. One of the main causes given was the use of disciplinary measures giving rise to emotional upset and depression. The suicidal method most in favor was the use of drugs (aspirins, barbiturates, and tranquilizers). Some of the attempts at suicide seemed to be manifestations of risk-taking behavior.

The "core" factor in the formation of a suicidal personality in childhood is thought to be a loss of love, real and fantasied. The part played by depression may be relatively small (less than 7 per cent, although this may be related to the difficulty in recognizing depression below the age of puberty). In the adolescent, identity crisis may play the role that depression plays in the adult. The amount of psychosis found varies with the study but is thought to be small. However, in one study at the Payne Whitney Clinic, of 37 attempted suicides between the ages of 13 and 19, 23 were diagnosed as schizophrenic. The same study defines the suicidal adolescent as "an individual who is delusional in varying degrees, withdrawn, spending a considerable amount of time in fantasy activity, with little if any somatic complaints, but constructing a picture of supposed wrongs done to him by associates, parents, or siblings. He may show very little by way of overt anxiety and might or might not have complaints of feelings of depression." Impulsiveness may, on occasion, lead to suicidal attempts, but these are often ill conceived and therefore likely to be unsuccessful. In the younger group, there may be a real physical difficulty in bringing off a successful suicide. Occasionally, a child may imitate a suicide seen on TV.

The psychodynamics underlying suicidal attempts include an appeal component representing a plea for help in dealing with sexual difficulty and hostile impulses aimed at the parents. According to Zilboorg, suicide at puberty is more often a primitive urge resulting from frustration of genital wishes rather than

an oral-aggressive one. Both intrapsychic and interpersonal conflicts of a serious nature are present in all suicidal attempts in children, most patients demonstrating long-standing, unrecognized disturbed mental states. These are usually associated with disturbed family relations and most frequently rejecting or highly ambivalent mothers. The immediate motives are usually multiple and include anxiety over school work, problems revolving around sexuality and social adaptation, and frequently some experience interpreted in terms of loss.

Differential diagnosis. Depressive reactions must be differentiated from acute reactive disorders (grief), anaclitic depressions, transient depressive feelings in developmental or situational crises, cyclical mood swings occurring in developmental disturbances, and psychotic depressions seen in adolescents with a schizoaffective disorder.

Prognosis. The predisposition to depression is occasionally so strong that the individual responds to all difficulties (frustrations, deprivations, losses) with depression. Klein has postulated a "depressive position" in the 1st year of life, and Abrahams a primary parathymia in the preschool child, as precursors to later depressive elements. The individual with such a depressive personality tends to face problem-solving situations with the expectation of becoming depressed. This is again equivalent to the anxious or stress sensitive personality.

Symptomatic treatment, aimed at relieving the child's mood, is usually effective but offers no safeguard against the occurrence of similar reactions in the future, unless the underlying neurotic conflict is also resolved and some measure of insight furnished to the child.

Management. As with the other psychoneurotic conditions, intensive psychotherapy is the treatment of choice for the depressive reaction. Antidepressive drugs, such as amitriptyline (Elavil), may be indicated when the phenomenological picture is similar to the depressions of adult life with marked loss of self-esteem, withdrawal from social interaction, depressive affect, self-accusation, and self-deprecation. In cases of attempted suicide in children, it is better to hospitalize the patient for a period following the attempt. Tranquilizers and antidepressants can be used as adjuncts, but the therapeutic aim should be insight rather than reassurance, since it is important for the patient to develop some understanding of his unsatisfied needs and the way in which his suicidal attempt relates to the unconscious motivating forces. It has been suggested that, during this critical period, the psychiatrist should make himself more easily available to the child and prescribe the frequency of the therapeutic interviews in relation to the child's needs.

Suggested Cross References

The neurotic disorders are also discussed in Chapters 23 and 24 in Area F, which deals with the psy-

chiatric disorders of adults. For a more detailed description of classical psychoanalytic theory, which underlies this discussion of neurotic disorders of children, see Chapter 6 in Area C, on current concepts of personality and psychopathology. This area also contains descriptions of alternate conceptual models of personality development and symptom formation. Suicide is also discussed in Section 33.1.

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41.2 PSYCHOPHYSIOLOGICAL DISORDERS

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Definition

Psychophysiological disorders in children, like those in adults, are defined in the American Psychiatric Association standard nomenclature as conditions in which "the symptoms are due to a chronic and exaggerated state of the normal physiological expression of emotion, with the feeling, or subjective part, repressed. Such long continued visceral states may eventually lead to structural changes." This definition, now some years old, is really an oversimplification of an extremely complex set of disorders. The term "psychophysiological disorder" is best reserved for a diverse group of conditions in which both psychic and biological factors play a role in producing a somatic disorder. Typically, such diseases include obesity, bronchial asthma, eczema, and ulcerative colitis. In these conditions there appears to be a biological factor, often only partially identified, which in combination with certain psychopathological stresses leads to the development of a particular syndrome.

The term "psychophysiological" as used today replaces the older terms of "organ neurosis" and "psychosomatic disorder." This area of medicine, however, remains vague and ill defined, and just how many disease entities can properly be included in this broad term is as yet unclear. Modern research has shown that many illnesses previously thought to be purely infectious or degenerative have emotional aspects. Even vulnerability to the common cold appears to have a relationship to emotional tensions. This section discusses only those conditions that have gradually come to be considered typical of the psychophysiological disorder group.

Anorexia Nervosa

Definition. Anorexia nervosa is a serious and sometimes life-endangering condition characterized by a self-imposed, severe dietary limitation, leading to extreme loss of weight, malaise, and other associated symptoms and serious malnutrition.

Clinical description. Although it is most common in young adults, anorexia nervosa can occur at puberty or even before. The most typical history is that of the slightly obese youngster who decides to go on a self-imposed and often severe diet. The decision may be based on some small incident where the youngster was criticized for his obesity or awkwardness. The child and his parents are often pleased with the resulting weight loss until it becomes excessive, at which point efforts to encourage the child into a more rea-

sonable intake are found to be futile. The common sense approach to the child in terms of the need for a certain number of calories, vitamins, etc., seems useless. The child becomes increasingly malnourished and gaunt but clings to the idea that he is improving his health.

A 12-year old may begin such a diet at 115 pounds and continue to lose weight until he is perhaps 60 pounds, by which point his entire body physiology is extremely disturbed. He may continue with exercises, again of a self-imposed nature. Restlessness is common in these youngsters, and that intensifies the physiological difficulty.

The diagnosis of anorexia nervosa is made on the basis of the excessive weight loss combined with the history of the peculiar dietary limitations the youngster has imposed on himself. As the malnutrition continues, the youngster becomes increasingly cachectic, but in spite of his general physical weakness he often continues with body-building exercises. Body reserves are generally used up. Blood sugar drops, and the youngster may suffer a circulatory collapse. It is essential in making the diagnosis to rule out any other cause of anorexia and subsequent weight loss. An undiscovered malignancy or infection, for example, may simulate anorexia nervosa.

The premorbid personality of the youngster with anorexia nervosa is usually one of a constricted, compulsive, rigid type. Hypersensitivity is a very common characteristic, and some of these children have schizoid traits. Both oral and anal residual qualities are usual. Once the disorder has developed, the child devotes a great deal of time and thought to the whole subject of food. In spite of learning the caloric content of foods and the requisites of an adequate diet, the child continues to eat very little—far below the requirement for normal health. The mechanism of denial is extremely prominent in these youngsters. They will claim to feel physically fine when it is obvious that they are so weak they can hardly stand or walk. They can even look in a mirror and remain oblivious to the fact that they are seriously malnourished. Bribes and threats by family or physician aimed at getting the youngster to eat more are usually fruitless.

It has been postulated that the psychodynamics of the anorexic child involves the entanglement of sexual and aggressive instincts with the concept of food intake. These basically immature youngsters fear growing up. Eating becomes a destructive oral aggressive act, one that also has sexual connotations. Unconsciously, to eat is to grow bigger, more aggressive, and more sexual. In attempting to ward off such dangerous instinctual impulses, the child also wards off eating.

The parents of children with anorexia nervosa present no uniform type of psychopathology. Most of these youngsters have probably been overprotected by

one or both parents. As with most other psychosomatic disorders, the child has had a close and markedly ambivalent tie to one parent or the other. The disorder tends to occur somewhat more commonly in girls than in boys, but the close ties exist between either parent and children of either sex. By the time the disorder is well advanced, one parent, if not both, has usually become extremely overconcerned and oversolicitous and may spend long hours bribing, threatening, and otherwise attempting to get the child to eat.

Psychophysiology. Anorexia nervosa is a non-classic psychophysiological disorder in which it is difficult to postulate the existence of a biological factor. Most of the symptoms of this disorder can be explained on the basis of severe psychological difficulties, which result in a marked limitation of nutritional intake. The subsequent physiological results are those of ordinary malnutrition—loss of weight with all the concomitant secondary factors associated with severe malnutrition. The end result of self-imposed starvation is physically the same as if a child was subjected to involuntary starvation. Once the child begins to eat again, all these physical problems disappear. When a child does recover from anorexia, however, there is apt to be a swing back toward obesity, which probably does include a biological factor.

Management and prognosis. As with children suffering from other psychophysiological disorders, the youngster with anorexia nervosa is often not recognized as having a serious psychological difficulty until the physical symptoms are well advanced. They are usually children who have been regarded as well behaved and even well adjusted. They may have done well academically and have presented no management problems to their parents. Only closer observation reveals the past hypersensitivity, marginal social adjustment, and compulsive features. One of the first requirements of the effective management of these children is convincing the parents that there is a large psychological contribution. This may not be particularly difficult during the middle and advanced stages of the disorder, when they see the child's peculiar and distorted view of his food intake and his insistence that he is in good health. Parents can be helped to understand that the youngster is physically healthy in terms of the absence of any organic disease. They need to understand that the child's symptomatology is emotional and the result of his own attitude toward eating.

Enlistment of parental cooperation in the total treatment program is vitally essential, whether the child is to be treated as an outpatient or in a residential center. By the time the disorder is well developed, considerable secondary gain has usually been added. All parental efforts toward enticing or threatening the child into eating must be discontinued, and the child

must be convinced that his dietary intake is totally up to him. This attitude must also be developed in any other important adults involved in the treatment process, including the local family physician, relatives, and hospital personnel. The child is in a chronic battle with all those who would make him eat, and it is essential that this battleground be removed.

The treatment approach to the child himself is that of relatively forceful and active interpretation of what is going on and to some extent why. He must be helped to understand not only that his dieting is excessive and harmful to himself but also that it is based on his unwillingness to grow up. The extensive use of denial by the child as a mechanism of defense means, as a rule, that therapy cannot succeed unless this particular mechanism is met head on. Some therapists feel that better results are obtained by granting the child's wishes and allowing him thorough, total oral regression, which is thought by some to underlie this disorder. Others find that this does not work nearly so well as facing the child with reality, challenging his use of denial, and actively pushing him toward acceptance of some of the duties and responsibilities appropriate to his age group. The child's nutritional intake must be detached from his aggressive and sexual struggles while these other problems are dealt with. He should be helped to understand how he is using food in an attempt to find a solution to difficulties he has feared facing.

It sometimes becomes necessary to feed the patient intravenously or by nasal tube. If such measures become necessary, the child must be helped to understand that he himself has caused the situation and that the measures undertaken are not provoked by hostility on the part of the physicians but are practical requirements of the circumstances. When the child begins to face what he is doing, these treatment procedures become unnecessary.

Neither excessive concern about the child's physical health nor a sadistic approach are of value. The general therapeutic approach, at least in the beginning, is a matter of fact accounting of what the youngster must have in the way of food intake, plus reassurance that, if other problems are present, they may be discussed. In the meantime, food intake must remain at a specified level, and weight gain must take place, or the involuntary feeding will, of necessity, be introduced. Once the patient has begun to divorce his eating from his other difficulties, his physical status begins to improve, and his emotional problems can be worked on in a more leisurely and classical fashion.

Obesity

Clinical description. Obesity in childhood is much more difficult to describe accurately than it is in adulthood. The fat baby and the chubby toddler are commonplace and do not necessarily qualify as obese children. In general, obesity in youngsters begins to

be diagnosed as a recognized and clearly defined syndrome during the grade school years. At this time, the obese child is one whose weight reveals him to be excessively heavy for his age and his height. The obesity may have been present during infancy and remained throughout grade school and into adolescence. Or it may begin later in childhood or even in early adolescence. The classically obese child has an obvious excess of adipose tissue.

The obesity itself is apt to interfere with the child's participation in normal childhood activities, particularly in athletics. Taunts from other children further isolate the obese child, who turns increasingly to eating and less to ordinary physical activities. Sensitivity about obesity tends to become enhanced at puberty. At this time, many of these youngsters begin to take dieting more seriously. Also, families tend to pay less attention to obesity during prepuberty than at adolescence.

From a statistical standpoint, obesity in children is more prevalent when they have obese parents. It is commonly observed that obese children are jolly on the surface, but unhappy inside, but this is not invariably so. Some obese youngsters are reasonably well adjusted, in spite of their obesity. Others are sensitive, selfish, and without friends.

Psychophysiology. Obesity, like most other psychophysiological disorders, is only partially understood. The overeating that results in obesity may arise from any one of several causes or combinations of causes. Certainly, some children become overweight because of purely endocrine difficulties. Such cases are relatively rare and are usually identified by a thorough physical examination. The remaining obese children, the majority of them, are not a homogeneous group. It is often difficult to determine whether the obesity is at least in part genetic or is due primarily to a family pattern of overeating.

The work of Bruch suggested that perhaps a majority of obese youngsters have developed this condition as a result of perpetuated and exaggerated oral needs. The orally oriented individual has great needs and demands much from his environment. He may sometimes have his needs met by excessive love and attention; at other times he may seek to meet them by an increase in caloric intake. Bruch's studies have indicated that many obese children come from families in which food is overvalued. Mothers who themselves are oral in nature tend to feed the infant whenever he is uncomfortable, regardless of the reason for his discomfort. The young child builds a pathway from need to eating. He remains oral, dependent, and insecure; as a result, he is often uncomfortable. He attempts to satiate himself through eating and, as a result, becomes obese. He often has little if any motivation to diet because there are no other routes through which he can meet his oral needs.

It appears that there are genetic, constitutional, biological, and psychological factors contributing to

the hyperphagia that results in obesity. Certain children, although obese, are not particularly maladjusted, and their obesity can be kept under control without great difficulty. The over-all picture presented by each child requires considerable attention to each of these factors.

Management and prognosis. Obesity in a youngster is not generally considered a life-endangering or even a serious disorder. Parents may occasionally bring a child to a physician because of obesity, but more often than not this condition is recognized by the physician, and it becomes his responsibility to suggest a course of treatment. Frequently, the child and his parents have been aware that he is overweight, but they have either accepted this as part of the family pattern or assumed that it would eventually disappear.

Proper management of the obese child involves a thorough study of the family and of the child himself. If the family tends toward overweight and the youngster's obesity is not excessive, little if any therapeutic measures may be necessary. If, on the other hand, the youngster reveals the psychological characteristics typical of many obese children—immaturity, hypersensitivity, and insatiability—more stringent therapeutic measures may be necessary.

Bronchial Asthma

Definition. Bronchial asthma is a condition characterized by recurrent episodes of a wheezing type of dyspnea with labored and prolonged expiration. Attacks of asthma may be brief and mild or severe and prolonged, reaching the stage of status asthmaticus. The symptoms are due primarily to a narrowing of the smaller bronchi and bronchioles. Although the condition may occur at almost any time in life, it often originates during the childhood years.

Clinical description. The child with bronchial asthma is subject to recurrent attacks of wheezing dyspnea, which may come on as a result of exposure to a particular allergen, during a period of emotional stress, or without apparent reason. The attacks may last from a few minutes to several days. The labored breathing may be mild or may reach the point where the child needs the assistance of an artificial respirator. The attacks may be seasonal or not.

An attack of bronchial asthma is physically uncomfortable and produces anxiety in the child as well as the parents. Medical advice is usually sought early, and the diagnosis is relatively easy, based on the characteristic wheezing respirations and the prolonged expiratory phase, with prominent rhonchi and rales. If the condition persists over a number of years, there is a tendency for the youngster to develop emphysema, with a diminished vital capacity.

As soon as the diagnosis is established, the average physician begins to search for the allergic factors that he assumes are responsible for the attacks, scheduling a series of skin tests and taking a careful his-

tory in an attempt to narrow down the search. Although it is sometimes possible to find specific allergens that produce the attack whenever the patient is exposed to them, at other times such a search is fruitless.

Physicians have long known that children with bronchial asthma frequently reveal overt emotional difficulties. Some physicians tend to attribute this to the asthma itself, but others feel that it is a contributing cause. Probably both factors are involved. Emotional factors do contribute to asthma in many youngsters, and the child with asthma is also prone to develop additional emotional problems as a result of his condition.

The characteristic course of asthma during childhood is extremely varied. Sometimes it begins very early in life and continues throughout childhood into adult life. At other times it begins late in childhood, lasts a short time, and then becomes quiescent. Serious cases usually start during the preschool years and become increasingly incapacitating as the child grows older.

As a result of repeated asthmatic attacks and the additional limitations imposed by medical management, many of these youngsters lead relatively secluded, quiet lives. They miss the opportunity of mingling freely with their peers. They are often forbidden athletic opportunities. They may be put on limited diets and be subjected to long term desensitization procedures. Asthmatic children often have other psychosomatic difficulties, such as eczema and other skin problems.

Psychophysiology. Asthmatic children can be broadly divided into two groups. One group contains those youngsters who show a number of neurotic symptoms and relatively few strong allergic reactions. These are children who respond well to residential treatment in special homes for asthmatic children. They do not tend to become steroid-fast, although they may originally react fairly well to steroid treatment. The other group of asthmatic children show fewer neurotic symptoms and less improvement when separated from parents and placed in a residential treatment center. They are prone to remain steroid-fast—that is, they do not tolerate removal of steroids, and if this is attempted, they redevelop their asthmatic symptoms.

The theories developed over the years regarding the psychological contributions to asthma in children have been numerous and conflicting. They have included the concepts that the asthmatic dyspnea represents a repressed cry of the infant for the mother, the perpetuation of an early mother-child ambivalent tie, the perpetuation of various anal features due to strict toilet training, and an over-all emotionally deprived early infancy and childhood. It seems impossible at this point to present any well documented, proved, and unchallenged theory as to the psychological role in the production of asthma. It is not even possible to delineate certain types of personality structure in asthmatic children, as some authorities claim is possible

in ulcerative colitis, for example. Asthmatic children may, and often do, have other psychosomatic difficulties including eczema, ulcerative colitis, rheumatoid arthritis, and migraine. They may be neurotically oriented children or have severe characterological problems. Early in the investigation of the psychological aspects of asthma, it was felt that these youngsters were by and large more intelligent than the average, but subsequent studies by Schneer have proved that this is not so.

At the present time, one can only say that various psychological factors may be involved in the production of asthma. These factors may be more important in some children than in others. It should also be kept in mind that an asthmatic attack is a psychologically traumatic event. Inability to breathe has life-threatening aspects and is bound to produce anxiety. The possibility of a subsequent attack may well reactivate the anxiety and assist in producing a new attack. The surrounding adults who themselves become increasingly anxious only serve to intensify the child's anxiety.

Management and prognosis. The child with bronchial asthma deserves, as does any other youngster with a serious chronic disorder, a complete physical and a psychiatric evaluation. Such a total study often gives important clues to the biological and psychological factors involved, thus allowing appropriate therapeutic measures. Some youngsters do not respond well to psychiatric measures and present a lesser amount of psychopathology. The immunological and autoimmune factors appear to be predominant in these children. In other youngsters, the neurotic features are more prominent, and environmental manipulation and psychiatric treatment are more effective. There are, of course, children with combinations of both; for them, total team management is essential.

Residential centers for asthmatic children are located primarily in the West and Southwest parts of the United States, and it was originally assumed that their greatest benefit stemmed from the climate. Although this may be important in certain cases, the concomitant "parentectomy" may be even more crucial in others, where separation of the child from his family psychopathology leads to marked improvement in the asthma, even without medication or other therapeutic measures. The children most apt to benefit by this environmental manipulation are those with more neurotic features and fewer allergic problems.

The psychiatric treatment of asthmatic children is not particularly unique. It is based on the neurotic or characterological problems the youngster presents. As with most other psychosomatic problems, it is essential to have a good working relationship with the other physicians involved in the treatment of the child. Many nonpsychiatric physicians, although aware that emotions may contribute to asthma, do not have a thorough understanding of the importance of the child's psychodynamics and the family psycho-

logical interactions. They may not recognize the importance of the emotional impact of some of their own advice to the family and how this can be distorted by both parents and child. For example, increasing limitations placed on the youngster's food intake, drastic curtailment of activities and socialization, getting rid of all pets, and total revision of household management and cleaning can at times be useful, but they may also produce almost as many problems as they cure. If the nonpsychiatric physician understands family dynamics, he may modify his approach and yet still accomplish his therapeutic goals.

Treatment of the child's parents is essential when the youngster's emotional difficulties are predominant. Also, some therapeutic assistance to parents is usually necessary when the child's asthma is primarily of an allergic nature. In the first instance, the treatment is directed toward the underlying emotional problems of the parents, as they may affect the emotional maturation of the child. In both instances, it is necessary to help the parents deal realistically with the asthmatic child, so that they neither overprotect nor reject him. Secondary gain accruing to the child from his asthmatic attacks should be minimized. All possible physical activities should be encouraged whenever they are not contraindicated by the asthma itself. The tendency for parents to infantilize such youngsters is common and must be minimized. It is often a matter of delicate judgment as to what physical or social limitations need to be imposed on these children. Such judgments are best reached by the team of physicians, all of whom should be thoroughly acquainted with all aspects of the child's family and his disease.

Functional Constipation

Definition. Functional constipation may be defined as a chronic condition due primarily to emotional problems in which the bowel is evacuated only at long intervals and with difficulty. The child with this disorder characteristically has a bowel movement only every several days and, often, only with the help of suppositories, laxatives, or some stool-softening agent.

Clinical description. A typical history of the child with functional constipation reveals that his difficulty began early, usually during his 1st year and invariably by the 2nd or 3rd year of life. The child seemed, according to his parents, not to have a daily bowel movement as they wished but occasionally to skip a day or two. This was followed by parental manipulations designed to produce a daily movement. Slowly, over a period of months, the child became increasingly recalcitrant about evacuation, and the parents increasingly concerned. They began to take additional measures to produce the bowel movement they thought necessary each day, since the child seemed unable to do so without parental interference.

By the time a youngster has reached school age with this condition, he is often quite constipated, his parents have proved to themselves and to the physician that, if left to his own devices, he will not have a normal bowel movement for 3 or 4 days, perhaps even longer. As a result, the parents have often instituted a regimen of suppositories, enemas, or mineral oil. The evacuations the child does produce may, if infrequent, be large and perhaps even painful.

The diagnosis is made on the basis of the history of infrequent bowel movements, a parent-child conflict over the production of bowel movements, and the demonstration of a potentially normal colon. The last includes the ruling out of Hirschsprung's disease, which is a megacolon due to a faulty innervation. The latter condition is relatively rare but may require a colon biopsy in order to confirm the diagnosis. It is, of course, quite possible for a child with Hirschsprung's disease to become involved in a parent-child battle similar to that seen in the child with functional constipation. There is a general atonicity of the bowel in both conditions. The fecal mass tends to build up, and there may be leakage around the main fecal mass, producing mild soiling in the child.

It is safe to say that the majority of cases of chronic constipation in children result from emotional problems rather than neurological problems. A careful history usually elicits early toilet training difficulties and the fact that at least one parent has been overly stressful about daily bowel movements. Once the child begins to resist parent demands and withhold feces, an atonic colon that performs poorly tends to develop. Such an atonicity is further enhanced by parental use of laxatives, enemas, and suppositories. Too much parent-child interaction begins to focus around the child's habits of elimination. The administration of enemas holds a mixture of fear and pleasure for the child. A child with functional constipation presents a mixture of passive-aggressive rebellion toward parental demands and an atonic and poorly functioning colon.

Psychophysiology. This condition stems for the most part from overly intensified parental attempts toward early bowel training. Children with functional constipation have literally chosen to resist parental demands by not giving the very thing the parent seems most anxious to receive—a bowel movement every day. The personality of one or the other parent may be predominantly anal in nature, leading the parent to focus on the child's bowel habits in a demanding and forceful way. Such parents are often convinced of the potentially dire results of constipation, thus rationalizing their frequent intervention. The children with functional constipation may present predominantly anal characteristics, being obstinate, ambivalent, and generally passive-aggressive. Some of them present an overtly characterological passive-aggressive attitude; others become, at least by grade school age, predominantly compulsive. In both cases, however, the child's basic orientation is one of resistance—not only in

bowel habits but in other areas. Although those who have become compulsive appear less resistant and obstinate, these characteristics are basically present.

Constipation is one of the psychosomatic disorders that have relatively little of a biological nature contributing to the basic etiology. It appears that almost any child can be coerced into functional constipation by an overly demanding parent and that preexisting or physiological deficiency need not exist in the lower gastrointestinal tract to result in this condition.

Prognosis and management. The prognosis of functional constipation in childhood depends both on the age at which it is recognized and treated and on the degree of psychopathology within the parent and child. In general, the earlier the condition is diagnosed, the easier it is to treat. Treatment requires that the parents be helped to understand the degree to which they are preoccupied with the child's regularity of bowel movement. It is usually necessary to support and reassure parents during the early stages of treatment so that they will be able to give up their excessive demands on the child. As soon as the patient becomes convinced that his elimination is not of tremendous importance to his parents, he will become more regular. However, most youngsters with functional constipation also have many other anal characteristics, which may also need treatment.

It may be useful in the beginning of treatment to prescribe regular doses of mineral oil or some other stool-softening agent in order to prevent painful defecation. Both parents, however, must recognize the need for removing their attention from this physiological function and for allowing the child to assume such responsibility himself.

Ulcerative Colitis

Definition. Ulcerative colitis is a serious chronic condition characterized by recurrent episodes of severe, bloody diarrhea. It is accompanied by anorexia, weight loss, and anemia. There are characteristic changes in the mucosa of the lower bowel and occasionally in the terminal ileum.

Clinical description. Ulcerative colitis may occur at any time during the life span and has even been reported in neonates. The disease may develop in a child gradually, with one or more mild attacks that go unrecognized, or it may develop in a fulminating form that is fatal in a period of a month or two. Most characteristically, the patient develops diarrhea with up to 40 stools a day in which there is excessive mucus and varying degrees of blood. He loses his appetite, complains of cramping abdominal pains, and becomes listless and apathetic. An individual attack of ulcerative colitis may last from a few weeks to a few months, following which the symptoms may abate but rarely disappear entirely. Further attacks tend to occur when the child is under some type of emotional tension.

The child with chronic ulcerative colitis usually re-

mains somewhat anemic and underweight. If the condition persists for years, the child's growth may be seriously affected. Acute attacks of colitis carry with them the dangers of exsanguination or bowel perforation. Another complication of long standing ulcerative colitis in both children and adults is the higher incidence of carcinoma of the bowel.

The diagnosis is made on the basis of the history and of x-ray and sigmoidoscopic examination of the bowel. The colon mucosa is friable and bleeds easily. Ulcerations may or may not be visible on sigmoidoscopy. Pseudopolyposis is common. The disease may affect any or all of the lower bowel and at times extends into the distal portion of the ileum.

It has been suggested that children with ulcerative colitis can be divided into two relatively distinct personality types. By far the most common are those with obsessional personalities. The typical history reveals that the child has been perfectionistic, rigid, and overly conscientious. This pseudomature adjustment has been interrupted occasionally by brief episodes of infantile dependent behavior. Many of these youngsters have a history of peculiar eating habits, with intense dislikes for certain foods based on their consistency or color. There may also be a history of constipation, with occasional periods of mild diarrhea. When the child develops an attack of ulcerative colitis, he characteristically becomes whiney, depressed, and demanding; he generally withdraws from most of his ordinary activities. The depression in these children is quite prominent, and preoccupations with death are not uncommon.

A smaller number of children with ulcerative colitis have a personality quite different from that outlined above. They are querulous, demanding, manipulative children. These youngsters are somewhat less apt to develop acute fulminating attacks of colitis. Their symptoms are somewhat less dramatic but more constant. They often use the colitis in a manipulative fashion, to force parents and others to meet their excessive demands.

The parents of children with ulcerative colitis present more than the average amount of psychopathology, but there does not appear to be any single type of family dynamics characteristic of this disorder. One often finds a close, ambivalent, and almost symbiotic tie between the child and one of the parents.

Psychophysiology. Ulcerative colitis, like many other psychophysiological disorders, has been studied more thoroughly in adults than in children. One can probably assume, however, that similar factors operate regardless of the age of the patient. The most promising current research in ulcerative colitis appears to point in the direction of autoimmune factors. It has been demonstrated that the peripheral circulating blood of the patient with ulcerative colitis contains some as yet unidentified substance that is toxic to colon cells. Two basic questions remain unanswered. One has to do with the specific antigen in the blood

and its exact location, and the second has to do with the original triggering device that sets off the attack of colitis. One can presume, but as yet not prove, that emotional tension is the original triggering device. It is often, but not always, possible to demonstrate some type of emotional crisis surrounding the onset of colitis. It is also presumed, but as yet not proved, that, once the process begins, the reduction in emotional tension does not necessarily lead to a remission in the disease. Psychiatric improvement may not be followed by a similar improvement in bowel pathology.

Management and prognosis. Children with ulcerative colitis have, over the years, been treated by a variety of methods. Whenever this situation prevails, it is a probable indicator that the disease in question is not understood—and this is certainly true with ulcerative colitis. Currently, management of the child with this disease usually involves some dietary restrictions, particularly during an exacerbation of the disease. Iron may be prescribed to combat the anemia, and, if the latter becomes serious, transfusions may be necessary. Some physicians rely on steroids, particularly during acute attacks, but there is always the danger of problems inherent in removing the steroids later. A considerable number of these children eventually come to surgery, where a one-stage or two-stage colectomy is performed. The timing of the surgery is important. Although the fatality rate is much greater than normal in those patients who have suffered severe bleeding or perforation, one is reluctant to remove the colon from a child who seems to be getting along reasonably well. Once extensive, non-reversible changes have taken place in the bowel, it is probable that surgery will eventually have to take place. The incidence of carcinoma in such a diseased bowel increases after the passage of several years. Surgeons sometimes prefer to leave the rectal stump, particularly if it is not seriously diseased, in the hope of reanastomosis, thus ridding the youngster of a permanent ileostomy. Such reanastomoses in children are not frequent; of those that are performed, quite a number are unsuccessful because of a continuation of the disease in the rectal segment.

The most successful management of children with ulcerative colitis is based on a team approach involving a child psychiatrist, surgeon, pediatrician, and social worker. Each child and his parents are seen by all members of the team, and a joint decision is reached on the basis of the findings of each team member. There seems little doubt that psychotherapy for the child and casework for the parents are helpful in this disorder.

General Principles of Treatment of Psychophysiological Disease

This extremely complex group of disorders is at best only partly understood, without even general agreement as to which conditions should be properly classified under the category of psychophysiological

disorders. Certainly, in order to be considered as a psychophysiological disorder, the condition should have a strong emotional component. Most of these disorders also have a biological factor which may or may not be recognized. A great deal more research is needed to treat them more successfully and more scientifically than at present.

One should bear in mind that growing children are constantly changing, attempting to adapt. In most instances the parents at least consciously desire to have the physical problem eradicated but do not as a general rule perceive the emotional component. The majority of them do not see their own contribution to this emotional component and are not ready to accept help for themselves in order to cure what to them seems to be an obviously physical problem. Unfortunately, the viewpoint of many physicians is much like that of the parents. They are so busily engaged in treating the physical disorder that they deny appropriate attention to the psychological problems.

Psychosomatic personality. If one attempted to describe a psychosomatic personality in children, he would probably picture a relatively brittle, pseudomature youngster who in most instances pleases the adults with whom he comes into contact. He is a good child, a good student, and has not been a problem to anyone except with his occasional physical difficulties. When the psychosomatic disorder becomes really serious, he is apt to continue to be the good child and to impress most physicians as well as other adults as a well adjusted youngster. He may tolerate physical procedures well, even stoically, and his occasional infantile reactions are apt to be dismissed as normal by the physician. When it is pointed out that he has not adjusted especially well to youngsters of his own age, the parents or even the physician may reply that he has, after all, had some physical problems and, therefore, could not be expected to adjust well.

Management. In general, the management of a psychosomatically ill child may require the services of a team of not only physicians but members of other mental health disciplines as well. This need may be one of the chief barriers to the successful treatment of these children. The various specialists in medicine are not always able to work together in harmonious fashion, and where a psychiatrist is one of the predominant members of the team, continuing cooperation can become even more difficult. Nonpsychiatric physicians may be unfamiliar with and reluctant to work with such disciplines as social work and psychology, even though thorough and total communication between the various disciplines is essential.

A series of steps is necessary if a child with a psychophysiological disorder is to be treated with reasonable effectiveness. Step one is fundamental and involves the conviction of the primary physician that the disorder is psychosomatic. The average general practitioner has relatively little understanding of these disorders, particularly of their emotional psychic

elements. It is essential that he recognize the strong psychic component and that he be convinced that it is necessary to deal with this if the treatment is to be successful.

Step two, which follows naturally, is that this primary physician convince the child's parents that there is a large psychic element in the disease and that it must be taken into account in the treatment program. The physician can only do this if he himself is convinced not only of the importance of the psyche but also of the importance of the emotions in the production of this particular disorder.

Step three involves the enlisting of a team able to understand and undertake a therapeutic regimen for the youngster and his family. Such a team—comprised of a psychiatrist, a nurse, a social worker, and other professionals in various disciplines of medicine and outside of medicine—needs to understand the child's total physical situation and his emotional and intellectual status. They should also have a complete knowledge of the family and how their emotional reactions may have played a part in the disorder.

Making such a team operate smoothly is difficult. The time spent treating these youngsters and their families is great. In ulcerative colitis, for example, the surgeon may limit himself to removing the colons of those patients whose colitis has made this a necessary step, but if he is to be involved in the treatment both before and after colectomy, he will have to involve himself with a team of professionals working with the child.

The final step in working with these youngsters is the individual treatment of the child himself and the treatment of the parents. These youngsters should have the opportunity for regular psychotherapy while they are receiving adequate medical and surgical care. The parents often require extensive social casework to understand their own contributions to the child's illness and to alter his emotional environment.

Suggested Cross References

In this section, psychophysiological disorders of children were discussed largely from a conceptual viewpoint in which specific psychological factors are associated with specific disorders. For further information regarding fundamental concepts in psychosomatic medicine and discussions of alternate theoretical positions, see Section 29.3, on current concepts of psychosomatic medicine, and Chapter 30 on psychophysiological disorders of adults.

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Personality Disorders

41.3 PATTERN AND TRAIT DISTURBANCES

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The Concept of Personality

Definition. Personality, or character, does not develop independently; nor is it an "accidental" phenomenon. Rather, it is determined, in large measure, by the interaction between the instincts and the environment. Personality refers to the individual's habitual patterns of behavior, the nature and design of which are unconsciously determined. More precisely, these patterns of behavior are the outward manifestation of the individual's inner interests and, in particular, his instinctual impulses.

No two individuals are identical in this regard. There are inevitable differences in instinct need and presentation. Secondly, there are differences in instinctual cathexis, in the intensity of instinctual drives. Clinical psychiatry is dedicated to the identification and description of the patient's unique pattern of instinctual functioning, for these data bring about an understanding of his mode of adapting to life, that is, of his personality.

Personality formation. Personality formation can best be described as a process of progressive integration: at each maturational stage, different psychological and physiological functions are coordinated to form dynamic patterns of behavior. The organization of primitive faculties and impulses in the infant can best be described as chaotic. Later, as the child learns to adapt needs to external conditions, these impulses and the faculties which permitted their expression and fulfillment are organized to form specific patterns of behavior. Because these patterns assure gratification of the child's basic needs, theoretically, at least, he is no longer completely dependent on the crucial adults in his environment. At the same time, however, the child's personality struc-

ture as a whole will reflect his responses to the conscious and unconscious components of his parents' personalities, and his perception of their conscious and unconscious attitudes toward him.

Concurrent with the formation of personality, the child develops a typical mode of behavior. Social and cultural factors may, of course, be expected to exert considerable influence on behavior. If this influence is to be a favorable one, the demands imposed on the child by the environment should not exceed realistic limits, and, above all, the environment must provide the child with adequate emotional support.

The determinants of personality. According to psychoanalytic theory, the dynamic forces which operate to produce the elements of personality determine the interaction between the instincts and the environment and, by implication, the regulation of instinctual expression by ego and superego. While the concept of instincts is generally accepted, their classification has long been the subject of controversy; nor is it likely that this dilemma will be resolved in the near future. Under the circumstances, it would seem most useful, for clinical purposes, to center this discussion on the child's uneven efforts in the course of his development to master his sexual and aggressive impulses.

The ego seeks to regulate instinctual expression to conform with the demands of the external world. In the early stages of development, the parents function as auxiliary egos and assist in the control of the instincts. Subsequently, parental dictates with regard to instinctual discharge are internalized to form the child's superego, or conscience. The superego imposes further controls on instinctual expression, insofar as violations of internalized parental values give rise to guilt feelings.

As the child develops, the ego and superego continue to mature and to influence his mode of behavior. At successive stages in his development, the nature of the child's instinctual expressions and his capacity to delay discharge, which depend, in turn, on ego and superego function, will determine personality structure. Viewed from this perspective, those factors which

may impair personality development emerge clearly. Just as there are individual differences in many constitutional givens, individual children may manifest wide differences in rate of ego development. The rate of ego maturation may also be affected by constitutional nervous system dysfunction. The controls exercised by the superego with regard to instinctual expression may be inappropriate, i.e., either too rigid or overpermissive, if the superego represents the distorted values of emotionally disturbed parents. The ability of parents, particularly the mother, to gratify the child's basic needs and thereby afford him a sense of security, and the specific mode of gratification, will play a crucial role in molding his earliest personality traits. As the child grows older, his expanding activities and contact with an increasing number of people will color his emotional functioning. At this point, his family, their modes of behavior and emotional expression, his peers, and the cultural milieu will all exert an influence on his development. In fact, however, the groundwork has already been laid: the child's potential level of personality organization and function is determined during the earliest stages of development.

Assessment of Psychopathology in Childhood

Nosology. Current diagnostic categories compound the confusing aspects of the clinical picture. The fact that the whole spectrum of psychopathology in childhood has been fitted rather forcibly into diagnostic categories adopted from the fields of adult psychiatry and criminology represents a major source of difficulty. Anna Freud has stated, in this connection, that this solution to the problems intrinsic to the diagnosis of personality pattern and trait disturbances in childhood has proven unsatisfactory as a basis for assessment, prognosis, and the selection of appropriate therapeutic measures.

Many authors have pointed out that, in contrast to later stages of development, it is more difficult to draw a line of demarcation between mental health and illness in childhood. During the early years of life, the relative strength of id and ego is in a constant state of flux; concomitantly, adaptive and defensive mechanisms, normal and pathogenic processes frequently merge. It has also been postulated that the transition from one developmental level to the next constitutes a potential psychological hazard, for it is at this point that major or minor stress is most likely to produce arrest in development, malfunction, fixation, or regression. Particularly when id impulses develop at a more rapid rate than ego functions, various factors may combine to undermine, distort, and deflect the forces on which mental growth is based.

As a general rule, current classifications of emotional disturbances have not contributed to our understanding of the etiology of specific disorders to any degree; nor do they facilitate differential diagnosis in a dynamic sense. Yet, unless the clinician is aware of

the underlying pathogenesis of an emotional disturbance, he cannot accurately evaluate the patient's presenting symptoms, assign them to the proper dynamic categories, or institute appropriate therapeutic measures. Diagnostic formulations which are primarily descriptive, which derive from superficial observation of overt symptomatology, may have disastrous repercussions when they are used as the basis for psychoanalytic inferences. Of particular significance for the classification of emotional disorders in childhood is the fact that current diagnostic procedures neglect such crucial variables as age and stage of development. Nor do they make sufficient allowance for the difference between symptoms which are due to the delay or failure to acquire and perfect specific personality traits, and symptoms which are caused by the breakdown of previously acquired functions or by regression to a less mature level of functioning.

Symptomatology. Symptoms manifested in childhood do not necessarily carry the same significance they do in adult life, where typical symptom complexes lead to specific diagnoses. The presenting symptoms of immature individuals are much too unstable to provide reliable criteria for purposes of assessment; in fact, the child does not maintain a stable level of functioning in any area, at any time. Instead, the assessment of child psychopathology hinges on one crucial variable, specifically, the child's capacity to move forward in progressive stages until maturation has been achieved, his personality is sufficiently integrated, and he has adapted successfully to the social community. By the same token, emotional upsets become diagnostically and prognostically significant when they exert an adverse effect on the child's overall development—whether it is slowed up, reversed, or brought to a standstill.

Clearly, the assessment of psychopathology in childhood would become more meaningful if developmental norms were developed for all the parameters of the personality and attention were redirected from symptomatology to the child's position on the development scale. In that event, concern would center, more appropriately, on drive, ego, and superego development; on the structure of the personality, i.e., the stability of the boundaries between id, ego, and superego; and on the child's modes of functioning, i.e., evidence that primary thought processes have begun to give way to secondary thought processes, of progress from the pleasure principle to the reality principle. Considered within this frame of reference, it becomes apparent that the pathogenic impact of hereditary factors will depend, in large measure, on the developmental influences with which they interact. Similarly, organic defects, i.e., body malformations, may give rise to a wide range of psychological consequences, depending on the child's environmental circumstances and mental equipment. In brief, although any of the elements elicited in the assessment of child psychopathology may be identical by definition, there

may be wide differences in the significance attached to such elements in different personality settings. The fact is that indications of possible psychopathology in childhood cannot be properly evaluated if they are viewed in isolation or according to preconceived, rigid standards and criteria. Rather, they must be considered in relation to the child's total functioning and, more specifically, in terms of their potential effect on his development.

Personality Disorders in Childhood

Definition. Personality disorders in children represent relatively fixed pathological trends in personality development and functioning which have become a way of life more or less. According to the *Diagnostic and Statistical Manual* of the American Psychiatric Association (A.P.A.), "These disorders are characterized by developmental defects or pathological trends in the personality structure, with minimal subjective anxiety, and little or no sense of distress." The *Manual* further states that most frequently the personality disorder finds expression in a life-long pattern of pathological behavior, rather than mental or emotional symptoms.

Personality disorders are divided into three main categories: personality pattern disturbances, personality trait disturbances, and sociopathic personality disturbances. In this section personality pattern disturbances and personality trait disturbances will be discussed. Sociopathic personality disturbances are discussed elsewhere in this area.

Personality pattern disturbances are deep-seated disturbances; as such, their inherent structure can rarely be altered by therapy. At the same time, however, prolonged therapy may lead to an improvement in functioning, even though basic changes in personality structure occur only very infrequently. In the A.P.A. *Manual*, the classification of personality trait disturbance applies "to individuals who are unable to maintain their emotional equilibrium and independence under minor or major stress because of disturbances in emotional development." Some individuals are so classified because their personality pattern disturbance is closely related to the "fixation and exaggeration of certain character and behavior patterns; others, because their behavior is a regressive reaction due to environmental or endopsychic stress." This diagnostic classification is applied only when basic maldevelopment of personality is the crucial distinguishing factor, and the neurotic features, such as phobia, are relatively insignificant.

General considerations

Clinical features. Children with personality disorders solve their conflicts simply by changing their personality. This does not cause subjective feelings of discomfort unless they are confronted with the harsh realities of life, at which time they are forced to realize that their adaptive capacities are inade-

quate. In general, then, on superficial examination, the mode of behavior of children with personality trait disturbances will appear to be appropriate under normal conditions. When these children are under stress, however, they are unable to maintain their emotional equilibrium. Pathological personality traits then emerge as a reflection of their underlying disturbance.

Etiology. As pointed out earlier, clinical syndromes in childhood are shaped by age and developmental status, level of personality organization, and the nature and quality of the child's interaction with his environment. Unfortunately, at the present stage of our knowledge, it is impossible to postulate an etiological schema for personality disorders in childhood which will have taken all of these variables into account, and in so doing be conceptually and theoretically adequate and universally accepted.

A major impediment to our efforts in this connection stems from the instability of symptoms and reactions in childhood. It is not difficult to recognize that the child is in conflict with his environment at a given point in his development. However, criteria have not yet been developed which would permit us to predict the subsequent fate of this conflict, i.e., whether it will develop into an internal conflict or a personality disorder. The personality disorders—those psychopathological problems in children which are neither neurotic nor reactive, and which represent relatively fixed trends in personality development and personality functioning—are an area of particular concern and have given rise to considerable speculation. This concern is understandable in light of the fact that these disorders are considered to represent a more or less fixed way of life, largely because of the fact that they are accompanied by minimal subjective anxiety which, in turn, will obviously have an adverse influence on treatment efforts and prognosis.

Personality pattern disturbance. The official A.P.A. definition stresses that personality pattern disturbances in adults can rarely, if ever, be altered in their inherent structures by any form of therapy. Perhaps this accounts for the fact that most child psychiatrists hesitate to affix this diagnostic label to a troubled child. Yet careful long term studies have proven conclusively that this diagnostic classification may be justified in children. There are four types of personality pattern disturbance.

Inadequate personality. Although on examination they do not appear to be grossly deficient physically or mentally, according to the A.P.A. definition, adults in this category have an inadequate response to intellectual, emotional, social, and physical demands and display poor adaptability, ineptness, poor judgment, lack of physical and emotional stamina, and social incompatibility. Admittedly, the applicability of a definition as inclusive as this one to personality disorders in childhood is questionable. It is generally agreed that, even if a child does have this

syndrome, it will have less impact on him than it would on an adult so classified. More important, however, is the fact that criteria such as "inadequate response to intellectual and emotional demands" and "social incompatibility" clearly fail to recognize that the developing child has limited responsibilities and freedom. Under these circumstances, a diagnosis of "inadequate personality" would be difficult to substantiate; in any event, it is made only rarely.

Schizoid personality. Isolation is the most prominent symptom of the children in this group. They are further characterized by an inability to form close relationships with others, an inability to express "normal" feelings of aggression, and, in general, a tendency to withdraw emotionally from the environment. Typically, these children are quiet, shy, obedient, sensitive, and retiring. Frequently, they become more withdrawn and introverted at puberty, and sometimes they become eccentric. Many authors have pointed out that children with schizoid personalities show a marked infantilism, so that even their attempts to meet the ordinary problems of childhood evoke feelings of frustration which, in turn, give rise to poorly handled hostility. Fantasy becomes a common refuge. Most of these children grow up to be isolated adults; some develop psychotic episodes.

Etiology. The specific factors which produce this mode of behavior have not been clearly delineated. However, the available data do permit some generalizations. The histories of these patients point up their life-long isolation from parents, siblings, and others; and, in addition, there is a strong possibility that this pattern may be constitutionally determined. Apart from such considerations, however, almost without exception the parents of such children are themselves without close relationships, despite a facade of sociability. Usually, despite vehement protests to the contrary, these parents also manifest a marked ambivalence toward their child; they attach great importance to his physical care but are incapable of providing him with emotional warmth or acceptance.

Treatment. With therapy, such children may develop some warmth and a social facade, but, almost invariably, they return to their solitary activities with relief. The more severe cases may develop a psychotic reaction in adolescence under the stress of phase-specific tasks.

Cyclothymic personality. Adult cyclothymic personalities are characterized by "frequently alternating moods of elation and sadness, stimulated apparently by internal factors rather than external events." However, this diagnosis is almost never applied to a child. Mood changes in a child are influenced by parental attitudes, the family milieu, and peer relationships. If parents reward or praise the child, he feels happy; if they are chronically critical, he is depressed.

With regard to adults in this category, the A.P.A. *Diagnostic Manual* states that such persons demon-

strate "an outgoing adjustment to life situations, an apparent personal warmth, friendliness and superficial generosity, an emotional reaching out to the environment, and a ready enthusiasm for competition." It may be speculated that relatively minor events in the environment may precipitate a marked shift of these attitudes to feelings of sadness and depression when these events are unconsciously related to early childhood traumata.

It has been suggested that children who are subjected to the chronic disapproval of their parents may be predisposed to the development of a cyclothymic personality. At first glance, they appear mature, happy, and active. In fact, they are extremely sensitive, react with tears or depression when they are punished, and reveal marked mood variations, alternating between happiness and sadness with minimal stimuli. Although these features would seem to provide a foundation for the development of a cyclothymic personality in later life, not all children with these characteristics develop this disorder.

Etiology. The basic pathology stems from a conflict between a severe, punitive superego and powerful primitive unconscious impulses. When the superego is in ascendancy, the child is depressed and preoccupied with thoughts of self-depreciation and self-recrimination. Early childhood traumata, such as desertion, precipitate hostility which is turned inward and is manifested clinically as depression. As pointed out above, this clinical picture will not emerge with any clarity in the child whose emotional expressions will depend on his parents' attitudes toward him. Nor is the presence of such symptoms in childhood a reliable indication of the subsequent development of a cyclothymic personality; the fluidity of developmental processes in childhood prevents such a prediction.

Treatment. Treatment is necessarily intensive and should involve the parents, whose attitudes and care have much to do with the child's personality development and modes of behavior. Thus, child therapy becomes family therapy; understanding of the dynamics which underlie the child's problem must include an understanding of the family dynamics.

Paranoid personality. Many of the elements described above in connection with the schizoid personality are present in this syndrome, coupled with an exquisite sensitivity in interpersonal relations. Suspiciousness, mistrust, envy, extreme jealousy, and stubbornness are characteristic. Most marked is the tendency toward projection, a mechanism of defense by which one's own internal inadequacies and immaturities are attributed to others. This mechanism operates unconsciously and, although it is very common in children, is not so highly systematized in the early stages of development as it is in adults.

Etiology. Projection offers the child a means of ridding himself of uncomfortable feelings of inadequacy. This does not mean that the child who projects is going to develop a paranoid personality—

whether he blames his peers for being poor sports because he himself is a bad athlete or a "sore loser," blames his teacher for his failing grades, or accuses others of attacks he alone has provoked. The difficulties inherent in the accurate prediction of future psychopathology in the early years of life have been emphasized throughout this section. The child's extreme sensitivity may be due, for example, to an unusual constitutional sensitivity of the ego, although it will certainly be enhanced by a sense of insecurity and inadequacy and by the turbulent, suspicious, distrustful attitudes of disturbed parents.

Treatment. The goal of treatment is to strengthen the child's confidence, sense of security, and safety; to help him to develop appropriate reality testing; and, of course, to ameliorate family pathology. Treatment is always difficult; it is not always successful.

Personality trait disturbances. When there have been distortions in personality formation, various unhealthy modes of behavior may appear under stress, which are labeled personality trait disturbances. The *Diagnostic and Statistical Manual* states that "This classification will be applied only to cases of personality disorder in which the neurotic features (such as anxiety, conversion, phobia, etc.) are relatively insignificant, and the basic personality maldevelopment is the crucial distinguishing factor." Personality trait disturbances fall into three main groups.

Emotionally unstable personality. Once again, the fluidity of development precludes the use of this diagnosis with children. Nor is it used frequently with reference to adults, primarily because it is defined only vaguely and because the symptoms identified with this syndrome are relatively common. In brief, individuals included in this category react with extreme excitement, albeit ineffectively, in stress situations. Because of strong and poorly controlled hostility, guilt, and anxiety, relationships with other people in the environment are consistently undermined by fluctuating emotional attitudes.

Passive-aggressive personality. This category includes three types of reaction: passive-dependent, passive-aggressive, and aggressive. The underlying psychopathology is the same for each, and the three syndromes occur interchangeably. An anxiety reaction is almost always a concomitant in the clinical picture.

Passive-dependent type. Dependence on one's parents is normal during early childhood. Thus, this diagnosis is applied to those children whose dependency needs exceed "normal" limits. Such a child appears helpless and indecisive, clings to others, and obviously is neither autonomous nor independent to the degree considered healthy for his age or stage of development. Typically, these children were overprotected by parents who, however, often have mixed reactions about their child, encourage a helpless and clinging attitude, and inhibit the child's development of independence because of their own guilt feelings. Treatment is designed to facilitate the healthy matu-

ration of the child, of course, but an equally essential goal is the correction of unhealthy parental attitudes toward the child.

Passive-aggressive type. This clinical picture occurs most frequently in children. Passive obstructionism, inefficiency, procrastination, stubbornness, and pouting are hallmarks of this type of aggression. This behavior is seen in many children as an expression of resentment, invoked by excessive parental demands. The "normal" parent expects the child to resent his demands at times and is prepared to accept some of the child's hostility. On the other hand, if any overt expression of hostility is deemed unacceptable by the parent, the child may develop more subtle rebellious behavior, particularly if the parent expresses his objections to the child's hostility by criticizing or punishing him excessively. A classic reaction to such parental behavior is the child who dawdles endlessly over meals, because the child is well aware that this type of passive-aggressive behavior will not elicit the punishment or disapproval he has learned to associate with expressions of open hostility. Not unexpectedly, the goal of treatment is to help the child express his resentments and hostilities openly and in more acceptable ways. At the same time, his parents are made aware of their suppressive, critical attitudes and are helped to correct them.

Aggressive type. Such behavior is not to be confused with delinquent reactions. As pointed out above, the underlying dependency of the passive-aggressive child is strong and is enforced by ambivalent parental attitudes, especially on the part of the mother. When such a child is frustrated repeatedly, he may display overt and angry behavior, which incidentally may be antisocial. On the other hand, quite often it seems that the child's excessive demands could not conceivably be satiated, that his frustration is self-inflicted and inevitable. In either case, irritability, temper tantrums, destructive behavior, and, above all, a fierce resentment which leads him to strike out at the environment characterize this syndrome. Here, again, treatment focuses not only on helping the child develop healthier modes of expression and adequate gratifications, but also on correcting the parents' pathological attitudes toward the child.

Compulsive personality. The pathology manifested by a good, conforming child usually escapes recognition. Excessive rigidity and conformity, overconscientiousness, and inhibition of emotional expression are marked in these children, who are so well behaved they become mature, or pseudomature, too early. Like adults, these children show an obsessive concern with adherence to standards of conscience or conformity and may have an inordinate capacity for work without the usual capacity for relaxation.

Etiology. Such children are fixated at the anal stage of libidinal development. The resulting immaturities are countered by a punitive superego which is so strict that the child appears to be unusually well behaved, worrisome, inhibited, and organized. In light

of the fact that the parents of such children are compulsive, driving, perfectionistic individuals with very high standards, it has been speculated that this type of personality is hereditary.

Treatment. Treatment seeks to develop a more balanced intrapsychic relationship between instinctual expressions, coping mechanisms, and the dictates of the superego. Parents' attitudes must be altered as well, for one should not underestimate the influence that the parental expectations and image of a good, well behaved, conscientious child may have had on the child's personality formation.

G.A.P. Classification of Disorders in Children

The Committee on Child Psychiatry of the Group for the Advancement of Psychiatry (G.A.P.) has recommended that the classification of personality disorders in childhood remain descriptive until the whole area of chronic or fixed trends in total personality structure has been defined more clearly. The Committee has thus expressed its awareness of the deficiencies in current classifications and the fact that they are basically unsuited to child psychiatry. The Committee has also suggested other categories, in the hope that they may prove more realistic and have greater clinical validity than the categories listed in the A.P.A. *Manual*. The categories recommended by G.A.P. are listed below and are largely self-explanatory. This proposed classification has not been universally accepted; nevertheless, it represents a major step forward. The classification is as follows: (1) anxious personality; (2) compulsive personality; (3) hysterical personality; (4) overly dependent personality; (5) oppositional personality; (6) overinhibited personality; (7) overindependent personality; (8) isolated personality (replacing schizoid personality); (9) mistrustful personality (replacing paranoid personality); (10) tension discharge disorders: (a) impulse-ridden personality and (b) neurotic personality disorder; (11) sociosyntonic personality disorder; (12) sexual deviations; (13) other personality disorders.

Anxious personality. These children are chronically tense and apprehensive over new situations. Their anxiety is not so crippling, however, as the anxiety experienced in anxiety neurosis.

Compulsive personality. These children are characterized by excessive orderliness, cleanliness, and conformity. Their personalities are rigid and inflexible, with occasional obsessive thoughts and compulsive rituals.

Hysterical personality. More girls than boys are included in this group which shows tendencies toward overly dramatic, flamboyant, overly labile, overly affective, overly suggestible, coy, and seductive behavior. Symptom formation of conversion or dissociative nature may occur with stress.

Overly dependent personality. Children in this group are chronically helpless, clinging, and overly dependent and have difficulty in achieving independent initiative. Included here are some children formerly classified as passive-aggressive, passive-dependent, immature, or unstable personalities.

Oppositional personality. These children show their aggressiveness by oppositional behavior of a passive character, which

often has aggressive implications. Typically, they use negativism, stubbornness, and procrastination and are often quite provocative. These children were previously in the passive-aggressive category.

Overly inhibited personality. On superficial examination, these children manifest passivity, shyness, motor inhibition, and marked constriction of personality functions. They differ from the schizoid (isolated) personalities, however, in that they have a deep desire for warm meaningful relationships.

Overly independent personality. These children show a chronically ebullient, active behavior, with a need to rush toward independence and concomitant difficulty in accepting limits. Their behavior is pseudoprecocious, for, in general, they have a positive attitude.

Isolated personality (replacing schizoid). These children tend to show distant, detached, cold, or withdrawn attitudes. They are frequently isolated, seclusive, and unable to form warm and meaningful attachments.

Mistrustful personality (replacing paranoid). This disorder, rare in childhood and more common during adolescence, is characterized by suspiciousness, intense distrust of others, and rigidity in thinking.

Tension discharge disorder. These children exhibit chronic behavioral patterns involving aggressive and sexual impulses. As a result, they are in constant conflict with society, for they act out these impulses in an antisocial or destructive fashion. Included here are the former designations of antisocial personality, sociopathic personality, and psychopathic personality. In addition, children who were previously diagnosed as acting out or as manifesting conduct disorders and behavior disorders fall into this category. This category includes two major subdivisions:

Impulse-ridden personality. These children have a low frustration tolerance and shallow relationships with adults. They have poor control of their impulses, little anxiety and internalized guilt, and defective superego formation.

Neurotic personality disorder. The behavior of these children is similar to that of the impulse-ridden personalities, described above, with two exceptions: they act out tension resulting from conflict of a neurotic origin, and there is evidence of conscience formation.

Sociosyntonic personality disorder. This category consists of two groups. The first exhibits aggressive antisocial personality trends which, although they deviate from the standards of society, are consonant with their environment (the dyssocial category). The second group includes children from subcultures, such as isolated rural settings, who may have hallucinatory experiences, embrace voodoo beliefs, etc.

Sexual deviations. These children show chronic, relatively fixed sexual deviations. Usually, this classification is used only with adolescents and applies only in those cases where the deviation is pervasive and chronic.

Other personality disorders. Included here are personality disorders not listed under other headings, such as cyclothymic personality.

In summary, when the progressive integration of personality and the establishing of structural boundaries between id, ego, and superego are impaired by the conscious and unconscious parental attitudes toward the child, psychopathology will result. Constitutional givens are an important factor. The particular manifest continuation of specific attitudes singles out personality types. Precipitate reaction formations, related to early infantile stages of development, determine character traits. Treatment is not restricted to the child but involves the parents or family as well. The most effective type of treatment by far, for these clinical syndromes, is the psychoanalytically oriented approach.

Suggested Cross References

See the editors' introduction to this area for further comments regarding nomenclature in child psychiatry. For further information regarding personality disorders, see Chapters 25, 26, 27, and 28 in Area F, on the psychiatric disorders of adults. Area C, on current theories of personality and psychopathology, contains a more detailed description of the psychoanalytic concept of personality development as well as discussions of some alternate viewpoints regarding this subject.

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stated that "children now love luxury. They have bad manners and contempt for authority. They show disrespect to their elders and love to chatter in place of exercise." Shakespeare had a character say in a play, "I would that man could forego the pleasure of life from four and ten to one and twenty, when youth does nothing but fight, drink, and get wench with child."

Modern concepts of delinquency suggest that children who are called delinquent are ill primarily in terms of society, in their inability to conform to the social milieu. Since the social and cultural milieu is influenced by many factors—education, radio, television, socioeconomic levels, minority racial groups, poverty, war and threat of war, civil rights movements, immigration, and many others—it is not possible to give precise definitions of delinquent behavior. In addition, one can view our states and cities as a wide variety of legal systems, attempting to evaluate, modify, and contain individual and group behavior. What is viewed as antisocial behavior in one city may not be viewed identically in another city or may be viewed differently by the same city officials over a period of time. As an illustration, an adolescent Negro boy may be arrested and sent to a reformatory for participating in a restaurant sit-in, and, after the local laws are changed, essentially the same behavior would go unnoticed. Laws tend to reflect current morality to a greater or lesser extent, and children are caught up in intense personal conflicts in our rapidly shifting and changing culture. Clearly, some fail to adapt to the various pressures as well as others. We can speak of two types of sociopathic patterns: (1) antisocial reaction—characteristic of children and adolescents who are always in trouble, who seem not to profit from experience or punishment, and who have no loyalties to persons other than themselves—and (2) dyssocial reaction—characteristic of children and adolescents who have been brought up in amoral or immoral families or institutions and who have identified with strong loyalties to a criminal element, for example, children whose parents are gypsies or habitual criminals.

It should be noted that both antisocial and dyssocial reactions are subsumed in the standard nomenclature of the American Psychiatric Association under the larger heading of sociopathic personality disturbance, this latter grouping being a category in which individuals "are ill primarily in terms of society and of conformity with the prevailing cultural milieu, and not only in terms of personal discomfort and relations with other individuals."

Epidemiology

It is generally accepted that the incidence of antisocial reactions varies from about 2 per cent to about 7 per cent of the childhood population. There are more than 3,000 juvenile courts in this country, and modern policies of juvenile probation programs permit many

41.4 **SOCIOPATHIC PERSONALITY DISORDERS. I: ANTISOCIAL AND DYSSOCIAL REACTIONS**

ROBERT L. STUBBLEFIELD, M.D.

Definitions

The concept of juvenile delinquency has been known to man for many centuries. Socrates in 500 B.C.

officers, after appropriate education and inservice instruction, to make quick decisions in the community, so that many children are not booked and identified by a formal court procedure. The reporting systems must be studied at the probation officer level in order to obtain accurate figures for study.

In boys the major offenses are truancy, stealing, fire setting, vandalism, and cruelty to animals and humans; in girls the major offenses are stealing, shoplifting, and sexual promiscuity. It is accepted generally that the incidence is higher in males; it is higher in low income, minority, and culturally deprived groups; and it rises with industrialization and urbanization of a population. Distribution and incidence studies should be done in individual cities and regions to plan reasonable control programs in the classical public health sense of the phrase, since it is difficult to generalize about findings from one city to develop a public crime and delinquency prevention program in another city.

Etiology and Pathology

The general physician and psychiatrist should consider a number of diagnostic possibilities in evaluating the possible etiology of antisocial and dyssocial behavior. He should think in terms of conditions that must be met in order to explain the maladaptive behavior pattern of the individual child. Any illness or defect that contributes to misperception of the external environment or the inability to identify with healthy personalities or the inability to inhibit hyper-aggressive or hyperlibidinal behavior may contribute to the delinquent behavior pattern. This pattern may be caused by mental retardation, epilepsy, brain damage, hyperkinesis, compulsion neurosis, childhood psychosis, and affect deprivation to name a few.

Past studies. Specific social, psychological, and clinical psychiatric studies have broadened and extended our ideas about etiology and about the psychopathology of the entity. Although it is difficult to assess the relative contributions of the many individuals who have contributed to our growing understanding of the psychopathology of delinquency, Aichhorn clearly made the significant observations that made it possible for psychiatry to look beyond purely medical, biological, and inherited constitutional ideas for explanations. In his book, *Wayward Youth*, he reported his observations about the wide variety of personality types that he encountered and he described in vivid detail his clinical efforts to establish meaningful therapeutic relationships with such children. Eisler's *Searchlights on Delinquency* brought many of Aichhorn's ideas into sharp focus, including his observations of the connection between gross criminal behavior in the parent and delinquent behavior in the child.

The essential idea in the theories about delinquency in the early 1950's was that some defect or distortion in the conscience was present. Most experts thought

that this abnormality was caused by a constitutional inability to develop an inner control system, by identification with a pathological parent or parent figure, by severe and cruel social and emotionally traumatic experiences in a particular social or cultural group, or by some combination of these factors. Healy and Bronner, pioneers in the field, thought that parental coldness was the major factor; however, Szurek and Johnson demonstrated in their clinical work the high probability of the existence of specific defects in the conscience.

The Johnson-Szurek thesis is that the antisocial behavior in the child is encouraged unconsciously by a parent or parents who participate in the process, vicariously gain pleasure in the child's deeds, and subtly carry out their own unconscious hostile and destructive feelings toward the child. As an illustration, a mother in a car pool laughingly admonished her son, who was biting another 5-year-old boy on his arm, by saying, "Johnny, don't bite him *so hard*." The mother remained quiet and detached when the other children came to the victim's rescue and began to pound Johnny quite actively. As our knowledge about language (linguistics) and nonverbal behavior (kinesics) becomes more and more precise, it is evident that the child is learning constantly many of the beliefs, customs, and models of behavior he sees and experiences in his relationship with parents and peers.

Studies on pathological development have been paralleled by increasingly sophisticated studies on the child's moral development, as illustrated by the work of Woolf on moral development and the longitudinal personality development studies of Benjamin and others. We now recognize the importance of the nature and consistency of the mothering experience and later emotional experiences on the emerging character structure of the child.

Kaufman has made a number of important observations about the association between loss of a significant love object by illness, abandonment, or death and delinquency. The child develops grief and depression and continues a restless, angry search for the lost object, with resulting narcissistic and delinquent behavior.

Redl has made further contributions to our understanding of the psychopathology of antisocial behavior, especially in regard to his observation about the existence of unusual ego strengths in individuals with severe character defects. He suggested that, in the development of an adaptive pattern, certain personality functions become hypertrophic in order to compensate for the existing defect or deficiencies in character structure.

Current ideas. Current ideas about the psychopathology in delinquent behavior usually contain these four elements: (1) The child feels significant emotional deprivation and strongly resents it. (2) The child cannot establish his own range of skills because his parents have not set the limits for him.

(3) The parents, especially the mother, are very often overstimulating and inconsistent in their attitudes toward the child. (4) The child's behavior usually represents a vicarious source of pleasure and gratification for a parent and is often an expression of the parent's unconscious hostility toward the child, as the behavior is either overtly or covertly self-destructive to the child.

Clinical Features

Antisocial and dyssocial reaction types of behavior present a wide variety of clinical pictures to the psychiatrist. In the absence of confusion due to toxic or organic factors, the child is usually superficially tense when he is brought to a psychiatrist by a parent, court worker, or social worker. He is often sullen, defiant, and flippant; he answers questions briefly and in a matter of fact tone, uses denial extensively, and tends to minimize the reasons for the referral. Usually the child is reluctant to share inner emotional experiences, feelings, day-dreams, jokes, favorite books or television programs. He frequently projects personal difficulties onto a parent, sibling, or peer and almost always minimizes his involvement in any meaningful personal relationship. The usual and expected guilt feelings are frequently not present or are merely glossed over quickly without much evidence of personal discomfort.

Differential Diagnosis

Differential diagnosis requires a thorough and careful evaluation of the biological, psychological, and social factors that may contribute to the development of the maladaptive behavior. A detailed and accurate history, physical and neurological examinations, and psychological and various laboratory tests are required to evaluate brain damage, mental retardation, and similar causes of the behavior. Direct observation of the child in an interview and skilled evaluation of the parents and perhaps of the parents and child together may give valuable clues to the possibility of a conscience defect, affect deprivation, major and significant loss of a loved person, or a major connection between the parents' behavior and the child's symptoms of an antisocial nature.

An adequate differential diagnostic statement should make some attempt to define the interaction between the biological, psychological, and sociocultural forces and attempt to assess the possible precipitating causes and contributing factors to the behavior.

An 8-year-old girl was truant from school while her parents were away from home for 2 weeks. The girl was bright-normal intellectually, in good physical health, very closely attached to her father and her mother. The major past historical event was the death of her maternal grandmother, who was quite close to the child and to the mother, so that the child experienced a dual loss—of the grandmother and of the mother, who was depressed. The parents' trip was the first significant absence of

the mother from the girl since the grandmother's death. The truancy seemed to be a cry to the mother, "Return home and take care of me." Probably, it also had oedipal fantasy meanings.

In the biological areas, the claims and statements about the significance and importance of abnormal electroencephalographic findings remain controversial and widely debated in professional circles—for example, the association between abnormal EEG clinical findings of the 14 per second and 6 per second cycle pattern and outbursts of uncontrolled aggression.

Prognosis

The prognosis in treating antisocial and dyssocial reactions is poor to fair. Obviously, the prognosis is much better if the behavior pattern emerges for the first time after the child starts school, if it is recognized promptly, if proper and adequate intervention occurs, and if both the child and the parents are motivated to a genuine exploration of the underlying sources of the undesirable behavior.

The work of the Gluecks offers much hope, as they have pioneered the efforts to identify high risk populations of predelinquents and to study the personality characteristics of children who seem to move on to a specific, repetitive type of delinquent behavior in later years. The sociological factors in delinquency have also been receiving increasing attention and knowledge about them may well contribute to our understanding and management of the delinquent.

Management

The management of delinquency should be considered by general physicians and by psychiatrists in two areas—direct treatment and prevention. Treatment involves a thorough diagnostic study and a definition of the extent and nature of the clinical problem. In most instances, it is necessary to work with the child and with the parents in a collaborative team approach, as advocated by Szurek, Kaufman, and many other writers. The individual therapy usually has some special features that vary considerably from most child psychotherapy.

1. The presence of early childhood defects or distortions makes it necessary for the therapist to present himself consistently as a warm, understanding person.

2. There should be a strong reality orientation in the collaborative process, with specific emphasis on requiring parents to set consistent and realistic limits on the child's behavior.

3. There should be recognition of the high probability that the parents may not want to give up their vicarious and usually unconscious pleasure in the child's behavior.

4. The specific therapeutic maneuvers called deceiving the deceiver, first advocated by Aichhorn and later elaborated on by Hoffer and others, may be useful if employed by a skilled therapist.

Residential treatment. In many instances it is necessary to treat the delinquent in some type of residential institution to break the ties with the stimulative and destructive parent or to compensate in part for the absent or unavailable parental figure. Here, the multidimensional complexity of the dynamics of delinquency must be dealt with by an equally complex set of institutional factors. The personnel must somehow provide the food, clothing, shelter, health care, education, and opportunity for new learning through individual and group psychotherapy and thus try through the experiences in group living to give the child new and corrective emotional growth opportunities. Aichhorn's ideas about residential therapy have been reformulated by Redl and many others.

The treatment focus seems to be shifting away from punishment and retaliation to a greater focus on causes of problems of social isolation and social distance. The residential group attempts to focus on children with weak and inadequate personality resources and to provide them with some nurture to compensate for the individual child's feeling of being unloved earlier in his life.

Psychotherapy. Whether in individual, group, or residential settings, it seems clear that most workers agree with Redl's idea that therapeutic work with delinquents, especially adolescents, requires much activity by the therapist. He suggests that it is important to keep the patient talking, to keep him active, to keep him reality-oriented as much as possible, to try to get enough of a relationship with the therapist so that the child can inhibit his tendency to act out impulses and to develop instead feelings of guilt, shame, remorse—that is, more classical neurotic personal feelings.

Noshpitz has suggested several specific principles in psychotherapy with severe delinquents. First, the therapist should not encourage the emergence of instinctual behavior. ("You want to show me what you want to do; I want you to tell me instead.") Second, the therapist should recognize the child's fear of loss of control over his own impulses. Third, the therapist should recognize the child's inevitable wish for consistent limit setting.

Drugs. There is clinical evidence of better control of epilepsy and other behavioral disorders by new pharmacological anticonvulsants and tranquilizers. In the area of individual treatment, the possibility of using antidepressants in conjunction with specific brief abreactive psychotherapies, the use of phenothiazine drugs in the management of childhood psychoses, and the judicious use of milder tranquilizers and stimulants to aid in the management of hyperkinetic and impulse-ridden children seems promising. It is hoped that the current psychopharmacological revolution will have the same effect on psychiatric treatment as anesthesia did on surgery, in that it may permit clinicians to utilize drugs more actively

in children to interrupt maladaptive and faulty patterns of behavior, to facilitate the development of new and healthier patterns.

The Future

It seems reasonable to expect—with our rapidly urbanizing and industrializing country, the impact of the great increases in population in the world, the increasing facility of our radio and television communication media, and the gradual liberalization of our sexual and social morality—that the problems of dyssocial and antisocial behavioral patterns will remain important clinical matters for behavioral scientists in the future.

Physicians and psychiatrists, working in close collaboration with psychologists, sociologists, social workers, educators, judges, and many other personnel in the newly developing field of community mental health, must contribute their knowledge and skill in the evaluation, diagnosis, treatment, and management of delinquency in the years ahead. It is hoped that new therapeutic developments from psychologists and learning theorists will emerge, especially ideas about the use of operant conditioning. Group therapy approaches may be refined, which should prove to be useful with acute and less severe types of delinquency.

Suggested Cross References

Sociocultural determinants of juvenile delinquency are presented in detail in Section 41.5. Antisocial and dyssocial reactions are also discussed in Section 26.1 in Area F, which deals with the psychiatric disorders of adults.

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41.5 SOCIOLOGICAL ASPECTS OF JUVENILE DELINQUENCY

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Cohen has formulated the distinction between psychological and sociological approaches to crime by contrasting the psychological question "How do people become the kind of individuals who commit criminal acts?" with the sociological question "What is it about the structure of social systems that determines the kinds of criminal acts that occur in these systems and the way in which such acts are distributed within the systems?" Keeping this distinction in mind, it becomes clear that the task of theory building in sociology is enormous, in keeping with the size of the social system, which forms the basic unit of analysis. Sociological theories are, expectedly, far from parsimonious or elegant explanations; even so, clinicians may find them of use in patient management, since they help to illuminate the situations in which delinquent acts originate.

Definition

The term "delinquency" suffers from looseness of definition. It may include all deviant behavior among the young, ranging from actions that are classed as criminal among adults, such as assault and robbery, to offenses that are strictly age-related, such as truancy, driving, drinking, and sexual activities. Furthermore, these "deviant" behaviors are punished differently in different communities and among different social classes. Explanations for given occurrences, therefore, tend to falter when applied to another set of circumstances.

Epidemiology

Delinquency has steadily increased in almost every country in the world. It appears to be a feature of modern industrial society, in which rapid technological change, high rates of mobility, and the conditions of urban life result in social instability, what sociolo-

gists refer to as *anomie*, or normlessness. The concept of *anomie*, however, is insufficient to account for the various forms of deviance both between and within cultures.

Etiology

Bordua, whose review of the subject is an excellent introduction, distinguishes two major approaches in theoretical attempts to explain delinquency on a sociological level—one that attributes delinquency and other manifestations of deviance to the lack of effective social controls, and the other that seeks to establish motivation for delinquent acts not in psychological terms but in cultural and subcultural terms.

Lack of social controls. Theories developed prior to World War II tended to reflect the first approach. Thus, Shaw and McKay's area approach was based in part on types of land use in big cities and the effects of immigration and urbanization on heterogeneous population groups. The resulting instability—that is, the lack of effective social control, particularly in the inner city areas—was conducive to the formation of delinquent groups with their own codes of behavior, in which individual boys might find personal gratifications otherwise unavailable to them.

In such theories, the problem of motivation is not a serious consideration. It is assumed that motivation derives from participation in a specific social setting where the absence of controls and mutual support in the group are sufficient to perpetuate delinquent behavior. These early theories were subject to two major critical objections. First, if they accounted for the delinquent as an individual who came under the influence of a group, they failed to account for the origin of delinquent patterns. Second, they were limited in their application to disorganized urban areas.

Subcultures. The second approach distinguished by Bordua arose in an effort to account both for motivation and for the origin of specific delinquent patterns. These patterns became theoretically formalized in the 1950's as subcultures. Cohen postulated the formation of delinquent subcultures as a response to status deprivation. Lower class boys who cannot measure up to middle class standards of success tend to seek a collective solution to their lack of social esteem and self-esteem through interaction with others similarly situated. The resulting delinquent subculture turns middle class norms upside down and tends, therefore, to be malicious, hedonistic, and utilitarian. In effect, the subculture protects its members from their own recognition of the validity of middle class judgment.

Cloward and Ohlin accounted for the formation of delinquent subcultures in a different way, which rests in part on Merton's theory of the origin of *anomie* itself. In this formulation, deviant behavior, of which delinquency is one form, results when some groups in the society do not have access to the means necessary

to achieve cultural goals. Cloward and Ohlin's position is that the unjust distribution of opportunity, particularly with respect to income, drives lower class adolescents either into the *illegitimate* opportunity structure (organized crime) or into alternate groups characterized by combat (gangs) or by retreatist behavior (drug use subcultures).

Miller, whose work has focused specifically on gang delinquency, sees the origin of delinquent behavior in a distinctly lower class culture, rather than as any kind of reaction formation to middle class culture or alienation from the dominant norms. Lower class adolescents are simply reflecting the focal concerns of their milieu—trouble, toughness, smartness, excitement, fate, and autonomy.

Matza, taking quite a different tack, views delinquency from the perspective of classical criminology. In the legal context with which he is concerned, the most relevant factors are injustice and its consequences in indeterminate punishments, labeling, and resentment. In his view, delinquents are not necessarily committed to deviant or to conventional values. The beliefs that constitute the subculture of delinquency serve to permit rather than to compel delinquent acts. Their function is to neutralize the moral precepts of the law, and the result is drift between criminal and conventional action, with delinquent acts occurring only sporadically. Matza, in effect, reintroduced the lack of social controls as an important element in delinquency (albeit in more sophisticated form). The mere absence of controls does not necessarily result in delinquent behavior, but their absence provides the setting for activating the will to crime. "The conception of will," he said, "need not carry the whole burden of explanation, as it came close to doing in classical criminology. Instead, it may represent the missing element needed in social control theory by which the potential for delinquency implicit in drift can be realized."

Value of Sociological Approach

The theories mentioned here, as well as other attempts to build total or partial explanations for delinquency, are far more complex than this presentation may imply. At the risk of oversimplifying, however, it is worth pointing out certain of the shared strengths and weaknesses of sociological approaches to delinquency. By and large, as Bordua pointed out, they are incapable of empirical verification. Their theoretical constructs are highly abstract, and it is often difficult to specify the linkages between these abstractions and the particular acts that are said to flow from them.

Effects of institutions. The usefulness of sociological theories lies in their emphasis on the effects of institutions and in their stress on the collective nature of delinquency. It is well recognized, for example, that the occurrence of delinquency is often correlated with school failure. Failure in

school is related not only to academic interest or ability but also to the successful negotiation of the school as a social system. There are critics like Friedenberg who deplore the school as a social system and who stress its purely custodial, antiexpressive controls. Nevertheless, those adolescents who succeed in school are generally those who are able to use the school as the locus of their peer group life as well as the setting for acquiring information and knowledge. To do this successfully generally requires acceptance of the norms and standards of the adults in the system.

Stinchcombe's study of expressive alienation among high school students led him to conclude that the open flouting of school authority (rebellion) occurs as a result of one or both of the following conditions: (1) when a student's future status does not depend on current performance, that is, among boys with limited academic ability or interest who see school as irrelevant to the low status jobs they expect to hold; (2) when students, failing to accept the school's formal culture, in which they have inferior status, seek to usurp adult symbols. According to Stinchcombe, actual rebellion is most likely to occur among those school failures who are under the most pressure to succeed.

If an adolescent cannot or will not identify with the school, it does not necessarily follow that his only option is delinquent or deviant behavior. Nevertheless, the increase in years of schooling in the United States has had the effect of limiting alternatives for work. The consequent lengthening of the period of dependency is one aspect, but not the only one, of the social system that creates the conditions for delinquency.

Adolescent groups. In stressing collective behavior, sociological theories serve to focus on the adolescent group—what Matza calls the "situation of company"—which serves both as the locus of the action and as the source of mutual support. It has been commonplace, for example, to view the delinquent acts of middle class, suburban youths as individual aberrations of psychic origin. Recent reports, however, make it clear that, although the individual emotionally disturbed adolescent acts out in both the city and the suburb, a good deal of behavior that disturbs both kinds of communities takes place in groups.

The stress on situational factors also serves as a caution against assuming that all delinquent acts are the consequence of a deep commitment to delinquency, whether psychologically or sociologically induced. The fact that most delinquency and crime rates decline sharply with advancing age argues against such commitment. Furthermore, insofar as psychic disturbance is an element in delinquency, it may also be an element in other kinds of deviant, as well as in conforming, behaviors.

Typologies. One promising new direction in the treatment of delinquency is the attempt to build typologies and classifications that combine demo-

graphic, cultural, and psychological factors. Types of delinquent behaviors and types of delinquents may then be more readily accounted for. In effect, some of the existing theories have set about this task from the opposite end—by first postulating the existence of one or more types and then attempting to explain them. It seems likely that these explanations may prove valuable, if not for the whole range of delinquent behaviors, at least for single types.

Suggested Cross References

Clinical aspects of juvenile delinquency are discussed in Section 41.4. For additional information regarding social and cultural determinants of psychiatric disorders, see Sections 4.2 and 4.1, respectively, in Area B, on the basic behavioral sciences.

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41.6 SOCIOPATHIC PERSONALITY DISORDERS. II: SEXUAL DEVIATIONS

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Definition

Despite the central position of sex in the developmental processes of the child, it is not common for younger children to be referred for psychiatric care because of a problem specifically related to sexuality. This becomes less true as the child increases in age. With adolescence, abnormal gratifications of sexual impulses increasingly cause parents to seek help. Even then, however, many of the symptoms that so-

ciety feels are inappropriate in a sexual sense are more likely to receive attention through legal channels than through medical channels. This is particularly true of girls. The bulk of delinquent actions involving girls in most parts of this country consists of sexual activity of one sort or another.

Physicians may or may not regard such activity as abnormal. Normal sexual behavior is defined by society both as a general phenomenon and in relation to varying geographic customs. Since the etiology of deviant sexual behavior is not fully known, it becomes a problem wherever it exceeds what is accepted as a norm for any particular community. In considering sexual problems, one must realize that sex is only one role in the gamut of human behavior. However, so crucial are the interpersonal activities connected with sex that deviant behavior in this role becomes of greater importance than many other activities of life.

Sexual deviation in children represents a greater degree of immaturity of emotional development than does similar pathology in adults. In another frame of reference, it can be considered an unusual continuation of the normal activity of one of the early periods of development. Since society decides whether sex shall be openly exhibited or carried on within the confines of the home, the outward aspects of sexuality must relate to the demands of society. When individual expressions of sex exceed community prohibitions, they may be considered sexual deviations.

Epidemiology

A number of sexual activities, such as masturbation, are extremely widespread in society. The fact that such expressions of sexual activity are universal does not mean that they are necessarily normal. In normal development the child goes through periods of genital sexual satisfaction, which include early masturbation, homosexual attachment to peers, and finally heterosexual strivings leading toward intercourse with a mature partner of the opposite sex. Such normal development does not always proceed smoothly. If the child during his normal development subdues all his sexual impulses, the public is not particularly concerned. In this sense then, asceticism, with its complete inhibition of sexual drives, evokes only public apathy. However, when the child is overstimulated and develops an abnormal sexual appetite in any direction, heterosexual or homosexual, the promiscuity that evolves arouses public concern. The same is true of any of the deviations of sexual patterns occurring at any point during childhood.

Within this society there is a wide variety of sexual expectations and permissions. In general, the middle class sets the moral tone and has the most organized sexual codes. These consider the girl the more passive individual and are more likely to expect greater sexual activity on the part of the male. Some evidence suggests that these patterns are changing in the direction of earlier and more open expressions of heterosexual

activity. Overt homosexuality has been fairly consistently frowned on in the American culture, especially by those parts of society that have only tolerated demonstrations of overt heterosexuality. Pathology, therefore, is brought to medical attention when it violates the mores of that segment of society in which it occurs.

The epidemiology of sexual abnormalities can also be understood as part of the relationship of the child to the parent as the child goes through the normal stages of development. Particularly important are those aspects of parent-child relations that seem to be stimulatory of sex activity. In certain classes of society, such stimulating activity may be quite common. Where parents and children live closely together, intercourse and other sexual activities are more commonly seen by the children, and in some instances there may be overt attempts on the part of the parents to stimulate sexual activity on the part of the children. Of increasing concern is the number of mothers who live alone with their sons, and who in many unconscious aspects of living with them serve as stimulants to the child's developing sexuality. The practice of mothers' sleeping with their sons may stir up an abnormal kind of sexual activity, without either being consciously aware of the distortion. This rouses up anxiety in the boy, which is often met by acting out and by increased amounts of sexual activity as he goes into his adolescence.

One etiological approach to homosexuality suggests that the condition is often noted in families with a dominating mother and a hostile or passive father who provides a poor masculine example. The boy, therefore, is stimulated by an excess of maternal or feminine contact during his early years and thus develops an abnormal concept of his own identity and his own sexual role.

Excessive inhibition of the childhood manifestations of sexuality also plays a role in the development of symptoms. The expressions of parental taboos often carry a message of intrigue and salacious delight, which serves to stir up the child. The value of the activity is increased by being forbidden. The development of specific deviations in these instances may relate to the emphasis used in suppressing the particular acts of the child. Coupled with more general anxieties, a mode of symptomatic expression is clearly demonstrated.

Clinical Aspects

The sexual deviations one sees in children are not grossly different from those seen in adults. Abnormal sexual patterns serve as an outlet for anxiety. Characteristically, the sexual pattern of deviate children includes a repetitive quality and a compulsive sort of activity to relieve the tension. The bulk of deviate sexual patterns in childhood appear to have a neurotic base. In many instances, the child's sexual activity represents an unconscious wish of the parents.

The forms of sexual concern brought to the attention of the physician are similar to those described in adults. There is an important difference, however, since children are brought to a physician for help with the

complaints of a sexual nature being made by parents. When such children are brought in, the history is often very lurid and vivid. The parents complain of excess sexuality of an autoerotic nature, such as masturbation, or of a variety of homosexual and heterosexual contacts.

Especially when the history includes autoerotic complaints, one senses a gross exaggeration and fear on the part of the parents. The presenting parent, in most instances, is the mother. Characteristically, she presents the child with the statement that he masturbates frequently and that she is excessively concerned and feels that something drastic needs to be done. She often points out that she has herself made violent efforts to cut down on his masturbation by sewing up his pockets, threatening him, etc. It is often apparent in such cases that the child, although not innocent, is at least less involved in the symptomatic process than the mother making the complaints.

Similar stories continue to be true for children up through adolescence. At this time, stories of excessive heterosexuality are more common. It is important, therefore, to get an accurate history, one that reflects what is really going on in the child as opposed to the picture presented by the family. Similar stories are sometimes offered by teachers and others, who exaggerate minimal sexual activities and blow them up into major psychiatric disasters. Any child who begins to demonstrate sexual problems causes concern in those around him, and some of this concern reflects adult anxieties more than it does childhood practices.

In considering the sexual deviations of childhood, one must realize that overt sexual activity frequently accompanies psychotic conditions in childhood. In the regressive phenomena that are manifest in childhood schizophrenia, there may be sexual displays, obscene language, exhibitionism, etc. It is important to separate out these manifestations of an underlying psychotic condition from those neurotic situations wherein sexuality has become the primary symptom.

Masturbation. Masturbatory activities begin extremely early in life. Children during the 2nd year are frequently observed playing with their genitalia and obtaining satisfaction from it. Parents are particularly prone to move in very quickly when any signs of genital autoerotic stimulation are seen. A certain number of children continue to masturbate more actively than others. Such masturbation is nearly always associated with some form of stimulating expression, conscious or unconscious, on the part of the parents. Masturbation occurs in small children as part of the psychotic process; however, during latency a certain number of children demonstrate more overt masturbation than others, and this causes considerable concern to teachers and other adults. At times, masturbation becomes part of an acting out behavior on the part of small gangs, particularly among boys. It is frequently associated with other evidences of sexual deviation, such as oral copulation. With the onset of

adolescence, masturbation becomes a more overt sexual activity because of the end point of satisfaction that is then obtained. It is normal for younger boys to be taught about masturbation at this age.

Important in considering children who masturbate excessively is the guilt that is associated with it. This guilt is more or less implanted in our culture, although there is some evidence that it seems to be decreasing. Masturbation is a normal form of behavior and is regarded as pathological primarily because it may become excessive and because of the anxiety and concern that is related to it on the part of the child. Some younger children become excessively involved with masturbation and seem to have a compulsion to carry it on. These children usually demonstrate that they are masturbating because of anxiety. They freely talk about their inability to stop masturbating because of the pressure to carry it on. Such children are nearly always involved with other sexual activities at the same time.

Homosexuality. Since nongenital, same sex peer relations are a normal part of development, it is not always easy to determine when the child is deviating from the customary pattern. With the onset of adolescence, there is a stirring up of the relationships of children of both sexes, both to their own sex and to the opposite sex. The psychiatrist, then, sees homosexuality as a part of normal development and as a part of a confusion in the older child about his sexual identity. Whenever children are placed together in institutions, such as schools and residential homes, there is a stirring up of homosexual activity, manifested both by overt sexual relations and by the fears that children have about such relations.

Some children, however, demonstrate very early in life that they are uncomfortable with the opposite sex and have confused gender identifications. Evidence of such confusion is obvious in the boy who seems grossly attached to his mother and takes on a feminine type of habitus. He prefers to express his feminine relationship with individuals of his own sex and is concerned about relationships between sexes; however, he himself is more feminine than masculine in his identity. Although it is normal for the small boy to be dependent on his mother and cling to her, to continue this process beyond the normal oedipal resolution is obviously a sign of pathology.

Transvestitism. Although not necessarily related to homosexuality, transvestitism is a developmental phenomenon wherein the child is in a sense deprived of normal gender identity. Transvestitism in children is most commonly associated with a pathological relationship between the parent and the child of the opposite sex. A boy, for example, may be both consciously and unconsciously reared as a girl. He is placed in girls' clothing early and is offered only those satisfactions that are normal to the feminine sex. The boy, therefore, grows up with an exaggerated and deviant understanding of his own sexual role and appears to prefer, after a period of time, the habitus and activities of a

girl. Such deviate developmental phenomena appear to be increasing, but they are also subject to prevention if one interferes early. The full meaning of transvestitism is currently under investigation, but it is not as yet clarified.

Abnormal relations. Children are both the objects and the subjects of abnormal sexual relations. Unfortunately, many children are used by adults for their own sexual pleasure. Children are also encouraged, at times, to have relations with inanimate objects and lower animals. Such stimulation may in some instances be a form of abnormal activity on the part of the child that becomes deviant in terms of society's expectations of normality. Some children brought to psychiatric care because of excessive sexual activity give histories of early rape or other sexual exploitations on the part of adults. By virtue of the intense sexual stimulation offered to them, the children seek out all forms of sexual expression in order to carry out their compulsive needs to relieve their own tension. Consummated incest is most commonly observed between fathers and daughters, but, a *forme frustée* occurs frequently between mothers and sons.

Hypersexuality. A certain number of children are brought in because of abnormal sexual desires. A 9-year-old child was not only masturbating frequently but attempting intercourse with animals and children of both sexes and a variety of ages. He clearly demonstrated the compulsive aspect of the whole process and was quite free in talking about his own needs to relieve tension. He had been brought up in a Mexican culture where there was a good deal of overt sexuality, but his concerns had not arisen until a second marriage by his father to a puritanically obsessive mother, who was concerned about his sexual activity and acted in many ways as a stress to drive him into more and more overt sexual action.

Fetishism. In the process of separation of child from parent, it is frequently important—and normal—for the child to have an object related to the parent to which he can cling. This may be a blanket, a bottle, or a toy. Fetishism, however (and the use of objects to produce genital sexual satisfaction) comes much later, although it may, in many instances, be merely a translation from an earlier transitory object. The use of an inanimate object to enhance sexual satisfaction occurs normally in many adolescents. It is only when this becomes the primary choice of sexual satisfaction that the concept of sexual deviation is to be considered. It represents an immature solution of sexual identification and has to be handled as such.

Prostitution. Some girls become involved in excessive sexual activity early in their adolescence. In almost all instances this comes about as a result of exploitation of the child by adults. Such exploitation is nearly always accompanied by some form of adult stimulation of the child. In many instances this is akin to the overactive sexuality described above. The actual course of such deviant behavior is an increase in the

neurotic tension, which can only be relieved by excess sexual activity. Classically, these adolescents present a bland, hysterical personality pattern. The psychiatrist sees such deviant sexual behavior as a part of the total psychic activity of the individual. In this way, he is different from his legal colleague, who sees the symptom as a specific form of deviation from the practice of society and often as an insult against society. The medical problem is complicated, however, by the system that employs the girl and interferes with a clinical approach.

Prognosis and Treatment

Since the bulk of sexual deviations can be viewed as exaggerations of normal developmental processes, the physician must view them in the context of the over-all personality. Although the prognosis for change of many of these sexual deviations is guarded, it is enhanced whenever the physician has the opportunity to see the child early, to try to understand the total family pattern in which he lives, and to put the symptom in perspective as part of the child's total life experience. The child is often obsessive and compulsive about these symptoms. Treatment, therefore, should include any form of psychiatric treatment that attacks such neurotic manifestations in their relationship to the total life experience of an individual. Management becomes a combination of psychiatric and legal approaches. The law often separates such individuals from society but, unfortunately, equally often places sexual deviates of all sorts together. The stimulatory aspect of sexual deviations becomes exaggerated by congregating individuals with similar problems.

The best opportunity to treat these individuals is when treating the neurotic process. Unfortunately, the older the child becomes, the less the desire for treatment in such sexual deviations is present. Younger children may be more responsive because the entire family can be brought into treatment, and the abnormal relationships of the family situation may be brought out into the open and possibly dissipated.

There is no clear agreement on the part of psychiatrists as to how sexual deviates should be handled. To some extent this reflects not only the intrinsic pathology but also the impact of this pathology on society. Since therapists themselves are a part of the community, they often reflect the moral values of the community, and sexual deviations are particularly susceptible to being viewed with moral implications. The treatment, however, continues to be that of understanding the meaning of the symptom to the individual, understanding the compulsion and its repetitious activity, and attempting to break up the satisfying aspect of the process in order to relieve the individual's tension.

Suggested Cross References

For further information regarding sexual pathology, see Sections 26.2, 26.3, and 26.4, in Area F, on the psy-

chiatric syndromes. Normal sexuality is discussed in Section 5.7, in Area B, on the basic behavioral sciences.

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41.7 SOCIOPATHIC PERSONALITY DISORDERS. III: ADDICTION AND ALCOHOLISM

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Although precise statistics are unavailable, there is general agreement among medical, law enforcement, and other interested personnel that the number of children and adolescents using addictive substances has risen sharply in the 2 decades following the end of World War II.

Present day addiction among young people is characterized by the use of a variety of substances, sometimes sequentially, sometimes simultaneously. It is not opiate addiction per se that is most characteristic at this time but the addictive behavior with which many children and adolescents respond to the stresses, both objective and subjective, to which they are subjected. Remarkable ingenuity has been displayed by children and adolescents in discovering unlikely substances that produce intoxication or other desired psychic effects and often lead to addiction.

Addictive Substances

The simultaneous use of a wide variety of addictive substances has been observed among adolescents admitted to narcotic addiction treatment centers in metropolitan hospitals. Patients admitted for detoxification are commonly using heroin; amphetamines or barbiturates, or a combination of the two; and codeine-containing cough medicines at the same time. Detoxification under these circumstances must be accomplished with particular care, since withdrawal from barbiturates, particularly, may be hazardous unless done very gradually and under careful medical observation.

Opioids. The vast majority of American addicts in recent years have used heroin primarily, with morphine, meperidine, and other opioids following in that order. It has been observed that among many adolescent addicts the withdrawal symptoms occurring on discontinuance of heroin use are so mild that they have obviously been using greatly diluted heroin. Such addicts are said to be "addicted to the needle."

Marihuana. Although many young people who become narcotics addicts actually begin the use of heroin by the age of 16, a large proportion have used marihuana before becoming heroin addicts. The marihuana cigarettes commonly used today are prepared from the flowering tops of the hemp plant cannabis. It is known that marihuana differs from the opiates in that tolerance and physical dependence do not develop with its use and withdrawal symptoms do not appear on its discontinuance. The effects of the drug result from a relaxation of inhibitions, as is the case with alcohol.

Law enforcement officials have for many years considered the use of marihuana to be responsible for much criminal activity, but a number of studies of its use did not reveal a positive relation with violent crime. A group of marihuana users studied some years ago revealed that 13 per cent of the group began their use of the drug prior to adolescence, 64 per cent started between 12 and 17 years of age, and 13 per cent in their early twenties. The median age of "original addiction" was 15.3 years. The generally accepted knowledge of the use of marihuana by college and university students characterizes it as a significant adolescent activity at present, as it obviously has been for some time.

Amphetamines. Amphetamines have been used for therapeutic purposes, particularly in cases of narcolepsy, epilepsy, depression, behavior disturbances in brain-damaged children, obesity, and certain neurological disorders. Their addictive potential is now well recognized. The use of amphetamines by students and certain groups of workmen, particularly truck drivers, to induce wakefulness, is well known. However, their apparently widespread use, alone and in conjunction with other drugs, as part of the total addictive pattern, socially and psychiatrically, is more recent. Further, it is apparently world-wide, being prevalent in the Eastern as well as the Western hemisphere.

Barbiturates. The barbiturates, like the amphetamines, are known to be widely used by addicted adults, but there is now evidence of their substantial use by young heroin addicts. Many adolescents refer to their use of "goof balls," a term usually describing a combination of an amphetamine and a barbiturate.

Proprietary drugs. Proprietary drugs, particularly cough medicines containing codeine and substantial amounts of alcohol, are a relatively easy path to addiction. Among hospitalized adolescent addicts it has been found that tremendous quantities of such drugs have been taken either prior to or simultaneously with heroin.

Hallucinogenic drugs. Experimentation with hallucinogenic drugs, which alter sensory perception and produce hallucinations, has been conducted by adult intellectuals for some years. Quite recently, however, the use by university students of such substances as lysergic acid diethylamide (LSD-25), mescaline or peyote, and psilocybin has markedly increased. Such drugs have potential value in the exploration of altered states of consciousness if used under carefully controlled experimental conditions. There are, however, serious risks involved in their use, for they may precipitate psychosis, have serious side effects, or lead to addiction to other drugs.

Stramonium. Stramonium, a drug formerly used as a specific in treating asthma, has apparently been discovered by adolescents and used for intoxicative purposes.

Although the drugs enumerated above are most generally used by adolescents and young adults, a number of substances with intoxicating and addictive powers have been discovered by quite young children.

Glue. Glue sniffing has become sufficiently common within a few years to warrant legal action against the sale of glue to minors in several cities. The glue used in making model airplanes is both a stimulant and an intoxicant, and its use can have serious toxic effects. Superficial inquiry indicates that there are hundreds of glue sniffers, ranging in age from 8 to 14, in one small area of New York City. Records of arrests for glue sniffing indicate sharp increases in other American cities as well.

Gasoline. Gasoline addiction in children has been reported but may be much more common than is generally known. It has recently been recognized as a matter for concern by the welfare and legal authorities in some of the developing nations of Africa. It is logical that so common and easily available an intoxicant should be used where there is not likely to be money for the purchase of drugs or similar substances: automobiles can be found anywhere.

Alcohol. Alcoholism is generally considered an adult disorder that develops over a period of many years. However, a number of studies indicate that the use of alcohol by adolescents and young people is very common. Whether it is accurate to refer to children or

adolescents as alcohol addicts is questionable, particularly since the classification of even adult users of alcohol is very complex. However, an increasing number of young people are arrested and convicted of drunkenness or related charges in many parts of the world today, and some young people have clearly reached a state of dependency on alcohol.

Tobacco. Cigarette smoking, the near universal addiction of the mid-20th century, has been described as common along 9-, 10-, and 11-year-old children, and adolescents of 18 or 19 are already heavy smokers.

Epidemiology

A limited number of studies have been made of the incidence and prevalence of addiction and the distribution of narcotics addicts in the United States. Since most data are available from the records of law enforcement agencies and hospitals to which addicts have been admitted, the data, incomplete as they may be, provide information largely on adolescents and adults. A broad study of narcotics use among adolescent boys was done by a group at New York University between 1952 and 1956 (Chein et al.). Available for study were the records of all boys between the ages of 16 and 21 who had in the period 1949 to 1952 come to the attention of some official city agency in connection with narcotics. The list comprised 1,844 boys who had been involved in the use, possession, or sale of drugs.

Groups of boys interviewed during this research provided specific information on the steps that had led to addiction or, in the case of nonusers, had resulted in their rejection of drug use. Most of the users had heard about heroin before they actually had an opportunity to try it, usually at about 15 years of age. By that time, most of them had already seen someone inject or "snort" heroin. For most boys the first opportunity to use the drug came at about the age of 16 or 17, but a sizable group were 14 or less when this occurred. Sixteen seemed to be the age at which the boys were most likely to become users, with a greater proportion going on to regular use from this age group than from those who were either younger or older than 16 at first try.

Of the boys who served as a control group for the study—those who did not become users—40 per cent had also been given the opportunity to try heroin between the ages of 15 and 17, but none of them did so. The importance of learning what factors differentiated these boys from the previous group cannot be overemphasized. Authors of the study suggested that among the factors that did influence the nonusers were age; pertinent information about the result of drug use, which had a deterrent effect; and the boys' interpretation of the attitude of significant adults to drug use.

The urban neighborhoods in which drug use flourished, according to the above study, were the most underprivileged, crowded, and dilapidated areas of

the city. They were further characterized by the lowest levels of income and education and the greatest breakdown of normal family structure.

Another study of drug use among juveniles and young adults conducted in Chicago at about the same time as the New York study revealed a similar situation. The areas in which the highest concentration of heroin addicts was found were also characterized by the highest rates of other social problems—low family income, low social status, deteriorated housing, a high proportion of recent migrants to the city, absence of effective community organization, high rates of adult crime, and lack of family and community control over the conduct of young persons. Because this group of heroin users seemed to have indulged in delinquent behavior before becoming addicted and did not commit crimes of a more serious nature after addiction, it was concluded that their delinquency was not a result of heroin addiction but a reflection of the same interests and problems that had led to drug use.

The data provided by the above studies is to a great extent equally valid today, but there is sufficient evidence to conclude that changes have occurred in the past decade, not only in the number or proportion of juveniles using drugs but also in the socioeconomic strata from which such users are drawn. There appears to be a steady increase in the number of arrests of young university students for possession, use, or sale of drugs of all varieties. Newspaper reports exposing such activities in wealthy suburbs of American cities are now quite frequent. Such information only emphasizes the complex etiology of drug addiction and clearly destroys the validity of assigning complete responsibility to low socioeconomic class, lack of educational opportunity, abnormal family life, or a particular kind of "addict personality." Although all these factors and, in all probability, physiological ones as well enter into the development of addiction, it must be recognized that addictive behavior has multifactorial origins, and disciplined scientific investigation is required for their elucidation.

Treatment

The difficulties in successful treatment of drug addicts have been demonstrated many times and over a prolonged period of time. Most pertinent in a discussion of young addicts is the study done by the Columbia University School of Public Health in 1957 (Alksne et al.). This was a follow-up of discharges from Riverside Hospital, established in New York in 1952 for the treatment of addicts under 21 years of age. Of 147 discharges interviewed, only 19 per cent were seen outside a prison or a hospital. Only 5 per cent of the 147 had abstained from the use of drugs after leaving the hospital. The 147 ex-patients were all who could be located of a total of 247 who had been admitted to the hospital in 1955. It was as-

certained that 11 of the 247 were dead, an unusually high death rate for this age group. It seems that the majority of these deaths were due to overdoses of narcotics. It is also known that among addicts of all ages there is a high incidence of infectious diseases attributable to the use of shared unsterile needles for injecting heroin—such diseases as malaria, tetanus, syphilis, bacterial and mycotic endocarditis, and infective hepatitis.

Because of the demonstrated failure of most treatment programs for addicts, it becomes necessary to recognize that the emphasis on institutional programs, all of which have had as their goal complete abstinence from narcotics, may be misplaced. In the case of children and adolescents, certainly, it is difficult to accept maintenance on drugs of any type as a satisfactory aim, although that is now being seen as an experimental possibility for some adults. The aim of a treatment program designed for children should be not only withdrawal from the use of drugs but social and medical rehabilitation that leads to integration into the established institutions of society—school and employment.

Since the child's voluntary indulgence in glue sniffing, gasoline inhalation, or marihuana smoking is apparently an attempt to withdraw from the real world in which he finds himself, one must accept the fact that basic changes in that world would contribute to a greater willingness by the child to experience and grow in it. However, basic social change occurs slowly, and the glue sniffer cannot be put into a Deepfreeze while that is occurring.

There must be a careful examination of the society in which addiction develops and spreads. Attempts must be made to provide for children those social institutions, particularly schools and recreation, that engage them in experiences from which they do not seek to escape. At the same time, those children who, for whatever reason, have succumbed to drug use must be provided medical and psychiatric care that is realistically oriented to this disorder. The changes in patterns of drug use, the increasing involvement of young people from all socioeconomic classes, and the movement of drug dependence downward into ever younger groups of children suggest the widening dimensions of the problem.

Suggested Cross References

Also see Chapter 27 for further information on alcoholism and the other addictions.

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Chapter 42

Psychiatric Disorders of Childhood.

III: Psychotic and Brain Disorders

42.1 PSYCHOTIC DISORDERS. I: CLINICAL FEATURES

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History

A brief historical note may serve to emphasize the recency of the renaissance of interest in childhood psychosis. Though the term "dementia praecox" was coined in 1860 by Morel to describe a psychosis in a 14-year-old boy, relatively little attention was given to the form of the earliest manifestations of dementia praecox by subsequent students of the disorder. Kraepelin is often cited as stating that onset occurred before the age of 10 in 3.5 per cent of 1,054 patients he reported. These were, however, retrospective diagnoses, and the differentiation between premorbid personality trends and the onset of psychosis per se was a matter of "uncertain and arbitrary" judgment from the history supplied to the physician. Bleuler, with a more specific concept of schizophrenic psychopathology, stated in 1911: "With a relatively accurate case history, one can trace back the illness to childhood, even to the first years of life, in at least 5% of cases." The limitations of his experience with children are apparent in the further comment: "At the present time we know of no differences between the infantile and other forms of the disease. . . . The prognosis of those cases in which the onset of the illness occurred before puberty does not appear to be too poor for the next few years . . . ; however, the case histories of adults admitted to the hospital show that at least part of these early cases relapse and then usually become markedly deteriorated."

The first specific consideration of childhood schizophrenia as a separate category dates from the earliest papers (1905-1908) of deSanctis, who proposed the term "dementia praecocissima" to designate this clinical subdivision. However, deSanctis included not only

cases of childhood schizophrenia as the term is employed today but also others who had chronic brain syndromes and severe mental deficiency. Such wastebasket diagnoses, the loose usage of "childhood" to include onset as late as 16 or 17 years of age, and the preoccupation of psychiatrists with hospitalized adults—all contributed to a growing disbelief in the reality of schizophrenia in childhood. As recently as 1942, Bender wrote: "There are those who do not believe in childhood schizophrenia, not having seen a case. At the best, none of us have seen very many cases in which we could make a definite diagnosis, not knowing the acceptable criteria." Yet, not more than 10 years later, Despert could write: "Although there are still people who believe that there is no such thing as schizophrenia in childhood, generally speaking we might say that the concept of childhood schizophrenia has passed from non-recognition to over-recognition."

Despert's warning against "over-recognition" or misdiagnosis has even greater cogency today, when terms like "autism" and "childhood schizophrenia" have entered the common parlance. The defective or brain-injured child who fails to be labeled psychotic at some way station in his parents' odyssey through out-patient and in-patient services is rare indeed. Thus, it seems appropriate to place emphasis on specificity in diagnosis—not as an obsessional exercise in pigeonholing but as a necessary precursor for systematic investigation of cause, course, and treatment.

Classification

The American Psychiatric Association's standard diagnostic manual states that psychotic disorders are characterized by personality disintegration, faulty evaluation of external reality, impaired ability to relate to others, and ineffective work performance. Prominent manifestations include severe mood disturbance, incongruity between mood and thought, faulty stream of thought, delusions, hallucinations, and bizarre behavior. These descriptive terms devolve from the clinical study of adults; they serve as a general framework for the diagnosis in childhood but must be evaluated against age-

appropriate behavioral norms for children. Failure to take developmental age into account can lead to false positives, based on spurious analogies between child and adult behavior, and to failure to recognize psychosis if the clinical picture in a child does not replicate the full syndrome seen in the adult.

Some child psychiatrists espouse the view that diagnostic differentiation within the group of severely disturbed children is neither useful nor possible. It is indeed true that there are cases in which no firm diagnosis can be made, but the great majority can be assigned to categories that have therapeutic as well as prognostic implications. The literature on childhood psychosis is replete with discrepancies in the research and clinical findings reported by different investigators; in large part, these differences stem from differences in diagnostic practices, which result in non-comparability of the populations under study.

To stress the diversity of the disorders which may present a clinical picture of psychosis, a tentative classification of psychotic disorders in childhood is set forth below.

- I. Psychoses associated with impairment of brain tissue function
 - A. Associated with intoxication (atropine, bromides, stramonium, cortisone, etc.)
 - B. Associated with metabolic disorders (pellagra, amaurotic idiocy, etc.)
 - C. Associated with degenerative disorders (Schilder's disease, dementia infantilis, etc.)
 - D. Associated with infections (juvenile paresis, encephalitis, etc.)
 - E. Associated with convulsive disorders (temporal lobe epilepsy, dysautonomia, etc.)
 - F. Associated with trauma
 - G. Associated with neoplasm
- II. Psychoses without known brain tissue impairment
 - A. Autistic psychoses
 1. Early infantile autism (Kanner)
 2. Symbiotic psychosis (Mahler)
 - B. The schizophrenias
 1. Simple
 2. Acute undifferentiated
 3. Paranoid
 - C. Psychoses associated with maturation failure
 1. Atypical child (Rank)
 2. Childhood psychosis (Szurek)
 3. Childhood schizophrenia (Bender)
 4. *Pfropfhebeaphrenia* (Weygandt and Kraepelin)
 - D. *Folie à deux*
 - E. Manic-depressive psychosis

Subclassifying the functional psychoses poses a difficult problem. No two authorities agree fully on the use of terms; some of the nonspecific diagnostic labels ("atypical child," "childhood psychosis") include conditions such as dementia infantilis, which this classification assigns elsewhere. The intent of this schema is to emphasize clinical specificity and to guide the student to an awareness of the differences in concept represented by the differences in labels. Subhead-

ings A, B, D, and E in part II represent clinically definable and mutually exclusive categories. Subheading C is a residual category to cover terminology in disagreement with the principles of this classification but nonetheless meriting inclusion because of the frequency of their use.

Psychoses Associated with Impairment of Brain Tissue Function

These disorders may mimic the clinical picture of the functional psychoses in all respects. They are usually differentiable by history, clinical features, and associated neurological and laboratory findings. Central nervous system pathology should be suspected in the presence of fulminating onset, marked disorientation, intellectual deterioration, memory impairment, and lability of affect. Only if the clinician is prepared to consider the presence of a central nervous system disease will he undertake specific diagnostic investigations. The identification of disorders subject to specific corrective measures can be life-saving for the patient. But even when the condition is one with a progressive and irreversible course, correct diagnosis is important in assisting the family and in sparing them futile and costly therapeutic endeavors. These disorders are covered in detail in Section 42.3 by Laufer.

Psychoses without Known Brain Tissue Impairment

These disorders differ clinically as well as neuropathologically from the syndromes associated with brain tissue impairment. *Consistent* structural or chemical abnormalities regularly associated with these clinical conditions have yet to be demonstrated; whether or not they can be ascribed to a psychogenic etiology remains to be determined.

Autistic psychoses

Early infantile autism. This was described by Kanner in 1943. The pathognomonic disorder was seen as "the children's inability to relate themselves in the ordinary way to people and situations from the beginning of life." The children did not withdraw from formerly existing participation with others, as is the case in schizophrenia, but rather from the start displayed an extreme autistic aloneness. Parents report that these children as infants failed to assume an anticipatory posture before being picked up and never displayed the molding that the normal child shows when cradled in his parents' arms. Parents, initially pleased by the child's "goodness"—that is, his ability to occupy himself for long periods without requiring attention—later become distressed by the persistence of this isolation when they observe that their arrival and departure are matters of indifference to the child.

The second distinctive feature noted by Kanner was failure to use language for the purpose of communication. In 3 of his original 11 cases, speech failed to de-

velop altogether. The remaining children rapidly developed a precocity of articulation that, coupled with unusual facility in rote memory, resulted in the ability to repeat endless numbers of rhymes, catechisms, lists of names, or other semantically useless exercises. The parroting of words intellectually incomprehensible to the child brings into sharp relief the gross failure to use speech to convey meaning. The repetition of stored phrases and the presence of failure to recombine words into original and personal sentences give rise to delayed echolalia, pronominal reversal, literalness, and affirmation by repetition rather than by the use of yes.

A third characteristic is an anxiously obsessive desire for the maintenance of sameness, which results in marked limitation in the variety of spontaneous activity. These youngsters regularly display fear of new patterns and, once having adopted a pattern, incorporate it into the restricted set of rituals, which are endlessly iterated. Thus, a walk always has to follow the same course; bedtime to consist of a particular set of rituals; and repetitive activities like spinning, turning lights off and on, and flushing toilets occupy the child for long periods. Attempts to interfere with the pattern produce rage.

Fourthly, the children display a fascination for objects, as distinct from their poor or absent relation to persons. So intense is this relationship that minor alterations in the arrangement of objects, not ordinarily perceived by the average observer, are at once apparent to autistic children, who exhibit panic until the change has been undone.

These children are separable from mentally retarded or brain-injured children by their good intellectual potential. In the children who speak, this can be discerned by the extraordinary, if perverted, use of language and the feats of unusual memory. In mute children, though the evidence is less persuasive, there is facility with performance tests, frequently at or above age level. Thus, Kanner has delineated a syndrome that is differentiated from childhood schizophrenia by virtue of detachment starting no later than the 1st year of life and from oligophrenia by evidence of good intellectual potential.

Infantile autism has become increasingly fashionable as a diagnosis but with concomitant dilution of its specificity. The mere presence of autistic phenomena (observable in many defective and brain-injured children) is regarded by some as establishing the diagnosis of infantile autism, even when associated findings point clearly to other primary disorders. In evaluating reports of etiological or therapeutic studies on autism, it is essential to note the criteria by which the diagnosis has been established.

In a review of 100 cases of infantile autism seen on Dr. Kanner's service,¹ few neurological or electroencephalographic (EEG) abnormalities and infrequent reports of complications of pregnancy or parturition were noted. Of the 200 parents, only 6 presented gross

psychiatric abnormalities; of the 400 grandparents and 373 listed uncles and aunts, only 12 had come to psychiatric attention for major mental illness. Similarly, of the 131 known siblings, only 3 were autistic, and only 7 others displayed psychiatric disturbances.

The personality patterns of the parents revealed an unusually high percentage of obsessive, intelligent, and cold individuals; 87 per cent of the fathers and 70 per cent of the mothers had been to college, proportions greatly in excess of those characterizing a random sample of other private patients. A large number of the fathers were professional people who had attained distinction in their fields of endeavor. Although it is tempting to speculate that the emotional detachment, obsessiveness, and coldness of the parents may in some way be related to the syndrome in the children, it is noteworthy that at least 10 per cent of the parents did not fit the stereotype, and even those who do fit it have borne and reared other normal children. Moreover, similarly rigid parents have been seen who had not produced autistic offspring. If there is a relationship between child and parent characteristics, its significance is not immediately evident. Both may be manifesting the action of genetic factors, fully apparent in the child but only partially expressed in the parent; parental behavior may have induced the behavior in the child; or the experience of living with a severely disturbed child may have led his parents to withdraw from involvement with him.

Although the Hopkins studies have been negative with respect to organic abnormality, other investigators have drawn different conclusions. Knobloch and Grant stated that neurological disorders underlie the majority of cases of autism and schizophrenia in childhood. Schain and Yannet have described 50 cases of autism from the Southbury Training School; they reported a high incidence of seizures, EEG abnormalities, and associated neurological findings, but there is considerable question as to the appropriateness of the diagnostic allocation. White et al. have reported a high percentage of EEG abnormalities (53 per cent) under promazine sedation in childhood schizophrenics, an equally high percentage in nonpsychotic behavior disorders, but only 10 per cent among neurotic and none among control cases. These studies, together with a number of reports on small groups of autistic children with gross EEG or neuropathological disorders, are open to serious question as to diagnostic specificity.

Ferster has developed an interesting and provocative hypothesis on the genesis of autistic behavior by using an operant conditioning model. He provided a logical framework for therapeutic programs based on enlarging the autistic child's limited behavioral repertoire by positive reinforcement methods. Ferster's model has the striking virtue of being subject to experimental analysis. Research currently under way by Ferster and his associates is designed to evaluate the clinical efficacy of a therapeutic program based on his hypothesis.

A follow-up study of 63 autistic children demonstrated that the presence or absence of useful language by the age of 5 differentiated sharply between two groups of autistic children. Of the 30 children without effective speech, only 1 child subsequently attained a marginal social adjustment, and this child has since required psychiatric hospitalization. In contrast, about half of the 31 children with language have been able to maintain a social adjustment in the community and have progressed in school at about age level. Even the successful youngsters, however, continue to be characterized by an impoverishment of human relationships, a lack of social competence, and a schizoid personality. Many are painfully aware of their own maladroitness in interpersonal relations and tend to seek out solitary occupations. Outcome seemed to be more a function of the severity of the disorder than of the type or amount of treatment. However, it should be emphasized that efforts at psychiatric care—including residential placement, psychotherapy, and psychotropic drugs—are strongly indicated pending the demonstration of specifically effective treatment modalities.

Symbiotic psychosis. Mahler has proposed that psychoses of early childhood should be divided into autistic and symbiotic varieties. The symbiotic disorders are characterized by later onset and by symptoms of anxiety, which may mount to panic when attempts are made to separate the child from his mother; that is, the psychopathology in such cases reflects failure at self-differentiation after the initial developmental stage of relating to the mother had been attained. If symbiotic psychosis is indeed a real clinical entity, it must be far less common than infantile autism, itself uncommon, in view of the infrequency of clinical reports.

The schizophrenias. Among psychotic children there are a considerable number whose clinical manifestations meet the criteria set forth for the diagnosis of schizophrenia as it is seen in the adult. The term "schizophrenia" should be restricted to this group in view of the uncertainty about the relationship of the other psychotic syndromes in children to the adult schizophrenias. The term has been used in the plural, the schizophrenias, to emphasize the heterogeneity of the syndromes classified under this rubric. These schizophrenic reactions in childhood probably do not occur before the age of 8 years and are seen with increasing frequency as children approach adolescence.

The proposed subdivision into three types—simple, acute undifferentiated, and paranoid—reflects clinical experience in which the other types described in adults are either nonexistent or so rare as not to warrant listing here.

Psychoses associated with maturation failure. This residual category is intended to accommodate a heterogeneous set of clinical syndromes embodied in terminologies at variance with this classification but so widely used as to require identification. With greater specificity of diagnostic practice, many cases currently

labeled under this heading would be reallocated to the organic psychoses, to autism, or to schizophrenia.

The heterogeneity of the cases associated with maturation failure make impossible a meaningful comparison of etiological and therapeutic findings. Thus, whereas Bender reported a 40 per cent rate of schizophrenia among parents, Creak and Ini noted a low incidence of psychiatric abnormality in the parents of the psychotic children they have examined, a finding comparable to our observation among parents of autistic children. The one systematic search for chromosomal abnormalities in schizophrenic children thus far reported was completely negative.

Attempts to evaluate therapeutic results are confounded both by diagnostic uncertainties and by differences in criteria for outcome. Whereas Bender is persuaded of the value of electroshock, Clardy and Rumpf reported the contrary based on observations of children earlier seen at Bellevue. Szurek reported, after intensive psychotherapy, a 14 per cent improvement rate among cases of childhood psychosis, whereas Brown found a 37 per cent improvement rate after intensive psychotherapy and therapeutic nursery care for atypical children. The over-all figures from Hopkins and from Bellevue indicate that about one quarter of the children were able to attain an adequate social adjustment in the community.

Atypical child and childhood psychosis. Rank and Szurek have indicated in their definitions for these terms that they do not consider it fruitful to differentiate among schizophrenia, chronic brain syndromes, mental defect, and severe neurosis in assigning cases to these categories, which appear to be coterminous; any child who displays severe developmental deviations with marked impairment of social adjustment appears to qualify for inclusion.

Childhood schizophrenia. According to Bender, childhood schizophrenia is "a clinical entity occurring in childhood before the age of 11 years which reveals pathology at every level and in every area of integration and patterning within the central nervous system, be it vegetative, motor, perceptual, intellectual, emotional, or social." The fundamental pathological process is taken to be a diffuse encephalopathy, an inference from clinical considerations, since there are no neuropathological reports. Bender suggested subclassification into three clinical types: the pseudodeficient or autistic regressive type; the pseudoneurotic or phobic, obsessive-compulsive, hypochondriac type; and the pseudopsychopathic or paranoid, acting out, aggressive antisocial type. Follow-up studies from Bellevue are reported to reveal that some two thirds of the cases were diagnosed in later adolescence or adulthood as schizophrenic. There is, of course, the question about the independence of the second diagnosis insofar as knowledge of the earlier diagnosis may have influenced the clinician who saw the patient as an adult. However, it seems from these follow-up studies that a significant proportion of the cases classi-

fied as childhood schizophrenia by Bender display adult schizophrenic syndromes.

Pfropfhebephrenia. Kraepelin coined the term "hebephrenia engrafted upon defect" to characterize the psychotic states observed in a colony of mental defectives. Such disorders may represent: (1) psychosis and mental defect, both secondary to central nervous system disease; (2) deteriorated, functionally defective end states of originally psychotic children; and (3) psychotic episodes in primarily defective children. Bizarre mannerisms are frequent among the inmates of the traditional colonies for defectives; some represent the behavioral consequences of the neglect and deprivation so frequently accorded these unfortunate children; others may be part of the basic central nervous system disease. But even these latter symptoms may be correctable by appropriate environmental manipulations, since every living organism can learn. Modification of the aberrant behavior may free the child for the adoption of more constructive traits, or it may serve the purpose of making him more acceptable in the social group by removing characteristics that stigmatize him.

Folie à deux. *Folie à deux* is an induced or imposed psychosis in which a relatively healthy person shares the symptomatology of a psychotic person with whom he has a close relationship. The disorder appears in the context of an intense relationship between two persons, the great majority of which are family relationships. By definition, the relatively healthy partner is able to abandon the symptoms when separated from the psychotic partner.

Manic-depressive psychosis. True instances of this disorder in childhood are exceedingly rare. Anthony and Scott, in a scholarly review of the literature, were unable to uncover any instances in children younger than 11 who met the following criteria: a psychiatric state conforming to the classical clinical description, a positive family history, cyclothymic premorbid personality, periodicity, evidence of an endogenous illness in that cycles alternate with minimal reference to external events, psychotic severity, and current rather than retrospective assessment. Much of the controversy in the literature about the existence of depressive illness in childhood stems from a confusion of a psychodynamic interpretation of the meaning of symptoms with a clinical diagnosis based on overt behavior and longitudinal course. By the latter criteria, manic-depressive psychosis appears never to occur in early childhood and to be exceedingly rare prior to adolescence.

Prognosis

The foregoing review will have made it evident that no over-all statement about outcome is justified. For those disorders ascribable to defects in central nervous system function, the prognosis is that of the underlying organic disorder. For the functional psychoses, prognostic statements are just as difficult to offer,

TABLE I
Outcome of Childhood Schizophrenia

Author and Year	Number Recovered	Case Total
Before 1940		
Sukhareva (1932)	0	25
Grebelskaya-Albatz (1934)	1	22
Lurie et al. (1936)	1	13
Lutz (1937)	0	20
Potter and Klein (1937)	1	14
Creak (1937)	3	9
Despert (1938)	3	29
Total	9 (7%)	132
Since 1940		
Lurie et al. (1943)	4	17
Bender (1951)		
Shock-treated	36	143
Refused shock treatment	2	50
Eisenberg (1956) (autism)	17	63
Szurek (1956) (psychosis)	14	100
Brown (1963) (atypical child)	47	129
Total	120 (24%)	502

since it seems certain that in this category are entities of a wide variety of types. The field may in many respects be comparable to the state of mental deficiency 50 years ago, before the success of efforts to separate out the many different syndromes that share only the final common manifestation of defective intelligence.

Rutter has drawn attention to the I.Q. score of the psychotic child as an important prognostic indicator. Despite the clinical impression of the unreliability of I.Q. testing in such children, he found a correlation of 0.80 between initial scores and those on follow-up. Moreover, the likelihood of clinical recovery seemed more related to I.Q. than to speech function, with recovery rare in children testing at less than 50. He suggests, and I believe correctly, that my earlier observations on the presence or absence of useful speech by age 5 as a predictor of outcome may have been "largely due to the high correlation between absence of speech and low intelligence."

A tabular comparison of the outcome of cases of childhood psychosis reported in literature before and after the year 1940 indicates the change in the concept with time. The much better results reported in the recent era suggest, in the absence of any evidence of specific treatment methods, that contemporary clinicians include cases previously given other diagnoses (see Table I).

Current Status

The so-called functional disorders remain the subject of considerable dispute among competent and experienced clinicians. Resolution of the conflicting views

awaits careful investigation based on new methods of study as well as greater conceptual clarity.

The argument for careful clinical specification of subtypes rests on therapeutic, etiological, and prognostic grounds. To evaluate the comparative effectiveness of current or future treatment methods, one must begin by delineating comparable populations and assigning them to control and experimental groups. The uses and the limitations of penicillin, for example, could hardly have been ascertained if clinicians had not been able to differentiate colds, pneumonias, and neoplasms. This thesis holds with even greater forcefulness for attempts to isolate etiology. Abnormal metabolic findings that may characterize one clinical syndrome may be lacking in a second; if both are indiscriminately presented to the biochemist, his findings will be puzzling and inconsistent. Finally, if the clinician is to be able to offer meaningful prognoses to assist parents in planning for the care of their children, he must be able to differentiate disorders that have different likelihoods of favorable outcome. Differential diagnosis is no academic exercise; it is the very stuff of medicine.

Suggested Cross References

Schizophrenia and other psychotic disorders are also discussed in detail in Chapters 15, 16, and 17 in Area F, on the psychiatric syndromes of adults. Organic brain disorders of children and mental retardation are discussed in detail in Section 42.3 and in Chapter 22, respectively. Therapy of childhood psychosis is the subject of the following section, Section 42.2.

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42.2 PSYCHOTIC DISORDERS. II: TREATMENT

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The therapy of childhood psychosis is complicated by three factors. One is the variety of behavioral syndromes subsumed under this diagnosis. If this is indeed one disease, it encompasses behaviors that range from virtual unawareness of the human environment to a disposition toward disorganized thinking under environmental stress. A second factor is the considerable difference of opinion as to the etiology, since therapeutic choice depends on the causal theory held by the therapist. The third factor is the poor prognosis, especially with the severely psychotic child; this causes therapists to engage in therapeutic experimentation, with each new approach appearing to have initial success. Although various therapeutic interventions are discussed separately here, they are usually combined. It would not be unusual for a schizophrenic child to receive elements of all of the therapeutic modalities discussed below, although usually one or another receives greater emphasis.

In the discussion which follows, the designation "childhood psychosis" is used to mean psychosis without known brain tissue impairment. This includes the form appearing in early infancy (early infantile autism), later infancy (symbiotic psychosis), later childhood (childhood schizophrenia), and adolescence (schizophrenia).

Psychotherapy

The first efforts at the psychotherapy of childhood schizophrenia were made in the late 1940's. Initially, psychotherapeutic techniques were derived from the

treatment of neurotic children. When these proved fruitless, particularly in the more severely disturbed children, therapists experimented with innovative methods, which were initially based on trial and error and subsequently brought into existing theoretical frameworks. Since psychotic children tended to collect in special centers set up for their study and care, therapeutic techniques of varying types became established in these separate centers, which have, by and large, continued to refine their methods. As a result of this and the generally poor prognosis, there is no systematized psychotherapy of childhood schizophrenia, and varying methods are found from one center to another.

The type of therapeutic intervention employed in childhood psychosis depends on the therapist's etiological theory of the disease. For those who espouse vigorous psychotherapy, etiological emphasis lies in deficient life experience of the child, due either to constitutional inability to elicit or benefit from normal experience or from a pathological environment. Among the theories underlying psychotherapy are the following: (1) The child retreats as a result of gross emotional deprivation or painful contact with people. (2) The child is unable to erect an inner maternal image and thus cannot develop ego or superego, cannot use identification or introjection, and cannot establish a sense of reality. He therefore withdraws to an omnipotent world, which constitutes an attempt at restitution of the lost or never achieved maternal object. (3) Autism is a psychotic defense in which the ego restores oneness with the object as a delusional defense against separation from the mother. (4) The absence of crucial experience at some critical period causes an inability to endow human beings with appropriate significance.

There is considerable conflict of opinion as to the ultimate effectiveness of psychotherapy for psychotic children, although there is little doubt that it frequently results in symptomatic improvement. Autistic children may achieve socialization, enabling them to function outside of a special institution, while retaining considerable personality limitation and ego vulnerability. The resolution of intrapsychic conflict produces relief of anxiety or reduction of psychotic defenses, but in childhood psychosis, unlike neurosis, the intrapsychic conflict does not appear to be the cause per se of the disease; therefore, one could not expect to achieve resolution of the illness. It is possible that no matter how early the illness is detected, certain crucial experiences have been missed that make the course irreversible. Prognosis depends on the degree of severity of the illness, ability to alter contributing factors in the parents, the age at which treatment is instituted, the quality of treatment, and the vigorousness with which it is pursued. The personality characteristics necessary to do psychotherapy with psychotic children are optimism, persistence in the face of little reward, firmness and strength, and the ability to withstand countertransference tempta-

tions, particularly that of overidentification with the child.

Generally, psychotherapeutic techniques with psychotic children fall into three phases, based on the functional level of the child, regardless of etiology or previous treatment.

Markedly disturbed autistic children may be able to undergo only the first or possibly the second phase. Less disturbed or borderline children may begin with the third phase.

First phase: Overcoming the autistic barrier.

Methods for penetrating the shell of the withdrawn, regressed child have been extensively studied. In order to develop the initial awareness of human beings, the therapist establishes himself as an all important factor in the child's life, often caring for him physically, offering unconditional acceptance, using the child's receptive channels by mirroring them, removing obstacles to gratification, and helping him express his impulses while gratifying them safely. Music, rhythmic activities, food, extensive physical contact, and understanding and participation in the child's primitive magical language, gestures, and fantasies may be used by the therapist to insinuate himself into the behavior pattern of the child. The child may be encouraged to relive primitive stages of development that have been previously missed or have been unsatisfactory—for example, sucking on a bottle or messing with clay as a substitute for feces. Certain necessary frustrations, such as the control of destructive behavior, come from the same therapist who gratifies so freely, thus providing the basis for object relationship.

Second phase: Development of ego functions.

With the therapist acting as an auxiliary ego and providing such necessary ego functions as translating primitive impulses into language, acting as a stimulus barrier, interpreting events, etc., therapy concentrates on the development of the ego functions of relationship to persons, perception of reality (awareness of self and external reality), postponement of gratification, and clarification of impulses and feelings. The therapist acts as a boundary while helping the child establish his own boundaries. Thus, the child is helped to cope more successfully with internal and external pressures, developing more appropriate behavior.

Third phase: Resolution of intrapsychic and interpersonal problems. This phase, the goal of which is the understanding of the conflict that caused the withdrawal, is applicable to those psychotic children who can utilize it. It is somewhat similar to the treatment of severe neurosis but with considerable modification of technique, such as the therapist's active participation in and limitation of fantasies so that they do not become too frightening, the emphasis on intellectual controls, regulation of life outside of therapy, working with the part of the ego that is intact, and utilization of the corrective relationship to the therapist to provide understanding of previous frustrating

experiences. The resolution of internalized conflicts and relief of anxiety attached to primitive fantasies result in a freeing of additional sources of ego strength and in the development of more adaptive gratifications than the previous pathological interaction.

Group Therapy

In the past few years, group psychotherapy with psychotic children has been used in a few centers. Small groups of children with regressive behavior and disturbances in self-identity, perception of reality, and use of communicative language meet several times weekly with one or more therapists. Isolation, panic, and further regression may occur initially, but in time group formation occurs, as the children become aware of each other and the therapist. This permits the introduction of group activities and structure, which are tolerated for longer and longer periods of time. Finally, interpretations are given regarding the difference between reality and nonreality, self and object, and the relationship between feeling and behavior. Children perceive their own and others' behavior as dystonic, which helps to develop control. Therapy of the children is usually combined with group or individual therapy of the parents and, where possible, with school attendance.

It is felt that the therapeutic group develops a group ego, which provides support for the defective egos of the individual patients. For symbiotic psychotic children, the therapeutic symbiosis they require is provided by the group ego. Results include the achievement of communicative speech, some measure of self-identity, and movement upward in the development scale, such as achievement of toilet training. The avoidance and self-protective aspects of their behavior, such as ritual and mannerisms, may decrease.

Milieu Therapy

With the rise of residential and day treatment programs for children, the importance of milieu in the treatment of psychotic children received increasing attention. The protean nature of the impairments in this illness sometimes calls for intervention in all life experiences. Programs that provide care for a major period of the child's life are able to provide a controlled, consistent milieu that is in itself therapeutic.

Such programs consciously attempt not only to integrate all the child's experiences—physical care, education, recreation, psychotherapy, etc.—but also to develop an attitude on the part of all personnel, professional and nonprofessional, that meets the child's dynamic needs. Various centers define these needs differently. The emphasis may be on giving the child permission to regress to previous stages of psychic development and to relive them with therapeutic personnel; on providing the child with sensitively timed doses of human contact, according to his tolerance; or on providing a clear cut structure of expectation to which the child is expected to adapt. The therapeutic

prescription carried out by the staff strives to be internally consistent, in accordance with the theoretical understanding of childhood schizophrenia held by the center.

Milieu therapy provides multiple activities; a peer group that allows identification, necessary regression, or acting out; flexibility in individually designed programs; multiple adults from whom the child can choose; clinically controlled and manipulated experiences; an atmosphere of being accepted and wanted rather than of being deviant; and opportunities for diluted relationships. One of the important requirements in establishing a totally therapeutic atmosphere is to provide the entire staff with organized controlled opportunities to work out their own feelings of rivalry with each other; of resentment, guilt, and helplessness with the children; and of any other factors that interfere with optimum consistency of efforts.

Consciously designed milieu therapy necessarily takes place in selected residential or day treatment centers where a major segment of the child's time is spent and where sufficient time and personnel are available for this time-consuming effort. Psychotic children are referred for such programs on the basis of the degree of psychopathology in the child and parents and the ability of the home and community to tolerate their behavior and provide necessary services. Some psychopathological features for which milieu therapy is particularly recommended are inability to maintain contact with parents, lack of experience of gratification in interpersonal relationships, and the combination of uncontrollable impulses with very weak ego structures.

Results of intensive programs are generally good, considering that the most severely disturbed psychotic children are selected for them. Since these programs combine the best of all available therapies while adding the special dimension of milieu therapy, they should and do produce the best results, although they are the most costly.

Educational Therapy

Although educational principles are commonly used in combination with other treatment modes and enter into all psychotherapy of psychotic children, in some centers the educational experience is the definitive intervention with the child. This form of treatment has been receiving greater emphasis with psychotic children in the last decade as other therapeutic methods have yielded disappointing results.

Educational therapy is generally in the hands of teachers, usually with psychiatric supervision or consultation. Emphasis is placed on the external reality demands, structure of the classroom situation, and ego modes of functioning. Anxiety is reduced by clarity of expectation and predictability. Children are taught perceptual discrimination, relationships in time and space, functioning of the body, and the realities of various social relationships. They are trained to put

thoughts and feelings into words, to coordinate motor activity, and to master the operational tools for learning. The capacities to play, to learn, and to participate actively are encouraged. The strengthening of skills through emphasis on intellectual functioning serves to promote self-esteem and identification with peers. The teacher addresses himself to the healthier aspects of the child's functioning by imposing a graded series of reachable challenges. The defenses of intellectualization and obsessiveness, often very useful to psychotic children, are promoted indirectly. The focus is on learning to live in the world.

The rationale for educational therapy is that the psychotic child, having irreversible personality defects, must develop those areas of function that are least damaged, namely the capacity to imitate, to respond to cues, to learn adaptive skills, and to live "as if" he were a total person. The goals are in the main similar to those of psychotherapy. Although psychotherapy attempts to resolve the basis for psychotic withdrawal, educational therapy attempts to bypass it. The latter is generally emphasized for the more severely ill children or by those who feel that resolution of the psychosis is not possible. The results of all types of therapy with psychotic children are most often given in terms of the numbers who are able to attend schools subsequently. Using this criterion, educational therapy yields results comparable to or better than other forms of treatment. Whether this is done at the sacrifice of more total self-realization of the child has not been clarified.

Behavior Therapy

Behavior therapy, which is the application of principles derived from learning theory research to the modification of abnormal behavior, has its origins in two sources. One is the classical conditioning experiments of Pavlov, and the other is in various learning theories. Although clinical application to adults began a couple of decades ago, its systematic application to psychotic children is of relatively recent origin, the first reports of its use appearing around 1960.

The most commonly used clinical technique with psychotic children is free operant conditioning: the child has an alternative between courses of action that he controls by means of an operation or action. For example, if it is desired to teach a mute child to say a word, a desired reward is withheld from him until he says it. Each time he performs correctly, he is rewarded, which reinforces the learning. Much less commonly employed is the technique of aversive conditioning, whereby undesirable behavior, such as bizarre gestures, is followed by an unpleasant consequence, such as darkening of the room or even an electric shock.

Since the severely psychotic child has very few sources of gratification already in his experience that motivate him to utilize free operant conditioning, the use of this technique must be preceded by a careful

study of the child to discover ways of providing gratification and establishing controls. Food is by far the most commonly used reward. Other social rewards are physical contact, verbal praise and reassurance, reading, singing, playing music, and dancing.

This therapy rests on the theory that behavioral principles, reliably demonstrated in learning laboratories, are also applicable to managing, modifying, building, and maintaining the behavior of severely disturbed psychotic children. The basic concept on which this rests is that behavior, both normal and abnormal, is learned. Psychotic behavior is a learned reaction that was originally established as a barrier either against a hostile world or as a defense for an organism unable to cope with ordinary life experiences. The persistence of the behavior is maladaptive and prevents the individual from moving beyond his infantile survival needs. The psychotic symptoms are no longer necessary and, if eliminated, will enhance the child's use of environmental supports and thus bring him greater rewards in the form of social adaptation.

Behavior therapy has been used primarily with autistic children who have responded very poorly to all other methods of therapy. Since it is nonverbal and requires little or no conceptualization on the part of the child, it is particularly suitable for these children. Because autistic psychosis begins very early in life, giving the child a pathological behavioral repertoire by the time he emerges from infancy, he is deprived of the ordinary social reinforcements that normal children constantly receive as a feedback from their behavior. The autistic child's behavior may be self-reinforcing, as he may establish contact with the environment only by means of undesirable behavior. For example, because of his resistance to initiating contact, he may be ignored unless he screams.

Behavior therapy is seldom used as the sole therapeutic tool. It is usually combined with some form of psychotherapy, milieu therapy, or educational therapy. Its specific goal is the elimination of highly maladaptive target symptoms that prevent the child from deriving benefit from other forms of therapy or from life experiences. These target symptoms are the social behavior of psychotic children that serve to reinforce their isolation and regression, such as muteness, lack of eye contact, bizarre gestures or vocalizations, avoidance of human interaction, stereotyped behavior, temper tantrums, insistence on repetition, etc.

The use of behavior therapy with psychotic children is too new to evaluate results systematically. In addition, since behavior therapy is imbedded within other therapeutic modalities, it is difficult to separate results, except in terms of specific symptoms for short periods of time. Since behavior therapy has been tried with those children who have proved most resistant to any therapeutic intervention, goals must necessarily be limited. Some workers have reported successful long lasting symptomatic results. Others have reported vari-

able responses and a high rate of relapse. The question of whether the learned response can be transferred to another person without loss remains unanswered. It is also apparent that operant conditioning is best in strengthening existing behavior and less useful in initiating new behavior.

Treatment of Parents

The degree to which parents of psychotic children receive treatment and the type of treatment they receive depends on the theoretical orientation of the therapist treating their child.

Those psychiatrists who believe that pathological attitudes on the part of parents, especially mothers, play a large part in the genesis of the child's illness recommend direct psychotherapy or even psychoanalysis of the parents. Some of the pathological parental factors held responsible are the parent's distortion of reality and teaching of unreality, primitive destructive fears and wishes, unconscious need for a psychotic child, and inability to sense the child's needs or to exercise basic authority with him. Therapists with an organic theory of the origin of childhood psychosis recommend guidance of the parents in adjusting to their child's illness. Group therapy is often used to give parents the opportunity to cope with their reaction of confusion, anxiety, guilt, isolation, hostility, and helplessness. Parents can also be helped to mobilize community resources for their child's special needs.

Parents are also seen as an adjunct to the child's psychotherapy, providing information for the therapist or creating a home environment designed in accordance with specific therapeutic guidelines.

Family therapy, which has been increasingly used recently with psychotic children, provides the therapist with details and clarity of family interaction, the degree to which family members recognize mutual needs, the methods with which they communicate with one another, and their distortions of reality. For young autistic children, the family therapist can demonstrate to the parents how to relate and handle the child. He may interfere with the destructive and self-injuring behavior of the child; show expectation of response, conformity, and growth; or break the parental habit of treating the child as if he doesn't comprehend his surroundings.

Suggested Cross References

For further information about the treatment modalities mentioned in this section, see Chapter 43, which deals with the psychiatric treatment of children, and Area G on the psychiatric treatment of adults, as well as Sections 15.5 and 15.6, which describe psychological and organic treatment of schizophrenia in adult patients. For information regarding fundamental concepts of motivation, psychopharmacology, learning theory, and the sociocultural determinants of behavior on which the treatment modalities mentioned in this section are based, see Sections 3.4, 2.3, 3.3, and 4.1 and

4.2, respectively, in Area B, on the basic behavioral sciences, as well as Area C, which deals with current concepts of personality and psychopathology.

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42.3 BRAIN DISORDERS

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The American Psychiatric Association (A.P.A.) classifications under the heading "disorders caused by or associated with impairment of brain tissue function" cover a number of categories of clinical importance. But there is need for more general consideration of what may contribute to the particular pattern of dysfunction displayed by a particular child.

One consideration is the nature of the cause. Another is the particular time in the child's development in which the etiological factor begins to operate and the duration of time in which it does so. Another aspect is the severity or degree of insult from the etiological factor involved. Another contributing variable is the general status of the child. This itself is a composite of genetic factors, the extent of the central nervous system involvement, and the efficiency of parental management and interaction. For example, a highly intelligent child who has benefited from good child-parent interactions may more readily find or respond to ways of coping with a specific learning disability than another child who is not so fortunate.

The degree and kind of disability presented by a

child with some form of cerebral dysfunction is highly dependent on parental reactions and expectations, the meaning of the child and his behavior for this set of parents, and the expectations of his sociocultural milieu. One pair of parents may derive gratification from a hyperactive, aggressive youngster, as indicating they have produced "a real boy"; another pair of parents may be overwhelmed by the same picture. A child with a specific learning disability may be reacted to more negatively in an upper middle class family than in a lower socioeconomic milieu.

Etiology

Consideration of this area may be distorted by the popular concept of "brain damage," implying the prime and invariable role of traumatic insult to the brain. Both theoretically and practically it seems more appropriate to consider three general categories, all of which may lead to the same syndromes. The first of these is *maldevelopment*, in which there is a structural deviation from the normal due to a variety of possible causes other than trauma. The second does indeed reflect actual *damage* to central nervous system structure being formed or already formed due to such factors as trauma, infection, hemorrhage, and hypoxia. The third is *malfunction* without known structural change—for instance, the results of insufficient stimulation or of excessive stimulation at significant points in development or the results of distortion in the child-parent interaction.

When components of any of these categories impinge on a developing brain and psyche, there may be a greater effect than in an adult. There seem to be critical periods for the development of various functions. If there is interference at one of these times, it may be very difficult for the function ever to be developed adequately. In addition, a child's development follows both a segmental and sequential plan; therefore, early interference may have a profound and ever increasing effect, since subsequent phases of development are distorted by what has previously gone awry.

However, in a developing organism an early insult may be overcome in several ways. One is by compensatory overdevelopment of other functions. Or, in accordance with the concepts of equipotentiality, an uninjured area may to some extent take over the role of the injured one. Or, in later phases of development, that which was deficient earlier may no longer be critical in terms of total functioning.

Prenatal causes of central nervous system dysfunction are metabolic, genetic, infectious, toxic, and psychogenic factors. Perinatal causes are prematurity, postmaturity, prolonged labor, rapid labor, abnormalities of presentation, induction of labor, accidents of labor, effects of medication, immunological incompatibility, and normal mechanics of labor. The item "normal mechanics of labor" is in recognition of the fact that there are significant stresses and strains on

TABLE I
Syndromes of Cerebral Dysfunction

Area	Clinical Manifestations
Neuromotor	Cerebral palsy
Neurosensory	Central blindness, deafness, anesthesia
Consciousness	Epilepsy
Communication	Dysphasias, aphasias
Intellectual	Mental retardation
Perception, association, conceptualization, expression	Specific learning disabilities
Object relations	Some forms or components of psychoses of childhood
Impulse control, motility	Hyperkinetic impulse disorder

the fetal passenger, even in a normal delivery, and that firstborn males seem particularly susceptible to developing sequelae.

Postnatal (to 5 years of age) causes are infections, injuries, medications, poisons, toxins, metabolic or vascular disturbances, psychogenic-environmental factors, neoplasms, and convulsive disorders. The item "psychogenic-environmental factors" suggests that disturbances of human relationship and inadequate, excessive, or distorted stimulation and human interaction may have an effect on the developing central nervous system and lead to the development of one of the syndromes of cerebral dysfunction.

Syndromes of Cerebral Dysfunction

In order to develop a conceptual overview of the possible distortions of cerebral function that may result from the causes just outlined, Denhoff et al. have advanced the concept of syndromes of cerebral dysfunction. These are possible but neither invariable nor inevitable results of aberrations of central nervous system function and are partly stylized constructs for the purposes of description and classification. There are many possible variations. The symptom picture in a given child is the final result of the organically based tendency toward a deviation of function and the way the child adapts to and compensates for this. The latter, in turn, is a composite of the child's ego strength, coping mechanisms, and state of child-parent equilibrium (see Table I).

These syndromes often occur in varying combinations. One syndrome may represent the major presenting area or complaint, and another may contribute a major disability. For instance, in both epilepsy and mental retardation, hyperkinetic impulse disorder may be a component of the patient's disability.

Several of these syndromes, such as mental retardation, disorders of communication, and psychoses of childhood, are treated elsewhere in this text and will not be dealt with in detail here.

Hyperkinetic impulse disorder. Hyperkinetic impulse disorder and specific learning disabilities are often grouped together under the headings of "minimal brain injury" or "minimal neurological impairment." The two syndromes often occur together, but they may be found separately.

The possible etiological factors or combination of factors are categorized above. The most recent and possibly most authoritative estimate of incidence has been given by Masland as occurring in from 5 to 10 per cent of the school population. Since various causative factors may occur in all categories of the population, the symptom pictures may be found in all classes. They are more common among the socioculturally deprived, but their impact may be greater in more intellectually oriented groups in the population.

Clinical description. Hyperkinetic impulse disorder may have its onset in the earliest days of life. It is particularly common in firstborn males. Since the new mother is apt to be tense, fearful of inadequacy as a female, and convinced that the newborn, in some mysterious and primitive way, can divine and affirm or deny her essential worth as woman and mother, their initial encounter is fraught with significance.

A newborn who is already afflicted with hyperkinetic impulse disorder may be unduly sensitive to stimuli and may respond in an undifferentiated, massive, aversive manner. This may call to mind Freud's concept that there is a boundary to the developing ego, or *Reitzschutz*, that protects a human organism against being overwhelmed by stimuli and that this is in some way deficient in these infants. When a mother picks up the infant preparatory to feeding and he stiffens, arches his back, spits, squalls, and thrashes in wild protest, to the frantic mother this may represent the awful confirmation of her secret dread—that she has been rejected by the baby as inadequate. Her subsequent attempts to force the baby to conform only stimulate further negative reactions in the baby and may lay the groundwork for an ambivalent but predominantly negative relationship.

Frequently the converse of this sequence occurs, and the child is unusually placid, limp, and floppy, sleeping much and developing slowly in the initial months.

It is more common, though, for the infant to be active in the crib, have a rapid developmental schedule, sleep little, and cry much past the traditional first 3 months of colic. The infant often gets out of the crib on his own very early, undissuaded by the parents' attempts to bar his exit. Once out of the crib and able to get about, the infant is apt to do so relentlessly, getting into everything and generally fingering, breaking, or disintegrating objects. As time goes on, his sphere of activity widens and rapidly encompasses yard, neighboring territory, and street.

The "toddler" phase scarcely exists but is replaced by a gallop. As he gets older, the mother of-

ten complains that his constant activity keeps him from sitting through a meal, other children complain that he can't play ball because he can't stay at his assigned base, fathers complain that they can't teach him to fish or to work with them, teachers complain that he can't stay still in line or sit still in his seat, and so it goes.

Although hyperactivity is one of the hallmarks of this state, it does not always mean that quantitatively the degree of activity is greater than that of other children, though this may be so. Rather, it may be that the activity is relatively continuous and not turned off in inappropriate situations, such as school or church. Hutt and Hutt showed that hyperkinetic children were far less likely than normal children to reduce their locomotor activity when their environment was structured by social limits.

Often coupled with hyperactivity is short attention span or ready distractibility, which may be better viewed as "involuntary." The child is unable, without great and conscious effort, to inhibit his response to any stimulus that comes along, regardless of appropriate meaning or significance. In addition, the child seems incapable of attending to more than one stimulus at a time.

As Hutt and Hutt suggested, the hyperkinetic child is a "short sampler," incapable of attending to any stimulus for more than 10 seconds because of his rapid decay of memory traces. As soon as each stimulus has been explored, its central effects are lost, and the child comes back to it as if it were a fresh stimulus. Serial, repetitive sampling and monotonous, repetitive activity may be important learning and adaptive mechanisms for such children and may contribute to the apparently contradictory behavioral phenomenon of perseveration so often found.

Another set of phenomena, probably related, is impulsiveness and inability to delay gratification. The children are often accident-prone. In school, they may rapidly attack an exam and only do the first two questions, or they may rush quickly but inaccurately through all the questions. They may be unable to wait to be called on in school and may answer for everyone else, and at home they cannot be put off for even a minute.

They seem to have a need to handle and finger things, which often seem to disintegrate in the process. Hutt and Hutt pointed out that in these children, as in very young ones, the primary mode of contact between child and environment is by manipulation; they are seldom able to maintain visual fixations independently of manipulation; and they find it very hard to solve a problem visually before tackling it manually.

The children are often explosively irritable. This may be set off by relatively minor stimuli, and they themselves may seem puzzled and dismayed over this phenomenon. They are frequently emotionally labile,

easily set off to laughter and to tears, and their mood and performance are apt to be variable and unpredictable.

Not all the phenomena described are always seen together; there may be just one or two of these characteristics. Further, each item of behavior is often induced by difficulties in the emotional sphere, as in the child who is hyperactive and irritable as a result of inner tension and anxiety. But these behavioral phenomena may have their origin in altered central nervous system function as well as in emotional disturbance.

There are often other manifestations. Among these are a preoccupation with water play and a fascination with spinning objects. There may also be disturbances in left-right discrimination (internal and projected on the environment); in spatial orientation; in temporal orientation (internal time telling or clock time telling); in visual or auditory perception; in visuomotor performance and hand-eye coordination; in fine motor coordination; in figure-background discrimination; in the abilities to abstract, conceptualize, and generalize; and in the abilities to assimilate, retain, and recall.

Concomitant emotional difficulties are frequent. The fact that other children grow out of this kind of behavior and that the hyperkinetic does not grow out of it at the same time and rate, the variability of performance, the temporary response to pressures, the fact that in most cases the child is not retarded and therefore "has no excuse for his behavior," the general nuisance value and inexplicability of the behavior—all may lead to adult dissatisfaction and pressures. The resulting negative self-concept and reactive hostility are worsened by the child's frequent recognition that he "isn't right inside."

The impaired functions are ego functions, and their poor performance may both create and worsen difficulties in a circular manner. Because of them, the child performs poorly and unacceptably, resulting in criticism and other pressures. The impaired ego may also make it harder for the child to tolerate and adapt to the feelings evoked in him by these pressures. Such children are prone to develop almost any kind of psychiatric disability in response to those special problems, the normal needs for adjustment required in the process of psychological-sexual-social maturation, and those that may be imposed by psychological difficulties within the parents. These children are definitely not immune to the development of true neurotic pictures, but Kurlander and Colodny have stressed that these children may present a superficially identical picture, which they class as "pseudoneurosis."

Mechanism. The basic underlying mechanism for the development of this hyperkinetic picture is not known. In the course of their development, hyperkinetic children outgrow this mode of behavior.

This may be connected with the interrelationship between the diencephalon, which probably is fully formed and in full functional integrity at birth, and the cortex, which is by no means fully formed at birth but continues to grow at least beyond the 5th year of life and possibly to adolescence. One set of theories has suggested a reverberating feedback type of circuit between cortex and diencephalon. This postulates that, as the cortex grows in mass, it is eventually able to exert greater influence and allow for the more organized, localized, and discriminating responses characteristic of growth and for the ability to inhibit, which is one characteristic of maturation. Other theories have stressed the role of the diencephalon as the rostral component of the reticular activating system and its possible role as a first stage sorting, routing, and patterning mechanism for impulses coming in from sensory receptors to the various higher levels of the central neuraxis.

It has been suggested that in the first few months after birth the newborn infant operates under a homeostatic principle that induces great discomfort when any tension accumulates, with a great need to discharge this tension and return to the previously undisturbed state. Dysfunction of the diencephalon could make the individual unusually sensitive to stimuli flooding in from both peripheral receptors and viscera. This could well make a young infant respond with greater than usual urgency to what might otherwise be regarded as a normal amount of tension coming from the usual organic sources, such as hunger or a full bladder, and be hypertonic, querulous, and irritable.

Others have proposed that the rostral portions of the reticular activating system are concerned with ability to respond differentially to stimuli, to inhibit, to establish, and to alter set—all of which seem important in the production of this syndrome.

Diagnosis. Diagnosis has many facets. Most important is the history, which may reveal factors thought to be of etiological significance and also the kind of behavioral characteristics that have been described.

A neurological exam may be negative or show a variety of soft signs. Strabismus, mild central facial weakness, and mixed dominance are common.

Archimedes spiral aftereffect testing may be part of the diagnostic evaluation. In this, the patient stares at a rotating disk on which a black and white spiral has been mounted. With abrupt cessation of the rotation, an afterimage is normally seen, with the illusion of either expansion or contraction of what is being looked at, depending on the direction in which the spiral had been rotating. This is the normal response and tends not to occur in children with cerebral dysfunction with cortical involvement.

Standard scalp electroencephalography (EEG), though often showing no abnormalities, may be use-

ful. Almost any kind of EEG abnormality may be seen, focal or generalized. Bioccipital slow waves or spike-wave complexes are fairly frequent.

A special form of electroencephalography has proved useful and also tends to support the concept of diencephalic involvement. It is an adaption of the photo-Metrazol threshold technique first described by Gastaut as "a clinical neurophysiological test which provides a method for the exploration of certain subcortical structures, among which the most important are those of diencephalon and most especially of the thalamus." The results of this test were given in quantitative form (the photo-Metrazol threshold) as the number of milligrams of pentylenetetrazol (Metrazol) per kilogram of body weight required to obtain a specified type of response clinically and in the EEG when the patient was exposed to the flickering of a stroboscope light within a certain range of frequencies. Gastaut presented evidence to show through both human and animal studies that a photo-Metrazol threshold that was lower than normal indicated damage to or dysfunction of the diencephalon.

Modifying this procedure by using only the appearance of a spike-wave burst in the EEG as the end point and also standardizing on a stroboscope frequency of 15 flashes per second, in children from 7 to 12 years, the normal threshold was established as 6.5 mg. or above, borderline abnormal was 5.1 to 6.4 mg., and less than 5.1 mg. was clearly abnormal.

A group of 50 children who were sufficiently disturbed behaviorally to require residential treatment was selected and divided into two subgroups. One group of 32 children presented the symptom picture of hyperkinetic impulse disorder; the other group of 18 children did not. In the group with hyperkinetic impulse disorder, the mean photo-Metrazol threshold was 4.54 mg. per kilogram. In the group without hyperkinetic impulse disorder, the mean photo-Metrazol threshold was 6.35 mg. per kilogram. Statistically, the difference between the means for the two groups was highly significant.

A further highly instructive finding was the effect of administration of amphetamines (found clinically efficacious in the hyperkinetic picture) on the photo-Metrazol threshold. In a group of hyperkinetics, the mean photo-Metrazol threshold when not receiving amphetamines was 4.8 mg. per kilogram; the same subjects, when receiving amphetamines, showed a mean threshold of 6.7 mg. per kilogram. Thus, the use of amphetamines resulted in a rise of the mean threshold from an abnormally low to a normal figure. The difference between these two means is statistically significant.

Psychological testing may also be of value. Children showing only the behavioral aspects of hyperactivity, distractibility, impulsiveness, and variability tended not to show classical organic signs but on projective testing manifested their characteristic be-

havior in having a flow of associations, contaminations, and inability to delay. In those who showed visual-perceptual difficulties, problems with spatial organization, and other phenomena suggesting cortical and diencephalic involvement, the classical test signs became common. These included performance scores markedly lower than verbal scores on the Wechsler test, impairments of various subtests, distortions shown in the Bender-Gestalt, and organic signs in the projective tests. These, incidentally, often improved, as did the photo-Metrazol threshold, when amphetamines were used.

Psychiatric examination, in addition to clarifying the particular defense mechanisms and conflicts, may suggest the presence of a basic, pervading, organically based anxiety alluded to by Kurlander and Colodny as "primary anxiety" and called "body anxiety" by others.

Treatment. The first requisite is that the physician communicate to both parent and child his concept of the underlying central nervous system aspect and the rationale for treatment. There are wide variations in the possible responses of all concerned—from relief, to indignation, to feelings that this must be something irreparable, to agonizing confirmation of the suspicion that something is different, to a conviction that this must mean being crazy. Opportunities must be provided for ventilation of such feelings. The physician must also give an indication of prognosis. It can be stated with confidence that the hyperkinetic syndrome of behavior will be outgrown—treated or untreated—when the child is between 12 and 18 years of age. As yet, there is no way of predicting for a given individual when this favorable outcome will occur. And this prediction applies with such certainty *only* to the hyperkinetic aspect and not necessarily to learning or emotional complications or sequelae.

Nonetheless, it is important that the hyperkinetic picture be treated without waiting for its eventual disappearance. The mode of treatment is pharmacological, but there is some disagreement as to which medications are most efficacious. In children, there tends to be a paradoxical effect of medications affecting the central nervous system in that sedatives tend to stimulate and stimulants, on the other hand, tend to diminish rather than increase hyperactivity and other components of the syndrome.

There has been extensive experience with the amphetamines, both dextrorotatory and racemic. Which of these forms will work best is quite unpredictable. In children under 6 years, the general range has been 1.25 mg. to 7.5 mg. of the dextrorotatory form, once daily after breakfast, and 2.5 to 15 mg. of the racemic form. For children over 6 years, these figures are doubled. In most cases, a single dose after breakfast is efficacious, but it may be necessary to add another dose during the course of the day or to substitute or combine with longer acting forms. The

dose thus determined needs to be reviewed at 6-month intervals. With maturation, the need may diminish, but with bodily growth it may increase.

With time, the need for the medication will vanish, and this point may be recognized in two different ways. One is that the discontinuance of the medication does not allow the return of hyperkinetic symptoms. The other is that, instead of reducing overactivity, the usual effects of amphetamine—that is, overstimulation—begin to appear.

In evaluating the efficacy of the medication, some possible distortions are to be noted. One is that both child and parents may expect, by some kind of magic, that *all* behavioral problems will be erased and that, if they do not, the medication is not worthwhile. Professionals, parents, and children alike need to keep in mind that emotionally determined problems will not be erased by these medications.

Another important side reaction is that, even if the hyperactivity was due to aberrant central nervous system function, in the course of time it may have become incorporated in the psychic and defensive structure of the child, so that chemical interference with this hyperactivity may evoke great anxiety within the child. Dealing with this requires careful and thoughtful exploration with the child.

Another medication that has been used with apparent success is methylphenidate hydrochloride (Ritalin) in high dosages. Various phenothiazines have been suggested as helpful. Most of these have seemed helpful predominantly where there is anxiety that may have been present before or that may have been stimulated by the abrupt cessation of hyperactivity, which had come to serve a defensive purpose. Particularly useful is thioridazine (Mellaril), 20 to 60 mg. daily.

Another occasionally helpful medication, one without the side effects of the amphetamines, is 2-dimethylaminoethanol, in doses of 100 to 300 mg. daily.

Although these medications may, in a most amazing and beneficial way, control the organically based hyperkinetic aspects, they do nothing directly for emotional ones. When the latter are minimal and purely secondary to the difficulties in accomplishment related to the hyperkinetic picture, they may rapidly vanish without specific treatment. However, as was indicated earlier, these children may be more susceptible than others to the development of significant emotional disturbance.

Stone suggested that there is a link between and a common reservoir for the energy systems of the psychic apparatus and the neural apparatus. If the latter is damaged, then compensatory mechanisms that are called into play require greater than usual energy. This, in turn, makes the psychic apparatus more vulnerable to emotional stress. Conversely, in an emotionally threatening situation, energy being mobilized for psychic defense results in a worsening of

the neurologically based dysfunction, as there is less energy available for the previously used compensatory mechanism. This accords with the frequent observation that the neurologically based dysfunctions worsen under conditions of psychic stress. Conversely, when psychological status is improved, as by psychotherapy, more energy is made available to the central nervous system, with concomitant improvement in the symptoms associated with cerebral dysfunction. The child with cerebral dysfunction not only often needs but can profit from psychotherapy and should not be barred from consideration for it, as has been the case in so many child guidance clinics.

Since anxiety is often tremendously high and the damaged ego impaired in its attempts to adapt to stimuli, the child attempts to control and structure his environment to ensure that sensory experiences are, as far as possible, minimal and predictable. This may result in what look like obsessional and ritualistic maneuvers. These, however, differ from the true neurotic obsession in that there is neither fixation at the anal-sadistic level nor ambivalence in object relationships. These children are capable of intense attachments and open expressions of love and hate. Sarvis suggested that they may defend themselves against an evil self-image and paranoid attitudes by identification with the aggressor, the mother, or extension of the mother in general. This may lead to a danger of characterological effeminacy and may be a hazard to boys with unresolved oedipal attachments to their mothers.

When the children are not only allowed but helped to structure their environment, their anxiety diminishes. Thus their parents and teachers need to set up a structure that is predictable and experiences of manageable intensity. This applies to the physical, temporal, and interpersonal environment alike and should be one of the major areas of work with the parents. It may range from informational aspects to an intensive casework approach in dealing with their feelings of guilt, bewilderment, and hostility. An almost universal requirement is to help the parents recognize that the fashionable permissiveness is not beneficial for these children. They also need to be helped to recognize that, despite their deficiencies in some areas, these children face the normal tasks of maturation and attendant problems, including the need to introject standards and to form a normal, flexible superego. Therefore, they do not benefit from exemption from the requirements and expectations applicable to other children.

Stone cautioned the therapist to be careful in his interpretations, to focus on the reduction of irrational anxiety and guilt, to counteract feelings of omnipotence, to neutralize projections, and to improve reality testing. The therapist may need to be more than usually active, serve as an auxiliary ego, help the patient recognize the areas of realistic de-

iciency, and work with him on means to overcome this problem.

Specific learning disability. Specific learning disability is frequently associated with hyperkinetic impulse disorder, though each may occur alone. Specific learning disability refers to an impairment of the ability to learn scholastically up to a level appropriate to the individual's intellectual endowment. It is due to some disorder of cerebral function, rather than being emotionally, intellectually, or socially determined. There are many possible reasons for impairment of learning ability, dealt with in detail in other sections of this book. It is only desired here to emphasize that abnormal cerebral function may in itself be a significant cause, possibly in 5 to 10 per cent of school children.

Acute and Chronic Brain Disorders

As cited in the A.P.A. classification, acute and chronic brain disorders tend to be characterized by impairments of orientation, memory, intellectual functions, judgment, and affect.

Syndromes associated with intracranial infections. In the acute phase of epidemic encephalitis, encephalitis lethargica, or Economo's disease, the children may be hyperactive, excited, anxious and apprehensive, or confused, with delirium and hallucinations. In the chronic phase, they may be completely uninhibited, aggressive and destructive in uncontrollable rages, sexually preoccupied, emotionally labile, selfish, and suspicious. They may be moody, have spells of crying, laughing, or screaming, and have hallucinations. Sometimes, but by no means always, there may be accompanying intellectual deterioration.

In St. Louis encephalitis, headaches, lethargy, and seizures are often noted in the acute phase, and irritability and changes in behavior such as described above are relatively uncommon in later phases.

Measles encephalitis seems to induce personality changes a number of years later in a relatively high proportion of children. Phenomena seen include hyperactivity, difficulties in concentration, ties, tantrums, emotional lability, pointless fabrications, and impairment of school performance, which may be associated with impairment of verbal abilities, confusion of figure-ground relationships, and perceptuomotor distortions.

Pertussis encephalopathy is a much less common complication, but in those who incur it, the late sequelae are apt to be severe. In addition to the usual hyperactive, unpredictable, impulsive, and destructive behavior, there may be disturbances of relationships and reality testing severe enough to be classed as prepsychotic or psychotic.

Case reports of infectious mononucleosis encephalitis, of influenzal encephalitis, and of mumps meningo-encephalitis in children are alike in suggesting a rela-

tive and remarkable freedom from significant psychiatric sequelae.

The meningitides are more likely to result in neurological and intellectual defects than in significant psychiatric residuals.

Syndromes associated with poisons or drugs. These are prominently represented by lead poisoning. In the acute phase, the symptoms may be predominantly neurological, with irritability, convulsions, and coma. Some studies have suggested that there may be a sociocultural aspect to the ingestion of lead-containing substances, reflecting lack of care and supervision and proper maternal training or a culturally derived habit of clay eating. Many authors stress that this behavior is purposeful, occurring in a setting of emotional disturbance and family tension. This may contribute to the emotional instability so common in the late sequelae of lead poisoning. Many children become markedly retarded. Others have lesser degrees of intellectual deficit but tend to be hyperactive and distractible and have visual-perceptual and visuomotor problems and specific learning disabilities. In one study, out of 20 children who had suffered lead poisoning in early life, only 1 was performing adequately in school.

Barbiturates may result in clouded sensorium, impaired judgment, and mental deterioration.

Amphetamines—along with barbiturates, alcohol, and agents such as lysergic acid diethylamide (LSD)—are being used increasingly by adolescents for alterations of mood, alertness, energy, and states of consciousness, which are their acute effects. In adults, depression and psychotic states have been described with continued use, and reports of similar results may be expected for adolescents.

Gasoline addiction, in the form of inhalation, deserves some attention. This, along with sniffing of tar, is something seen commonly but transiently in many young children. A few, however, become really addicted to it. In the acute phase, while sniffing, they may have hallucinations, auditory and visual, then become drowsy and lose consciousness. In the chronic phase, there are predominantly signs of neurological disability. It is interesting that one child who practiced this habit for 11 years showed no evidence of a chronic brain syndrome.

Glue sniffing—sniffing of tubes of plastic cement and airplane glue—was quite common in the early years of this decade but seems somewhat less prevalent now. The acute phase is characterized by euphoria, excitement, exhilaration, and altered body sensations. There may be neurological phenomena, such as ataxia, diplopia, tinnitus, drowsiness, stupor, and unconsciousness. In the subacute phase, there may be irritability, inattentiveness, and episodes of drowsiness and unconsciousness. There have not, as yet, been reports of chronic brain syndrome.

Medications given for therapeutic purposes may induce hallucinations.

Congenital syphilis. Formerly a frequent problem, congenital syphilis is much less so now. The now rarely seen juvenile general paresis may result in progressive mental deterioration. There may be apathy, forgetfulness, irritability, restlessness, night terrors, temper tantrums, and impulsive behavior, often antisocial. Less often than in adults, there may be euphoria, expansiveness, delusions, and hallucinations.

Disorders of growth, metabolism, and nutrition. Among the inborn errors of metabolism, phenylketonuria has been prominently mentioned as contributing to mental retardation. There has been an increasing number of observations of altered behavior, not only in those who are retarded but also in children who present the same metabolic defect but without significant retardation. They may have a dull, expressionless facies, be negativistic and apprehensive, and have speech disturbances. Others are reported to display striking psychotic behavior, manifested by withdrawal from reality, failure to relate to people, echolalia, and stereotyped, catatonic-like posturing. There may be loosening of associations, rambling, bizarre and disconnected, primary process type of thinking.

Another inborn error of metabolism said to evoke a psychotic picture is that of cystathioninuria.

Acute porphyria may be accompanied by confusion, irritability, restlessness, insomnia, delirium, and hallucinations.

Dietary deficiency—as of niacin in pellagra, of thiamine in beriberi, and of the very prevalent kwashiorkor in deprived areas of the world—may lead to apathy, increased irritability, and some degree of intellectual impairment.

Endocrine disturbances may have psychiatric complications. In diabetes mellitus, hypoglycemia associated with difficulties in establishment of insulin dosage is common and may result in confusion and irritability. Hyperthyroidism may cause tension, anxiety, irritability, and emotional instability.

Intracranial neoplasms. These are not so often associated with personality and behavior disorders in children as in adults. One form in which they are relatively common is that of craniopharyngioma, where there are apt to be mood swings, lassitude, inertia, sadness, hallucinations, and excitement.

It has been suggested that there is a characteristic difference in reaction between children suffering from cerebral and from cerebellar tumors. The latter are said to be generally sweet, cooperative, and alert, and the former are said to be irritable and uncooperative.

Other than these statements, most reviews suggest that there is nothing really specific about a child's reaction to an intracranial tumor. Regressive tendencies, emotional instability, irritability, anxiety, withdrawal, and learning difficulties seem to reflect the fact fundamentally that cerebral functioning is

impaired. This interferes with the child's ability to deal with emotional stresses already present and now intensified.

Familial dysautonomia. A central nervous condition, not a tumor, that evokes similar effects is that of familial dysautonomia. The behavioral picture resembles that of hyperkinetic impulse disorder, with marked body anxiety and many secondary emotional reactions in child and parents.

Syndromes associated with trauma. In the acute phase, the patient may be delirious, confused, and stuporous to comatose. But the sequelae are of more concern. In many respects, children may show a post-concussion syndrome that is very similar to that noted in adults and about which there is continuing argument as to how much is neurologically based and how much is psychologically based.

The children may display marked irritability, restlessness, difficulty in concentration, ready fatigability, emotional instability, headaches, vertigo, sensitivity to change in position and to lights, noise, and confusion. Some degree of amnesia is characteristically present, and there may be some degree of impairment of intellectual functioning. Withdrawal, aggressiveness, and enuresis are common. So are sleep disturbance and the persistent recurrence of anxiety dreams in which the real or fantasied circumstances of the accident are recapitulated.

Undoubtedly, there are important psychological aspects to this. Symbolically as well as factually, the head contains the organ of control, and injury to it raises the specter of loss of control, including fantasies of insanity. Children, like adults, who have had a head injury in circumstances beyond their control may feel and fear that nothing is safe and predictable and may generate tremendous anxiety on this account, especially since the parents were unable to protect against this trauma.

Children, however, have a special vulnerability. As they go through the various phases of psychosexual development, acculturation, and superego formation, almost every phase has components or potentials for ambivalent or straightforward hostile and aggressive feelings within the child. Because of the characteristics of childish and primary process thinking, it is common and almost inevitable that the child will react to the traumatic accident as punishment and retaliation for his unacceptable wishes and thoughts. He may not only fear repetition of this or similar incidents, because the underlying drives or wishes continue unabated, but fear this even more because of the reactive hostility generated by the trauma he has suffered.

The situation is often worsened by implicit parental prohibition against some catharsis and working through of the traumatic event and the child's feelings. So often, the parents, meeting their own needs but justifying their actions on the ground that the child shouldn't be reminded, forbid discussion of the

event and develop elaborate schemes for avoidance of it. This not only prevents abreaction but makes it an even more frightening and menacing event as far as the child is concerned. Thus, regardless of the as yet uncertain proportion or contribution of a neurological component, psychotherapy for the child and counseling for the parents are often indicated.

A complication of head injury, subdural hematoma is more apt to result in neurological and intellectual deficit than any significant psychiatric picture.

Epilepsy. Common to all the diverse manifestations of epilepsy is some alteration in the state of consciousness and some impairment of complete control of actions. Both aspects may have psychological implications for both the patient and significant others—parents, teachers, siblings, other children and their parents.

Regardless of the type of seizure, there is often a distortion of the body image and self-concept. Sometimes this appears as a vague generalized unease or feeling that something is wrong. Sometimes there is an amazing specificity and, even in cases where there has not been a clinical diagnosis of epilepsy as yet, the child may have a conviction of something being wrong in the head. Since the head is so heavily cathected as the organ of control and is often sexualized and endowed with phallic significance, this may lead to a child's view of himself as crazy, impotent, or out of control. This, in turn, may be responded to by aggressiveness, withdrawal, inability to learn, counterphobic mechanisms, and a vast variety of behaviors that either act out or deny these distorted views of himself.

Grand mal seizures. In the most common form of epilepsy, grand mal, the patient is generally thought to have no awareness or recollection of the seizure itself, though he may have some recollection of the aura, when one is present, and may react to it as a warning of impending death. Unless he has his seizures only in sleep, this is likely to mean that he may suddenly awaken to find himself bruised, soiled and wet, with bitten tongue, surrounded by a ring of curious and horrified onlookers. This is enough in itself to make him think there must be something horribly wrong with him. This feeling would certainly be intensified by the negative reactions, on up to actual ostracism, of teachers, playmates, and their parents. Although this type of reaction is fortunately diminishing with the spread of public information and understanding, it is by no means entirely absent today. This, too, creates or accentuates a poor self-image, with the kinds of psychological reactions previously indicated.

Special note must be made of the reactions of the parents. Very often, despite the spread of intellectual understanding, they react—consciously or unconsciously—to the presence of grand mal seizures as a curse and affliction, a punishment for them, ret-

tribution for some misdeed in act or thought. They anxiously search their past and that of their marital partner for what it was that might have brought this upon them—masturbation, sexual activity, disobedience or hostility to parents, hostility to siblings, tainted stock, and a whole host of malignant fantasies. With this, come ambivalent feelings toward the afflicted child—pity and anger.

One of the most common reactions is overprotection, sometimes, unfortunately, fostered by medical and other advisers. The parents may limit the child's range of activities in all sorts of ways "so that he won't hurt himself in a spell." A variant of this is to fail either to set limits for the child or to require performances from the child unlike those the same parents would set or require for their other children. Both these modes of overprotection are exceedingly damaging to the child. They confirm his view of himself as someone different and interfere with the process of socialization and internalization of controls, with obvious distortion of psychological development.

Petit mal seizures. The situation is not so drastic for the child with petit mal or its variants, but there are similarities. The child with petit mal, who has sudden lapses of consciousness, may find it inexplicable and distressing that he seems to have missed something the teacher was saying or that he is suddenly behind the others in what they are reading. A child with akinetic or myoclonic seizures may be tremendously disturbed over the fact that, while drying the dishes, he suddenly drops or hurls a dish—not just once but many times. The frequent anguished cry is: "What's the matter with me? I must be crazy!"

Seizures with behavioral alterations. There are seizure types in which alterations of behavior may be the outstanding symptomatic manifestation. First in prominence is the grouping of temporal lobe or psychomotor seizures. Here, the seizure may be characterized by automatisms and aggressive outbursts ranging from verbal expressions of rage to actual destruction or assault. Some patients with bilateral temporal lobe EEG abnormalities have been described as psychotic.

Scott and Kellaway gave a more precise account of the types of psychic phenomena that may be encountered in temporal lobe epilepsy. These include (1) hallucinations, generally reliving an emotionally charged experience; (2) perceptual illusions, temporary distortions of subjective relationships with surroundings; (3) change of emotional tone, most often fear, terror, or dread; (4) disorders of thought or language, arrest of thinking processes, aphasia, forced thoughts or words; and (5) automatisms, actions, simple to complex.

There have also been accounts of behavioral disorders in children who showed a temporal or occipital spike focus without any overt evidence of sei-

zures. These children could show a hyperkinetic picture or oscillations in behavior, difficulty in relating to others, withdrawal or hostile aggressive attacks, enuresis or nightmares, or poor school work and paroxysmal headaches.

Contrasted with this is the description by Goldensohn and Gold of prolonged episodes of behavioral disturbance, which seemed similar to temporal lobe epilepsy but which, in the EEG, showed only generalized and not temporal lobe abnormalities. These episodes lasted as long as 72 hours, with confusion, hostility, negativism, withdrawal, with or without automatisms, but with apparent retention of consciousness.

Another type of seizure is that described by Gibbs and Gibbs as "hypothalamic and thalamic epilepsy," with which they associate the 14 per second and 6 per second positive spike pattern in the EEG in the sleep state, with attacks of rage and antisocial and vicious behavior, including murder, as possible concomitants of such seizures.

Epileptic personality. Conflicting accounts as to the interseizure behavior of epileptics raise the often debated question of the epileptic personality, described variously as egocentric, sensitive, irritable, rigid, resistive, suspicious, and hostile. This is complicated by the problem of subclinical seizure activity. Many studies with depth intracerebral electrodes have shown that there may be abnormal subcortical electrical activity, even when the scalp or direct cortical electroencephalogram shows no abnormality whatsoever. Conceivably the behavior of an epileptic between overt seizures may reflect the effects of subclinical seizure activity. Then there is the contribution to the epileptic's behavior of his own adversely altered self-image and his reactions to the real or fantasied depreciation of him by others.

Some small part of what has been considered the epileptic personality may derive from the frequent concomitant presence of hyperkinetic impulse disorder. Many of the medications used to treat epilepsy tend to accentuate and make worse or even to precipitate the appearance of hyperkinetic impulse disorder. They may also unfavorably alter other behavioral characteristics, obtund the individual or make him more irritable, depressed, or suspicious and thus contribute to the stereotype of the epileptic personality.

The seizures themselves—particularly those that are severe, prolonged, and repeated—can cause or accentuate a process of cerebral deterioration and the development of a chronic brain syndrome. They can have a particularly potent effect in this direction when the epilepsy is of the organic or symptomatic type. There is, therefore, a predisposition toward a chronic brain syndrome to begin with.

Taking all these aspects together, the epileptic per-

sonality does not seem to be a necessary and typical accompaniment of convulsive disorder.

Intellectual effects. The problem of intellectual capacity and function is significant emotionally because of the stereotype of inevitable intellectual deterioration being associated with epilepsy and the reverberating impact this may have on significant adults and then the child. There may, indeed, be some interference with learning because of the frequent association of hyperkinetic impulse disorder and of specific learning disability. Clinical and subclinical seizures may hamper learning capacity. So may medications used to control the seizures. So may the child's emotional turmoil.

But with present day medications and methods, epileptics, excluding those whose epilepsy is originally due to a profound cerebral insult, have the same range of distribution of intellect as the general population. The efforts of public health educators and lay organizations to communicate this will help to reduce not only the misinformation but also some of the emotional hazards connected with epilepsy.

Emotional factors. The role of emotional factors in epilepsy—in precipitation and in treatment—is an area in which some rather sweeping statements have been made. Perhaps to counteract the thesis that an epileptic grand mal was a recapitulation of man's ancestral piscine struggle to get out of the water onto dry land, the hypothesis was offered that an epileptic seizure was an attempt on the part of the patient to dive back into the uterine existence from which he had been dispossessed. These both seem as fallacious as most sweeping generalizations. Bona fide epilepsy seems to require some biological, physicochemical abnormality or predisposition. Given this, stress—generalized or specific—may precipitate a particular seizure, which is not the same thing as causing the epilepsy. In a person who does not have the epileptic predisposition, a similar constellation of emotional stresses and psychological structure will be reacted to in ways other than the production of a seizure.

Nonetheless, emotional aspects are very important. The very existence of seizures may create highly important psychological difficulties. In turn, emotional conflicts may precipitate seizures. Next, in a setting of emotional disturbance, seizures may, symptomatically at least, diminish this. There are two possible mechanisms for this. One may be relatively physiological, in that the seizure may literally discharge tension. Another may be symbolic, because of the particular psychological meaning of the seizure to the child or significant adults—punishment, expiation, orgasm, death, resurrection, etc.

The important thing to note is that there is no single, classical, pathognomic constellation of psychodynamics, interrelationships, and family involvements that inevitably and invariably causes or results from epileptic seizures; there are, rather, a whole

host of special and different situations. Gottschalk has tried to find a common denominator. He has speculated that there is a blocking of any nonspecific drive or strong emotion from gratification or expression by either an internal autonomous inhibiting factor or an external agent or situation. When this occurs in children who have a lower seizure threshold and less mature and more primitive impulses and emotions than other children, they are apt to respond with seizures. In these mixed pictures, psychotherapy is of the utmost value, reduces the tendency toward seizures, speeds a favorable outcome, and diminishes the need for medication.

As a final grace note, one may refer to the phenomenon, shared by the idiots of whom Dostoevsky wrote and by the great Russian author himself, of deriving gratification from a seizure, so that some have found means to induce it. More common in retardates than in geniuses, it may be for some the equivalent of an orgasm; for others, it may be relief from a drab existence; for still others, it may be at least an end to the tormenting feelings building up as a prodrome to a seizure.

Suggested Cross References

Organic brain disorders are also described in Chapters 18, 19, 20, and 21 in Area F, which deals with the psychiatric disorders of adults. Chapter 10, on neurology, and Chapter 22, on mental retardation, also contain information relevant to this subject. Fundamental concepts of neuroanatomy and neuro-

physiology are presented in Sections 2.5 to 2.9 in Area B, on the basic behavioral sciences.

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Chapter 43

Psychiatric Treatment of Children

43.1 INDIVIDUAL PSYCHOTHERAPY

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History

Reconstructing the history of psychotherapy for children is complicated by uncertainties in delineating the limits of what processes should be labeled psychotherapy. This difficulty is greater with child psychotherapy than with adult psychotherapy because of the superficial resemblance between some child psychotherapeutic techniques and many of the usual practices employed in rearing and educating children. As a consequence, there is a risk that something may be designated as psychotherapy not because of the nature of the process but as a consequence of the child's emotional disturbance and the professional's preference to consider his interventions to be psychotherapy, regardless of their substance.

Evidence of direct therapeutic contact with children prior to the 20th century is rare. Until this century, formal efforts to cope with emotional and mental disturbances in children generally took the form of advising the parents about alternate means of handling their children. The experts rarely confronted the child directly in an effort to alter his clinical course. A noteworthy exception was the celebrated efforts of the French otologist, Jean Marc Gaspard Itard in the latter part of the 18th century. Itard adopted Victor, a prepubertal boy who was assumed to have lived the bulk of his life as a savage with animals in the forests of Aveyron. Itard undertook to civilize and educate Victor in a manner that conceivably might be considered psychotherapy.

The modern era of child psychotherapy is generally thought to begin with Sigmund Freud's famous case report of little Hans, a 5-year-old phobic child. Though the approach employed with little Hans should unquestionably be labeled psychotherapy, it is of historical significance to note that it was the young patient's father, a physician, who, under Freud's direction, was the psychotherapist.

Sandor Ferenczi, in the 2nd decade of this century, reported the first attempt at direct psychoanalytic treatment of a child without the use of an intermediary, such as little Hans' father. Ferenczi found that the psychoanalytic method, as then used with adults, was not feasible with his young patient, who readily became bored with this approach and wanted to return to his toys.

It was only after it was recognized that a child's play could be considered a valid means of communication that child psychoanalysis was developed as a direct psychotherapeutic approach to the child. The central role of play in the development of modern child psychotherapy has been compared to the historical significance of hypnosis in adult psychiatry. Each has contributed considerably to the understanding of unconscious mental phenomena.

Women who had the advantage of experience with children as well as backgrounds in psychoanalysis devised the means of utilizing play in treating emotionally disturbed children without the use of an intermediary. Hermine von Hug-Hellmuth published the first such report 8 years after Ferenczi described his abortive attempt. The major credit, however, for the subsequent development of child psychoanalysis belongs to Anna Freud and Melanie Klein. Melanie Klein's theoretical assumptions about the similarity of the child's and the adult's personality structure were expressed in the development of a therapeutic technique that considered the child's free play as a substitute for the adult's free associations. Anna Freud, giving more credence to the child's inevitable dependence on his parents, evolved a different technique. As she has recently observed, the early days of child analysis were marked by a prestigious tendency to emphasize the similarity between the processes of analysis with children and adults. The principal differences recognized then were the absence in child analysis of free association and transference neuroses. In recent years, as the development of a transference neurosis has come to be considered the *sine qua non* of classical psychoanalysis, transference neuroses have been observed during the course of child analysis. Concurrently, there has been a paradoxical decrease in the insistence of child analysts

that there is no distinction between the processes of child and adult analysis.

In the United States, the development in the 1920's of the child guidance clinic movement under the aegis of the National Committee for Mental Hygiene and the Commonwealth Fund gave much impetus to widening the scope of child psychotherapy, enabling it to reach its current status in this country. Lawson Lowrey credits David Levy with giving the first report, never published, on play therapy at the 1925 meeting of the American Orthopsychiatric Association.

Types of Psychotherapy

Psychotherapy, regardless of the age of the patient, has evolved so that practitioners tend to think either that there are several different psychotherapies based on varying frames of reference or that there is only one psychotherapy with the potential for a variety of different emphases. In either event, psychotherapy can be classified in several ways, based on various features of the process.

A common frame of reference for classification is the global one, which takes into account the general aim and mode of the treatment resulting in supportive-suppressive-directive and expressive-exploratory-ventilative types of psychotherapy. Focusing on the therapist's attitude or the influence that he endeavors to exert, psychotherapy can be classified as being abreactive, interpretive, suggestive, persuasive, educative, etc. It is possible also to describe psychotherapy in terms of its depth, duration, and intensity. Emphasizing the theoretical concepts favored by the practitioner results in labeling therapy with eponyms such as Freudian, Kleinian, Rankian, and Rogerian.

Probably one of the most commonly used bases for classification of child therapy is the identification of the factor that is presumed to be the most helpful for the young patient. The history of psychotherapy has been punctuated by different factors or processes being emphasized at one time or another as the vitally essential element without which psychotherapy would not be effective. Suggestion, persuasive exhortation, and reassurance were the most prominent psychotherapeutic techniques prior to the ascendancy of psychoanalysis. In the infancy of psychoanalysis, symptomatic relief was attributed to the fact the patient had rediscovered a lost memory. Shortly thereafter abreaction, the release of dammed up emotions, was highlighted. With further development of psychoanalytic thinking, the emphasis shifted to modification of superego standards, identification with the therapist, development of increased emotional discipline in the working through process, the development of insight, and expansion of ego functioning.

Concurrently, there has been a waxing and waning of prominence accorded conditioning factors, such as motivating needs, stimulating cues, and the reinforce-

ment of reward and punishment. Similarly, improvement has been perceived as developing from a deconditioning process that may involve systematic desensitization or a manipulation of the therapeutic relationship so as to provide a corrective emotional experience.

Clearly, many of these factors overlap, and many are comparable with others, despite the fact that they are articulated in different conceptual frameworks. For example, subtle persuasion, operant conditioning, and fostering identification with the therapist probably entail similar processes. Efforts to attribute therapeutic progress with *all* patients to a single factor are unconvincing. It is likely that all the factors mentioned assume varying degrees of significance under different circumstances. Although none of these factors is specific for any particular age group, it is evident that with children the relationship and corrective emotional experiences exert a greater influence than they do with adults.

Isolating a single therapeutic element as the basis for classification is somewhat artificial, as each of these factors is present, in varying degrees, in every child psychotherapeutic undertaking. For example, there is no psychotherapy in which the relationship between therapist and patient is not a vital factor; yet child psychotherapists commonly talk of relationship therapy to describe a form of treatment in which a positive, friendly, helpful relationship is viewed as the primary if not the sole therapeutic ingredient. Probably one of the best examples of relationship therapy is found outside a clinical setting in the work of the Big Brother organization, highlighting again the difficulty encountered in drawing a fine line between psychotherapy and child-rearing and educational practices.

Remedial, educational, and patterning psychotherapy endeavor to teach new attitudes and patterns of behavior to children who persist in using immature and inefficient patterns. Often, though not invariably, these are presumed to be due to a maturational lag resulting from some organic deficit that is difficult to define.

Supportive psychotherapy is designed primarily to enable a youngster to cope with the emotional turmoil engendered by a crisis.

Release therapy, described initially by David Levy, facilitates the abreaction of pent up emotions. It is this factor in psychotherapy that is publicized in the popular news media, probably because it is easy for laymen to grasp the idea of a youngster deriving benefit from venting a feeling such as hostility in a play situation. Although abreaction is an aspect of almost all therapeutic undertakings, in release therapy the treatment situation is structured to encourage only this factor. It is indicated primarily for pre-school age children who are suffering from a distorted emotional reaction to an isolated trauma.

Psychotherapy with children is often psychoana-

lytically oriented, which means that it endeavors through the vehicle of self-understanding to enable the child to develop his potential further. This is accomplished by liberating for more constructive use the psychic energy that is presumed to be expended in defending against fantasied dangers. The child is generally unaware of these unreal dangers, his fear of them, and the psychological defenses he uses to avoid both the danger and the fear. With the awareness that psychoanalytically derived psychotherapy facilitates, the patient is in a position to evaluate the usefulness of his defensive maneuvers preparatory to relinquishing the unnecessary ones that constitute the symptoms of his emotional disturbance.

This is to be distinguished from child psychoanalysis, a more intensive treatment, in which the unconscious elements are interpreted systematically in the sequence of affect-defense-impulse. Under these circumstances, transference manifestations may mature to a full transference neurosis.

Though interpretation of dynamically relevant conflicts are emphasized in these psychoanalytic descriptions, this does not imply the absence of elements that have been the basis for naming other types of psychotherapies. Indeed, in all psychotherapy, the child should derive support from the consistently understanding and accepting relationship with the therapist, and varying degrees of remedial, educational guidance and emotional release are inevitably present.

Differences between Children and Adults

It is often assumed that therapy with children should consume less time than therapy with adults. Experience, however, does not confirm this expectation. This observation has been explained by a relative deficiency in children of many of the qualities that are prerequisites for successful psychotherapy.

For instance, a child typically begins psychotherapy because some adult in his environment has decided he should have it. As a consequence, one of the first tasks for the psychotherapist is stimulation of the child's motivation for treatment. In fact, children are often brought to psychotherapy not only against their wishes but also without the benefit of parental support because the parents may be blind to the child's needs and seek help only because of pressure from educational and legal agencies. Thus, the child in psychotherapy, in contrast to many adult patients who see advantages in getting well, may envision therapeutic change in terms of conforming to a disagreeable reality.

Furthermore, children tend to externalize internal conflicts in search of alloplastic adaptations. This causes the child's view of therapy to diverge from the therapist's. Although many adult patients anticipate solutions resulting from internal change, children find it difficult to conceive of doing anything other than altering an obstructing environment. It is inconceiv-

able to the passive masochistic boy, who is the constant butt of his schoolmates' teasing, to rectify this situation by altering his mode of handling his aggressive impulses rather than by controlling his tormentors. This view may be reinforced by parental agreement.

The tendency of children to immediately reenact their previous feelings in new situations facilitates the early appearance of spontaneous and global transference reactions that often prove troublesome. Concurrently, the eagerness that children have for new experiences, coupled with their natural developmental fluidity, tends to limit the intensity and therapeutic usefulness of subsequent transference developments.

Children have a limited capacity for self-observation, with the notable exception of some obsessive children who resemble adults in this ability. These obsessive children, however, isolate the vital emotional components. In the exploratory interpretative psychotherapies, development of a capacity for simultaneous emotional involvement and self-observation is most helpful. Only by means of identification with a trusted adult and in alliance with that adult are children able to approach such an ideal. Furthermore, the age appropriateness of primitive mechanisms such as denial, projection, and isolation hinders the process of working through, which relies on a patient's synthesizing and integrative capacities.

Though children compare unfavorably with adults in the above qualities that are generally considered desirable in therapy, they have the advantage of active maturational and developmental forces. The history of psychotherapy for children is punctuated by efforts to harness these assets and to overcome the liabilities cited above. Recognition of the importance of play constituted a major forward stride in these efforts.

Therapeutic Techniques

The playroom. Scott has discussed the structure, design, and furnishing of the playroom suitable for child psychotherapy. He favors Klein's suggestion that the number of toys be few, simple, and carefully selected, so as to facilitate communication of fantasy. This contrasts with Axline's view that a wide variety of playthings be available, so as to increase the range of feelings that the child may express. These contrasting recommendations have been attributed by Brody to differences in therapeutic methods. Axline tends to avoid interpretation, even of conscious ideas, whereas Klein, at the other extreme, recommended interpretation of unconscious content directly and quickly. In teaching a flexible technique emphasizing neither of these extremes, the author has observed that therapists tend to change their preferences in equipment as they accumulate experience and develop confidence in their ability. Inexperienced therapists seem to derive a sense of se-

curity from having a large variety of playthings available. They stock their playrooms, for example, with many competitive board games, which they subsequently regret because these games can be so absorbing that they readily serve the purposes of resistance to therapy.

Initial approach. There is no standard initial approach to children in psychotherapy. Variations are derived from perception of the child's needs and the therapist's individual style. The range extends from those in which the therapist directs the child's thought content and activity, as in release therapy and certain educational patterning techniques, to those exploratory methods in which the therapist endeavors to follow the child's lead. Even though the child determines the focus, it remains the therapist's responsibility to structure the situation. Encouraging a child to say whatever he wishes and to play freely, as the therapist does in exploratory psychotherapy, establishes a definite structure. The therapist has created an atmosphere in which he hopes to get to know all about the child. He may communicate to the child that it is not the therapist's task to get angry or to be pleased in response to what the child says or does but rather that he is in the business of understanding children. This does not mean that therapists do not react emotionally, but it assures the young patient that the therapist's personal feelings and standards are subordinate to his wish to understand the youngster.

A child whose disagreeable behavior has typically evoked a negative reaction from everyone may be threatened by this new apparently unconcerned person, the therapist. It may seem unbelievable to a child that a strange adult he is seeing only because of his bad behavior appears to like the child with no knowledge of him other than the bad behavior. The more benign the therapist's attitude, the more horrid are the punishments the child may fantasize. When this is the case, it is incumbent on the therapist to communicate his understanding of the child's apprehensions about the neutral therapeutic approach.

An inhibited, neurotic child who is the product of a rigid home and a highly organized school may experience mounting anxiety in response to the apparent absence of structure in the psychotherapeutic situation. From his superego-oriented view of the world, such a constricted child feels that the neutral therapeutic situation invites forbidden instinctual expression. Once again, the therapist's verbalization of his understanding of the child's anxiety helps to clear the air.

Nothing induces a child to participate in therapy so readily as the therapist's demonstrated understanding of him. This may take the form of clarifying the child's reaction to the therapeutic situation, as described above, or it may entail interpretation of affect and defense preparatory to subsequent interpretation of impulses. Experience has dictated that

such activity often precludes the necessity for the introductory phase that used to be considered a vital preparation for child analysis and other exploratory psychotherapies with children. This introductory phase involved risky devices, such as promising the child a cure, joining the child in criticism of his parents, courting the child's affections in all conceivable fashions, exaggerating the gravity of a symptom and thereby frightening the patient, making oneself interesting to and useful to the patient. Such methods are rarely used today except with extremely regressed and withdrawn children. The demonstration of understanding that has replaced these introductory maneuvers should not assume an aura of magical mind reading. Rather, it should convey to the child that the therapist knows something about emotionally disturbed children, that he likes to help them, and that he has great faith in the value of understanding.

Communication. Some children participate in play activities immediately and verbalize spontaneously without assistance from the therapist; others appear to require considerable help. Responsive to the child's apparent needs, the therapist assumes either a relatively passive, observing role or a more active, intervening one.

Children generally are not so verbal as adults, making it vital that the child therapist appreciate and accept the importance and value of nonverbal communication. The child's facial expressions, gestures, posture, and motility and the content, form, and configuration of his play and art may say more than his words. Adopting this attitude, of course, essentially reverses the value placed on language in adult communication.

Furthermore, the child therapist must be prepared to adjust to the varying connotations attached to the same words and phrases by people of different ages. One of the most striking examples is the word "why," probably the most commonly used word in psychotherapy with adults. As such, it is expressive of the therapist's effort to understand. Children, however, often seem to react to the question "Why?" as if it were an accusation. Thus, even if the child's capacity for abstract thinking is sufficiently mature to enable him to appreciate that the therapist is interested in determining causal relationships, the child may regard an evasive "Because" as a suitable response. In all likelihood, whenever the child was asked to explain his actions or thoughts in the past, the questioner was not so much interested in establishing causal relationships as he was in being assured that whatever questionable thing the child had said or done would not be repeated. To test this assertion, the reader should observe queries directed by parents to children as to *why* something was said or done. This question rarely, if ever, inquires about approved deeds or thoughts. It is phenomenal how infrequently children, whether emotionally disturbed or not, are exposed to an interest in the motivational

forces underlying *valued* thoughts and deeds. It is no wonder that sensitive children in psychotherapy automatically translate the word "why" into criticism and disapproval. The result is that the message sent by the therapist is not the same message that the child receives.

Therapeutic interventions. Therapeutic interventions with children encompass the same range as those employed with adults in psychotherapy. If one regards the amount of therapist activity as the basis for a continuum, at the lower end are the questions posed by the therapist regarding the patient's statements or behavior. Closely aligned is the process of clarification of the patient's manifest productions by means of questions, recapitulation, or reorganization. Next, there are exclamations and confrontations in which the therapist directs attention to some data of which the patient is cognizant but which the therapist thinks the patient should attend to at the time. Then there are interpretations designed to expand the patient's conscious awareness of himself by making explicit those elements that have previously been implicitly expressed in his thoughts, feelings, and behavior. Beyond interpretation, the therapist may offer the patient new information, information that is new because of the patient's lack of experience. At the most active end of the continuum, there is advising, counseling, and directing, designed to help the patient adopt a course of action or a conscious attitude.

There are, however, some vital differences in the ways these interventions are employed with children and adults. The probable fate of broad, open-ended questions is illustrated vividly by citing the book title *Where Did You Go? Out. What Did You Do? Nothing*. To avoid such responses and to encourage verbal and nonverbal associations, the child therapist needs to be far more specific, focusing his questions on what the child is just about ready to express. The best clues, of course, come from what the child has already communicated. In essence, the therapist asks the child to elaborate on what he has already said or done. The therapist should not sound as though he is quizzing the child and invading his privacy. The more the therapist can imply curiosity, not unlike that of another interested youngster, the greater the likelihood of fruitful response.

This apparent naiveté should be tempered with awareness of the risk of asking questions that may seem devious to the child, such as those to which the therapist obviously knows the answer. For example, if the therapist, in his initial contact with the child, inquires about the reasons for the consultation, the child, who assumes rightfully that his parents have already told the therapist, may wonder whether the therapist is being dishonest. It can make a great deal of difference to the child if the therapist states that he already knows the parents' reasons for consulting him but that he is interested in the child's ideas. Simi-

larly, the therapist who inquires as to what dolls are doing, in an effort to have the child elaborate on the fantasy underlying the doll play he is observing, will very likely get a minimal return, since, from the child's point of view, what the dolls were doing should be obvious to the therapist. It would be more productive for the therapist to make running comments describing the dolls' activities, like a television announcer at an athletic event. Under those circumstances, the child often responds by elaborating on the therapist's description, thereby facilitating the approach to the underlying fantasy.

Certain interventions that are vital with children are generally superfluous if not insulting to most adults. For example, to tell an adult who is consciously angry that he is angry would be a confrontation that could readily prove offensive to most adults. With an angry child, however, the same intervention may be a necessary interpretation of affect, inasmuch as everyone may know about the child's anger except the child himself. Also, there are many more occasions with children than with adults where clarification of misconceptions can be helpful.

Many psychotherapists are convinced that it is wise to deal with defenses and resistances before interpreting impulses. With children, however, there is an important exception to this general guideline: it is often unwise to undo the projection into play that is so characteristic of child therapy. Thus, when a child with adequate reality testing causes two dolls to fight, the therapist's running commentary might be limited to a description of the dolls' affect, namely, that the dolls are angry with one another. Though the displacement of the child's own feelings to one or both dolls may be obvious, it may be wisest to communicate about the anger without attributing it to the child, thereby dealing with the impulse without interpreting the defensive projection into play. Under these circumstances, projection is viewed as an age-appropriate, adaptive mechanism rather than as a pathological, defensive maneuver. If the therapist told the child that he had the dolls fight because of his own anger, the child's resistance and defensiveness might be increased to the extent that he would stop the activity, interrupting the communication. It is as if the therapist and the child with adequate ego strength have tacitly agreed to the significance of play without spelling it out specifically each time. Bornstein noted other disadvantages in interpreting play directly. Repeated interpretation of the symbolic meaning of play can impede the child's use of play in the service of the development of sublimations, since such interpretations may facilitate libidinalization of play.

Treating children whose ego functioning is so defective that they confuse play and reality calls for caution in dealing with impulses displaced in play. In such instances, the therapist may have to devote his efforts to educating the child about the distinction

between play and reality before it is judicious to deal with the content of the play. This type of educational intervention, however, is not supportive for those children who do not have difficulty in distinguishing fantasy and reality and who are generally alienated by such interventions. At the risk of oversimplification, it is comparable to the situation when the therapist interprets to an adult patient that he feels as though the therapist were his father. If the adult patient's ego functioning were borderline, the therapist might add, "And I am not your father." To add this comment with a patient whose reality testing is not impaired would not only be unnecessary but also insulting and clearly not therapeutic.

Children can derive ego strength out of any activity that produces gratification as a consequence of making progress in lieu of attention-seeking devices. The dependent child who, for instance, repeatedly states or shows that he cannot perform a simple task, such as putting his shoes on the wrong feet more frequently than is possible by chance, needs to discover that there can be more gratification in an accomplishment than in getting the assistance of an adult. Similarly, psychic growth is promoted by the development of internal controls rather than reliance on the adult's external controls and by deriving gratification from work as opposed to accomplishing the same tasks by cheating.

Parental involvement. Psychotherapy with children is distinguished by the necessity for parental involvement. This does not necessarily reflect parental culpability for the youngster's emotional difficulties; it is a factor of the child's dependent state.

In practice, there are varying degrees of parental involvement in child psychotherapy. With preschool age children, it is common for the entire psychotherapeutic effort to be directed toward the parents without any direct psychotherapy of the child. The rationale is that helping the parents results in environmental alterations that will be beneficial for the child.

At the other extreme, children can be seen in psychotherapy without any parental involvement beyond the payment of fees and perhaps transporting the child to the therapeutic sessions. Most therapists agree that only those relatively rare neurotic children who have reached the oedipal phase of development can sustain therapy by themselves. Even in such instances, however, the majority of practitioners prefer to maintain at least an informative alliance with the parents for the minimal purposes of transmitting information about the child.

Probably the most common arrangement is the one that has been stressed in child guidance clinics—that is, involving both child and parents in therapeutic relationships either with the same therapist or with different therapists. In recent years there have been efforts to shift the focus from the child as the

primary patient to the family as the patient. In such family therapy, all or selected members of the family are treated simultaneously as a group.

Confidentiality. Consideration of parental involvement highlights the important question of confidentiality in psychotherapy with children. There are advantages to creating an atmosphere in which the child can feel that his words and actions are viewed by the therapist as both serious and tentative. In other words, the child's communications do not bind him to a commitment; nevertheless, they are too important to be communicated to a third party without the patient's permission.

Ordinarily, such an attitude is conveyed implicitly and does not require explication. However, there are occasions when a child patient insists on discussing the issue of confidentiality. It is unwise, particularly with those children who are inclined to make an issue of it, to promise a child patient that the therapist will not tell parents what transpires in his therapeutic sessions. Though the therapist has no intention of disclosing such data to the patient's parents, the bulk of what children do and say in psychotherapy is common knowledge to the parents. Therefore, should the child be so motivated, it is easy for him to manipulate the situation so as to produce circumstantial evidence that the therapist has betrayed his confidence. Accordingly, if confidentiality requires specific discussion during treatment, the therapist is best advised not to go beyond indicating that he is not in the habit of telling parents what goes on in therapy, as his job is to understand children and to help them understand themselves.

It is important also to try to enlist the parents' cooperation in respecting the privacy of the child's therapeutic sessions. Needless to say, this is not always readily accomplished. Parents quite naturally are curious about what transpires and may be threatened by the therapist's apparently privileged position.

Theoretical Assumptions

Brody has characterized child psychotherapy as a "theoretical orphan." This refers to the fact that child psychotherapy does not have its own readily identifiable body of theory. Currently, three major theoretical systems underlie the bulk of child psychotherapeutic work: (1) psychoanalytic theories of the evolution and resolution of emotional disturbance, (2) social-learning-behavioral theories of psychopathology and treatment, and (3) developmental theories.

Psychoanalytic theory. Psychoanalytic theory conceives of exploratory psychotherapy, with patients of all ages, as working by reversing the evolution of psychopathological processes. The principal difference noted with advancing age is a sharpening distinction between psychogenetic and psychodynamic factors.

The younger the child, the more difficult it is to distinguish between genetic and dynamic forces.

The development of these psychopathological processes is usually thought to begin with certain experiences that have proved to be particularly significant to the patient and that have affected him adversely. The reason for this may reside in the nature of these experiences or their intensity or both. Their influence may have been exaggerated because of their occurrence in the early, impressionable years of the patient's life or under special emotional or physical circumstances that rendered him vulnerable. Though in one sense the experiences were real, in another sense they may have been misinterpreted or imagined. In any event, for the patient they were traumatic experiences that have caused unconscious complexes to which the patient reacted in a manner analogous to the body's organic reaction to irritating foreign bodies. Being inaccessible to conscious awareness, these unconscious elements escape rational adaptive maneuvers. They are subject instead to a pathological misuse of his adaptive and defensive mechanisms. The result is the development of distressing symptoms, character attitudes, or patterns of behavior that constitute emotional disturbance.

The therapist can design various therapeutic programs to interrupt this evolution. Expressive and exploratory psychotherapy facilitates a reversal of this evolution through a reenactment and desensitization of the traumatic events via free expression of thoughts and feelings in an interview-play situation. Ultimately, the therapist helps his patient understand the warded off fears, feelings, and wishes that have beset him. As the therapist leads the patient toward his goal, he helps him realize that he has been defending himself, points out the nature of these defenses and the reasons for these maneuvers.

Though the patient may have varying degrees of desire to learn about himself and thus gain conscious control over automatic processes, he invariably manifests resistances. These are paradoxical tendencies that oppose therapeutic progress. For instance, patients invariably manifest an inertia that is grounded in the fact that what has been repressed tends to remain forgotten and what has been repeating itself for years tends to perpetuate itself endlessly. Also, there are usually advantages, real or imagined, in remaining emotionally disturbed, and certain people, greatly burdened by conscience, develop a need to suffer, which opposes psychic health.

At the center of these resistances to treatment are the psychic functions that facilitate forgetting and repetition, which lead the patient to reexperience certain feelings out of context without recalling their relevancy. In the therapeutic setting, it is the therapist who becomes the object of these reexperienced thoughts, feelings, and reactions, known as transference. Their origins are found in the past and

in relation to other people, notably parents. In such transference, the therapist becomes the target of desires, love, hates, or suspicions that make sense only when viewed in terms of relationships the patient has experienced with other people. With the therapist's recognition that the patient misunderstands the relationship, he attempts to use these transferred reactions to discover the genesis of the patient's problems and to formulate interpretations that will help the patient understand his enigmatic stance. The goal of these interpretations is to enable the patient to increase conscious control over heretofore automatic mental processes. The desired result is a rearrangement of his personality structure and enhanced ability to realize his potential.

Whereas such an expressive-exploratory-interpretive approach seeks improvement via exposure and resolution of buried conflicts, suppressive-supportive-educative psychotherapy works in an opposite fashion, aiming to facilitate repression. Capitalizing on the patient's desire to please the therapist, the patient is encouraged to substitute new adaptive and defensive mechanisms. In this type of therapy, the therapist uses interpretations minimally, emphasizing suggestion, persuasion, exhortation, counseling, education, direction, advice, abreaction, environmental manipulation, intellectual review, gratification of the patient's current dependent needs, and similar supportive techniques.

Learning theories. Stimulated by developments in experimental psychology, several theories of learning that have relevance for all psychotherapeutic undertakings have been developed. Recently, they have received increased attention as the basis of an allegedly new therapeutic method, most commonly referred to as behavior therapy. Regardless of the type of treatment, however, the theoretical assumptions, derived primarily from laboratory experiments, assert that, since disturbed behavior is acquired, its evolution and treatment can be understood within the framework of established theories of learning, such as Hull's reinforcement theory, Pavlov's conditioned reflex theories, and Skinner's operant conditioning.

This may be summarized by citing Watson and Raynor's classical demonstration almost a half century ago of the development of a phobia in 11-month-old Albert. After determination that Albert was not afraid of furry objects and that he had had no previous experience with white rats, he was given a rat to play with. Whenever Albert made an overture to the animal, the experimenters made a loud noise. After a short period of time, Albert appeared fearful whenever he saw the white rat. This phobia then generalized to similar stimuli, such as white rabbits, cotton, and other furry objects. Albert's experimentally induced phobic reactions reportedly persisted several months later. This was not the invariable response of

all infants; some turned to scowl at the source of the noise while they continued playing with the animal. Four years later, Jones demonstrated that another infant who had been conditioned to fear furry objects could be relieved of the fear by means of both social imitation and direct reconditioning.

As a consequence of coupling such observations with clinical experience, concepts encompassing the learning and reinforcement of maladaptive behavior have always been implicit in the rationale underlying all child psychotherapy. Only recently, however, has there been a resurgence of interest outside the laboratory in behavioral techniques specifically designed to eliminate symptoms. Systematic symptom-oriented efforts to induce unlearning, inhibition, and extinction of maladaptive behavior by means of desensitization, operant conditioning, aversive conditioning, avoidance learning, etc., have been applied primarily to phobias, enuresis, sexual disorders, tics, and anxiety-tension states. Eysenck suggested that those treatment approaches that explicitly employ behavior in an effort to change habits ostensibly rooted in the nervous system should be designated behavior therapy and distinguished from psychotherapy, which employs psychological methods.

Developmental theories. Underlying child psychotherapy are a variety of psychosociobiological developmental schemata. The employment of this vital frame of reference distinguishes child psychotherapy from adult psychotherapy. It entails more than knowledge of age-appropriate behavior derived from studies, such as Gesell's descriptions of the morphology of behavior. It must encompass more than psychosexual development with ego psychological and sociocultural amendments. It extends beyond familiarity with Piaget's sequence of intellectual evolution as a basis for knowledge of the level of abstraction in which children of various ages may be expected to function. It is more than recognizing that children of various ages do not react to hunger, other frustrations, injury, illness, and death in some uniform fashion that resembles adult behavior but rather in ways that are characteristic of their stages of development.

Such information may be derived from a number of descriptions of child development; however, it is essential that it be supplemented by personal knowledge and observation of children, with the resultant view of the child as fluid instead of static, as a maturing and developing organism who is not complete. The child's personality must be viewed in the perspective of the interrelationships of his past, present, and future; the focus must be on questions of regression-progression and transience-permanence rather than only on static assessments, even if they are articulated in psychodynamic terms.

Special mention should be made of the developmental line, as Anna Freud conceptualizes it, from play to work. Children do not play solely for the

recreational purposes that adults prefer to attribute to their own games and sporting activities. Play serves a number of important purposes, such as facilitating the mastery of many of children's inevitable developmental crises through playful transformation of what was passively experienced into activity. As a consequence, play has been assigned a special position in child psychotherapy, as both a medium of communication and a means of sublimation.

Use of Psychotherapy

Indications for psychotherapy. The present level of knowledge does not permit the compilation of a meaningful list of the multifaceted indications for child psychotherapy. Existing diagnostic classifications cannot serve as the basis for such a list because of invariable deficiencies in nosological specificity and comprehensiveness. In general, psychotherapy is indicated for children with emotional disorders that appear to be sufficiently permanent to impede maturational and developmental forces. Psychotherapy may be indicated also when the child's development is not impeded but appears to be proceeding in such a fashion that he inevitably induces reactions in the environment that are considered pathogenic. Ordinarily, such disharmonies are dealt with by the child with his parents' assistance; however, when these efforts are persistently inadequate, psychotherapeutic intervention may be indicated.

Contraindications. Psychotherapy is contraindicated if the emotional disturbance is judged to be an intractable one that will not respond to treatment. This is an exceedingly difficult judgment but one that is essential, considering the marked excess of the demand for psychotherapy over its supply. Because the potential for error in such prognostic assessments is so great, therapists should bring to them both professional humility and a readiness to offer a trial of therapy. There are times when the essential factor in intractability is the therapist. Certain patients may elicit a reaction from one therapist that is a contraindication for psychotherapy with that therapist but not necessarily with another therapist.

Another contraindication is evidence that the therapeutic process will interfere with reparative forces. A difficult question is posed by evidence that the forces mobilized as a consequence of psychotherapy may have dire social or somatic effects. An example is the circumstance where psychotherapy may upset a shaky family equilibrium and cause more difficulty than the original problem posed.

Selection of the appropriate technique. Most contraindications to psychotherapy really relate to complications that are not so much absolute contraindications as they are factors that influence choice of the appropriate form of therapy for the particular child. Matching the child and his disturbance with a

specific treatment is a worthwhile goal that is difficult to achieve because of limited precision in diagnosis and uncertainty about the curative factors in psychotherapy. Clearly, there is no single, effective therapeutic element in treatment. Though therapists may attempt to predict in advance which factor will be the most influential, experience demonstrates that such predictions have limited reliability. Therapists need to guard against developing rigid preconceived ideas that will interfere with flexible sensitivity.

Certain elements in psychotherapy with specific children induce complications that militate against that particular variety of psychotherapy for that child. Many children, for instance, respond to a positive, constructive interaction with a neutral adult, thereby necessitating no more than relationship therapy. However, there are many instances where such treatment is so insufficient that it is contraindicated because its chance of success is so negligible.

With most neurotic children, a form of interpretive psychotherapy aimed at uncovering intrapsychic conflicts is indicated. However, if the youngster's ego functioning, particularly in the area of reality testing, is borderline, such an approach may prove to be so deleterious as to precipitate a frank psychotic adjustment. A minimal prerequisite for interpretation of the significance of doll play to a child is that the child appreciates that the doll play is different from real life. When the child's capacity for such reality testing is impaired, therapeutic interventions should be designed to strengthen this defective function. If, on the other hand, this function is not impaired, efforts aimed at strengthening a child's intact reality testing by helping him distinguish doll play from reality are insulting and not beneficial.

Though there are many hyperactive children, there is no standard psychotherapeutic approach to the child with this distressing symptom. If, for example, the hyperactivity seems to represent a means of expressing anxiety resulting from an intrapsychic conflict over aggression, one would be inclined to approach that child with interpretive psychotherapy, exposing the child's conflicts over aggression to rational scrutiny. On the other hand, if the hyperactivity is presumed to be due to organic processes, the therapist's primary task is to supply externally the controls that are lacking internally. This may require medication, regulation of the child's life, isolating him from distressing stimuli, and similar supportive, suppressive measures.

These markedly different approaches to hyperactivity are not interchangeable. Though regulating the life of the anxiously hyperactive child may result in relief of the symptom of hyperactivity, this is done by inducing passivity as a means of handling the unconscious aggression—in essence, a new handicap. Approaching the child who is hyperactive due to organicity with accurate interpretations of underlying

conflicts may be perceived by the child as increased stimulation, to which he will react with greater hyperactivity. It is not the underlying conflicts that are primarily pathogenic so much as the deficiency in internal controls.

The fact that symptomatic treatment may be beneficial requires no elaboration. However, symptomatic treatment is not invariably innocuous; there are times when it may be harmful. Consider the youngster with the symptom of reading retardation, secondary to underlying emotional factors, who does not respond to tutoring. The tutoring could result in more than a mere waste of effort if the child takes his failure to respond to these special efforts to be further evidence of his stupidity and hopelessness. Furthermore, such a symptomatic approach may be unwittingly repeating a pertinent trauma for the child.

Eight-year-old John was unable even to begin to learn the alphabet in his 3 years of schooling. Intensive tutoring only seemed to increase his resistance to learning. It was subsequently uncovered during the course of psychotherapy that John's sister, 3 years his senior, used to play school with him. During this game, which started when she was 5 and he was 2, she played the role of the teacher and he the pupil. His inability to learn the alphabet in this game prompted his 5-year-old teacher to be extremely punitive and threatening. She warned John repeatedly that he would never be permitted to go to school unless he learned. This game and these warnings persisted until John's entry into school, when he terminated the game. However, in reconstruction during the course of psychotherapy, it appeared that John's expectation of school had been such that he was sure he would hate it. Unconsciously, he was determined not to learn so that he would not be permitted entry into school. Only after these experiences and their resultant ideas and attitudes were uncovered and worked through was John able to dismiss them as inappropriate to his current situation and to benefit for the first time from tutoring. Until that point he had unconsciously viewed tutoring as a punishment that reinforced his determination not to learn from it.

Psychoanalytically derived individual psychotherapy is most effective for youngsters who have internal, self-sustaining, neurotic conflicts that have not originated earlier than the phallic stage of development and have resulted in circumscribed, ego-alien symptoms. Such expressive-exploratory-interpretive therapy is generally less helpful to those children whose disturbance has not caused them much immediate discomfort. Such syndromes are often a consequence of conflicts derived from prephallic phases, and the resulting disturbance tends to permeate the child's entire character structure. Psychoanalytically oriented therapy is least effective when the therapist cannot establish a therapeutic alliance with the child, as in the cases where there has been an arrest in ego development resulting in a diminished capacity for abstract thinking and the establishment of object relationships. When the capacity for object relationship is severely limited, as it is in extremely young children or older psychotic children, the treatment needs to be based on a foundation of need satisfaction. In

such instances it may be advantageous for the therapist to be the person who cares for the child.

Prognosis

One of the most complex issues in psychiatry is the assessment of change and determination of the factors responsible for the changes. Inevitably the number of variables is so great that all investigators are cautious in attributing change to any single factor, including psychotherapy.

The amount of time and energy invested in child psychotherapy seems to suggest that clinicians are convinced it is a worthwhile endeavor. As the patient cannot be used as his own control, it is never possible to state with absolute finality what would have happened had that particular patient not had the benefit of psychotherapy. Investigators who have attempted to survey the results of psychotherapy statistically have amassed data suggesting favorable results in 65 to 80 per cent of the cases. Neglecting momentarily the complex issue of the methodology involved in determining success, one is still left with the question as to what would have happened to these children had they not been exposed to psychotherapy. Comparisons have been attempted with different types of control groups, but none of these has been entirely satisfactory. In all these studies there are reasons to question the degree of success of the intensive efforts to select a control group of children with comparable prognoses who had received no therapy. Comparisons of the treated children with these questionable control groups generally fail to demonstrate that the treated patients obtained markedly better results than those who left treatment early or failed to continue after diagnostic study.

Illustrative of the additional difficulties in determining meaningful and measurable criteria of the outcome of psychotherapy is the fact that appearance of anxiety in a delinquent is generally considered a sign of improvement while a comparable result in a phobic youngster probably represents lack of progress. Although symptomatic considerations alone are an inadequate criterion of the results of psychotherapy, it can nevertheless be anticipated that a youngster with academic inhibitions will demonstrate a better academic performance as a consequence of successful psychotherapy. In contrast, an obsessive-compulsive youngster may demonstrate, after successful psychotherapy, that his academic performance has diminished.

Furthermore, different assessments by different clinicians of the same change in the same patient are common. The tightly controlled obsessive-compulsive patient who, during the course of therapy, demonstrates loosening of his thought processes may be considered by one clinician to be on a progressive road to eventual recovery, whereas another clinician could view this same patient as being on a regres-

sive road to a schizophrenic reaction. The only variables in such instances are the evaluators.

The methodological problems inherent in the evaluative process have proved so great that many investigators have shifted their focus from study of the results of psychotherapy to examining the process of psychotherapy. Temporarily, they are willing to sacrifice a global but imprecise overview in favor of a more intensive investigation of the changes taking place during the course of psychotherapy in an effort to isolate the factors responsible for these changes. Thus, it is not yet possible to articulate meaningfully the results of psychotherapy for a large number of cases. There are currently in progress what appear to be meticulous methodological studies, and these are to be encouraged.

Suggested Cross References

For further information regarding psychological treatment methods, the reader is referred to Chapter 34, which contains sections dealing with the therapeutic techniques mentioned in this section, namely psychoanalysis and psychotherapy (Section 34.1), family therapy (Section 34.8), and behavior therapy (Section 34.2). Theories of personality and psychopathology that underlie the conduct of psychotherapy are presented in Area C. For a more detailed discussion of child development see Section 38.2. For a more detailed discussion of learning theory, see Section 3.3.

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43.2 GROUP THERAPY

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History

Group psychotherapy of children originated in 1934, when Slavson began to work with latency age children in what he called activity group therapy. This and subsequent work differed from using children in common activities, such as scouting or group work, by there being a theory of personality and behavior on which were predicated certain actions of the leader in a deliberately designed situation. The children's behavior in the contrived staging of the group constituted their responses to treatment.

Activity group therapy laid the groundwork for further developments in the use of group psychotherapy with children and adolescents. It used classical psychoanalytic therapy consistently, as did play group psychotherapy, which was described in 1937. In the same year, Bender reported using groups in the treatment of children in a hospital ward. During the 1940's, investigators devised different methods to suit the usual age groupings of children, especially latency and adolescence. Techniques were tried for different settings, such as correctional institutions, public schools, hospitals, residential treatment facilities, and pediatric specialty clinics.

Basic Assumptions

The field of group psychotherapy presents a number of theoretical postures and variations of techniques. Client-centered psychotherapy, Adlerian concepts, and classical psychoanalytic principles have dominated the practice of group psychotherapy for children. Despite the particular theoretical background of the therapists, certain assumptions pervade their work. These include the unconscious, some constructs of the mind (such as ego), psychic determinism, and infantile sexuality.

Activity—such as play, gestures, and interactions—is based on inner fantasies of the child that seek expression and resolution in development, family transactions, and other aspects of growth-promoting adaptation. From these and other considerations, a therapist evolves an individualized treatment style that enables him to work comfortably with his patients.

Certain theoretical positions—such as an adoles-

cent's possession of weak self-identity, subjection to strong sexual urges, and action on them—could lead to a definite, concrete mode of thinking about group membership. In this circumstance, few therapists attempted adolescent groups with boys and girls together until Ackerman, in 1955, showed that sexual acting out need not occur. Subsequent efforts by others demonstrated that boys and girls could be treated effectively in groups at any age.

Age Groupings

The age and developmental stage of the child influenced the growth of group psychotherapy techniques more than perhaps any other factor. Since the standard diagnostic nomenclature for psychiatric disorders of childhood failed to describe adequately the disturbances in children, investigators tended to group children by age and nature of presenting difficulties. They also assumed that the verbalizations of children could not be utilized extensively much before puberty or adolescence, so that play and activity dominated techniques. Psychotic children and severe sexual deviates, such as homosexuals, seemed unsuitable to the groups. The grouping of children fell into about five categories. These categories were: (1) preschool and early school age, (2) late latency: ages 9 to 11, (3) pubertal: ages 12 and 13, (4) early adolescence: ages 13 and 14, and (5) middle adolescence through late adolescence: ages 14 to 17.

Preschool and early school age groups. Work with the preschool group is usually structured by the therapist by using a particular technique, such as puppets, or it is couched in terms of a permissive play atmosphere. In therapy with puppets, the children project onto the puppets their fantasies in a way not unlike ordinary play. The main value lies in the catharsis afforded the child, especially if he shows difficulty in expressing feelings. Here the group aids the child less by interaction with other members than by action with the puppets.

In play group psychotherapy, the emphasis rests on the interactional qualities of the children with each other and the therapist in the permissive playroom setting. Slavson stated that the therapist should be a woman who can allow the children to produce fantasies verbally and in play but who also can use active restraint when the children undergo excessive tension. The toys are the traditional ones used in individual play therapy, such as water, plasticene, a doll's house, and toy guns. The children use the toys to act out aggressive impulses and to relive with the group members and the therapist their home difficulties. The children catalyze each other and obtain libido-activating stimulation from this and their play materials. The therapist interprets a child to the group in the context of the transference to her and to other group members.

Ginott aims in group play therapy to effect basic changes in the child's intrapsychic equilibrium

through relationship, catharsis, insight, reality testing, and sublimation. The mechanism of identification affords the child major opportunities for therapeutic gain, as he identifies himself with other group members and the therapist. Since the individual child constitutes the focus of the treatment, little attention is given to the group as an entity in itself. Corresponding to ordinary play relationships of children, attachments to peers and toys and the formations of subgroups shift for each child.

Criteria for selection. The children selected for this group treatment procedure show in common a social hunger, the need to be like their peers and to be accepted by them. Usually the therapist excludes the child who has never realized a primary relationship, as with his mother, since individual psychotherapy could better help the child. Ginott also rejects children with murderous attitudes toward siblings, sociopathic children, those with perverse sexual experiences, habitual thieves, and extremely aggressive children. Usually the children selected include those with phobic reactions, effeminate boys, shy and withdrawn children, and children with primary behavior disorders.

Modifications of these criteria have been used by Speers and Lansing, who utilized group therapy for autistic children along with parent group therapy and art therapy. They began with four children under the age of 5 who showed reality withdrawal and severe disturbances in self-identity. Language deficits, lack of bowel and bladder control, severe sleeping and eating disturbances, and stereotyped behavior were prominent in these children. The investigators reported that these psychotic children can change in a group setting by obtaining rudimentary self-identity. The physical and psychological closeness of the group members panicked some of the children, but in time it helped them establish relationships. The group ego, originally described for older children in group therapy by E. J. Anthony, provided part of a therapeutic symbiosis for each patient and developed after the autistic defenses were repeatedly penetrated. Safety in the group fostered emancipation from the sick relationship with the mother.

Latency age groups. Activity-interview group psychotherapy combines elements of activity, play, and interview group therapies. It differs from activity group therapy in that the therapist actively interprets to the children their actions and verbalizations as they involve themselves with the usual materials used in play therapy and activity therapy.

The children can be more disturbed than in activity group therapy, since dreams and other dynamically laden verbalizations undergo group discussion. The meetings occur after school hours and last about an hour, with the last 10 minutes devoted to refreshments.

In this type of group therapy, as with pubertal and adolescent groups, the children verbalize in a

problem-oriented manner with the awareness that problems brought them together and that the group aims to change them. They report dreams, fantasies, day-dreams, traumatic and unpleasant experiences. These and their group behavior undergo open discussion.

Composition of the group. In some clinic and private practice situations, where an activity therapy setting may not be feasible, the emphasis in the group treatment of these children can be shifted to an interview type with little toy play and no use made of tools or arts and crafts. Late latency age children (ages 9 to 11), who usually constitute the majority of referrals to a child psychiatric clinic, utilize this procedure well. The children can be of both sexes, and their selection depends more on the over-all structure of the group than on the individual patient's characteristics. The optimum size of the group is six children. If the group contains several withdrawn and taciturn members, for example, it behooves the leader not to include another similar child. The leader can be of either sex, and he utilizes psychodynamic generalizations in verbalizing with and for the children as they relate daily experiences and comments about their parents and discuss their interactions with other group members. Here, as in other forms of group psychotherapy of children, the professional discipline of the therapist may be any of the traditional ones in the mental health field. A cotherapist of the same or opposite sex to the therapist can be useful in these groups.

The patients not usually taken into these groups include the incorrigible or psychopathic child, the homicidal child, and the overt sexually deviant child. The severely threatened, ritualistic, socially peculiar children who cannot establish effective communication at any useful level with the group members fail to do well in these groups.

Intellectual ability should be well distributed, for too many retardates in the group impede interaction and tend to enhance motoric patterns of all the group members. Children with physical deformities, lies, protruding teeth, or behavior based on maturational brain dysfunction find the group situation helpful. Vehement interactions or taunts about their disabilities produce in time a group response of support as the members perceive the victim's sensitivities and feelings.

Since the sex ratio inherent in child psychiatric work with latency children runs 3:1 of boys to girls, finding enough girls becomes a problem for these groups. If possible, equal numbers of each sex should be sought. The girls act as a modulating influence and diminish extremes of behavior.

Parents. In these circumstances, as with most treatment procedures for children, parental difficulties present obstacles. Sometimes uncooperative parents refuse to bring a child or to participate in their own therapy. The extreme of this reveals itself when

severely disturbed parents use the child as their channel of communication to work out their own needs. Then the child finds himself in an intolerable position of receiving positive group experiences at the clinic that create havoc at home.

Pubertal groups. Similar group therapy methods can be used with pubertal children, who are often grouped monosexually rather than mixed. Their problems resemble those of late latency children, but they are also beginning, especially the girls, to feel the impact and pressures of early adolescence. In a way, these groups offer help during a transitional period.

Activity group psychotherapy has been the recommended type of group therapy for preadolescent children. The children, usually of the same sex and in groups of not more than eight, freely act out in a setting especially designed and planned for its physical and milieu characteristics. Slavson pictured the group as a substitute family in which the passive, neutral therapist becomes the surrogate for parents. The therapist moves about the group as the children work with arts and crafts materials and tools. He assumes different roles, mostly in a nonverbal manner, as each child interacts with him and the other group members.

This freedom of expression and activity instigates responses among the members so that a number of roles emerge. There are the instigators, who enable the group to stay alive dynamically; the neutralizers, who, by greater superegos, keep impulsive acts down and help regulate behavior; the social neuters, who seem impotent to accelerate or impede the flow of group activity; and the isolates, who are so neurotically constricted that they initially find the group too frightening to join in its activities.

These children use the materials, under some control by the therapist, as fixators of such feelings as aggression. They can, however, engage in boisterous and destructive acts, especially with each other. The therapist does not intervene except when realistic danger to the patient or building arises. He helps with tasks when asked. The method assumes that, in time, the children will constructively transfer their energy from the tools and materials to each other.

The refreshment period at the end of the 2-hour sessions affords the children stimulation by the food and a family type of situation in which new modalities of behavior eventually assert themselves. The children in this clublike atmosphere also go as groups on self-selected visits to a variety of community offerings, such as athletic events, movies, and museums.

Pattern changes. During these exposures to the group, the child demonstrates his customary and usual adaptational patterns. If, for example, he has utilized his haplessness to elicit dependency fostering and psychological feeding responses from adults and peers, he finds the group and the therapist failing him. The neutrality and passivity of the therapist impede

these patterns and create enough frustration to initiate different behavior in time. Similarly, the provocative, extremely aggressive child finds no rejection or punishment for his behavioral distortions. In time, he begins to react differently to the therapist and to his fellow group members.

The therapist needs to be consistently aware of himself and the individuality of each patient. He sees himself as a catalyst for each child in special situations at appropriately timed moments. All these demands confront the therapist with an intense need for appropriate use of himself and nonexploitation of the children.

This therapeutic medium helps children with deficient and distorted self-images, inadequate role identifications, habit and conduct problems, and mild psychoneuroses. Neurotic traits that may be present in behavior disorders diminish in this type of group. Characterological disorders—as shown by the passive, dependent, infantilized child—tend to alter as these personality traits persistently fail to achieve satisfaction and as other behaviors become possible.

Adolescent groups. Boys and girls tend to be divergent in social awareness and responsivity in early and middle adolescence. Nevertheless, with this in mind, the therapist can place them together in interview group psychotherapy. Ackerman described in 1955 his work with members who ranged from 15 to 23 years of age. Each patient had previously undergone individual psychotherapy, and his group therapy experience supplemented it. Ackerman suggested that the group functioned to "provide a social testing ground for the perceptions of self and relations to others." He emphasized the importance of nonverbal behavioral patterns as material for the group.

Subsequent reports tended to agree that group therapy dealt more with conscious and preconscious levels than did an intensive, deeply introspective approach. Hulse listed clarification, mutual support, facilitation of catharsis, reality testing, superego relaxation, and group integration as ego-supportive techniques.

Composition of the group. Adolescent patients can be treated in an out-patient clinic, private office, hospital, or a special setting, such as a detention home, with modifications appropriate to the setting. The group format is that of an open-ended, interview-interaction, activity organization. The preferred number of adolescents for these groups is 8 to 10, but often circumstances require screening of perhaps 30 or more to produce a group of 15. Of these, about 6 will form a core group with constant attendance and effort, another 3 or 4 will constitute an intermediate group who attend more than they miss, and the remainder will make up a peripheral group who attend occasionally. Attendance and therapeutic output are difficult to predict for the individual patient, since they do not seem to be related to age, present-

ing problem, and diagnosis. Some therapists suggest separation of patients in early adolescence (ages 13 and 14) from older patients, since boys of 13 and 14 find 17-year-old girls difficult to deal with in these groups. Otherwise, treatment procedures remain the same.

Here again, the diagnostic categories fail to distinguish sufficiently among patients to serve as guideposts to patient selection. Certain behavioral patterns—such as overt homosexuality, a flagrant sociopathic history, drug addiction, and psychosis—contraindicate inclusion in these groups. Group methods for these patients can be used, but they require special considerations.

Aims and techniques. Interview mixed group psychotherapy offers opportunity for the adolescent to learn peer-relating techniques in a protective and supportive situation. Diminution of anxiety over sexual feelings and consolidation of sexual identification occur. He participates in group interaction in time and feels the pull of group cohesiveness. He also reacts to the group's pace and its changes, as when the group shifts its content level, a phenomenon that occurs frequently and rapidly, often within a single session.

The adolescents employ diversionary tactics to avoid discussing threatening subjects. A favorite maneuver is to change the focus by a question or a comment about an unrelated topic. Sometimes diversion masks itself behind physical activity, such as throwing a gum wrapper at the wastebasket or showing a picture in a textbook to others. These and other behaviors frequently receive comments by group members; if not, the therapist calls attention to them.

Schulman, Kraft, and Duffy commented that the therapist must be active, ego-supportive, and in control of the group situation at all times. He interprets cautiously to avoid the patient's misconstruing interpretation as personal criticism. Interpretations also focus on reality rather than on symbolisms. They are couched in simple, direct references to basic feelings and to unconscious intent of behavior when it lies quite close to awareness.

The therapist can be of either sex. Coterapists and observers do not deter group movements and interaction. When the coterapists are of different sexes, differentiated responses to each occur.

The content of the discussions varies tremendously, ranging over school examinations, sibling competition, parental attitudes, difficulties with self-concepts, and sexual concerns. Sexual acting out or impulse eruption rarely occurs. Brief group responses to significant experiences narrated by a patient fulfill his needs, for he can return to the subject later if necessary. The group often prefers short discussions, since the anxiety is too high to dwell at length on a topic.

Therapy for delinquent adolescents. Since children and adolescents require many special care-

taking facilities by Western society, group psychotherapy techniques have been adapted to these different settings. Among these, the delinquent has received a good deal of attention, including group work, such as a field worker working directly with a neighborhood gang and group psychotherapy with probationers.

The customary procedures for group psychotherapy of disturbed adolescents require modification to account for contingencies of the character disorders of delinquents. These adolescents differ in their dys-social patterns from those who, in an adjustment reaction of adolescence or a transitional neurotic acting out incident, violate the legal, moral, and social values of the community. The adolescent with a delinquent character disorder is persistently truant, steals, runs away, or engages in other activities that usually mean removal to an institution.

Institutional group therapy. Schulman pointed out that the complexities of the interactional processes of group psychotherapy become complicated by the characterological pressures for dissent and chronic uncooperativeness. These factors and those inherent in institutional settings create design and procedural difficulties in studies to formulate the role of group psychotherapy for the antisocial adolescent delinquent.

Several reports indicate favorable aspects in this group. In Gersten's study in 1951 of group psychotherapy with male delinquents in an institution, he found that group psychotherapy improved intellectual and school functions, and psychological tests indicated some enhancement of emotional maturity. Another study reported by Thorpe and Smith in 1952 indicated sequential steps in the responses, the first being episodes of testing and the second a series of acceptance operations. Peck and Bellsmith in 1954 used group methods for delinquent adolescents with reading disabilities.

Schulman emphasized a 3-fold purpose in integrating group psychotherapy into the totality of care for these patients: (1) intellectual insight and reality testing occur in the group milieu; (2) alloplastic symptoms and superego development can be observed; and (3) the group situation readily tests the developmental stage of new attitudes, since the patient continues to perform in a homogenous group of delinquents.

The character distortions to be dealt with use aggression predominantly to reduce the internalized anxiety. The delinquents show a weak ego structure and a defective superego. Schulman suggested that their inherent difficulty with society and its authority symbols serves as the nidus for a therapeutic relationship. Modifications of the traditional therapist-patient relationship can then develop a shallow emotional attachment in the delinquent. Schulman initially used variations in activity and unexpected refreshments, but later he modified this to focus on the authority-dependency relationship built into the in-

stitutional situation. From the beginning, the adolescent knows that his getting out depends on the therapist, who then assumes a greater omnipotence and becomes one with whom he can identify. As the therapist continues to model early life experiences for the adolescent—but without their inconsistencies of feelings, exploitations, and dishonesties—he becomes somewhat of an ego-ideal for an embryonic superego.

Schulman and others described the sexual preoccupation of adolescent female delinquents and the need by the therapist to control it to avoid a deterioration through perseveration. This deterioration occurs in the male group also, often on a scapegoat in the group. Directed discussion by the therapist changes the tone of the session or blocks group disintegration.

Some therapists believe they can adhere to the more traditional leader role of permissiveness and support, contrary as it may be at times to the over-all patterns of the institution. The goals of all these efforts seem to fall into two categories. The first is to facilitate the delinquent's adjustment to the institution, and the second is to promote therapeutic readiness. Among the many variables that need to be examined, one of the most pertinent seems to be the duration of the group therapy process. Generally, the longer the group functions, the better are the chances for alterations in the members.

Other Group Therapy Situations

Some residential and day treatment units also use group therapy techniques in their work. Child placement agencies may use group psychotherapy with cottage parents, with the children, and with the foster parents employed by the agency. Unwed adolescent girls who have become pregnant have been placed in groups for counseling and psychotherapy. Children in pediatric hospital settings have been worked with in groups to help them handle their adaptation to disease and the hospitalization. Group therapy has been used in school settings for under-achievers, for truants, and for children with behavior disorders.

Children can also be treated by group methods in art therapy, and psychodrama has been used for children at all ages. Lebovici has described psychodrama for adolescents as providing as opportunity for action as preparatory for real life and a psychotherapeutic tool if used with the insights of psychoanalysis.

The foregoing has stayed mainly in the channel of group psychotherapy directly with the children. At the same time, most therapists agree that concomitant therapy with the parents is helpful. Some therapists believe that parental psychotherapy, such as a mothers' group, will be sufficient and more than adjunctive to remedying the problems with preschool through latency children. Multiple impact therapy can serve as both a diagnostic instrument and an intake de-

vice in family therapy. It is in these circumstances that one often sees so clearly how the child-patient can serve as the emotional radar of the family.

From the foregoing, one can gather that there are many indications for the use of group psychotherapy as a treatment modality. Some can be described as situational, where the therapist works in a reformatory setting in which group psychotherapy has seemed to reach the adolescents better than individual treatment. Another indication has been quoted as the economic one, as more patients can be reached simultaneously. Perhaps more appropriate would be the necessity to use a treatment procedure that will best help the child for a given age, developmental stage and type of problem. In the younger age group, the child's social hunger and his potential need for peer acceptance help determine his suitability for group therapy. Criteria for unsuitability are controversial. Ginott suggested that accelerated sexual drives or habitual thievery makes a child unsuitable for group therapy, but others disagree with him.

Evaluation

The results of group psychotherapy with children are difficult to evaluate. Several reports using control groups show favorable results in one study of nondirective play therapy and another of delinquents. Evaluating the results of group psychotherapy of children proves as difficult as assessing individual psychotherapy of children. Since few studies have been controlled for time as well as for other factors, including follow-up evaluations, one can say that group therapy does not supplant or replace individual therapy. It is another tool that the therapist might become familiar with by usage under supervision. If he then finds it to his liking, he can continue to use it under his own conditions of work. In crowded child psychiatric clinics, for example, various group techniques can help relieve pressures at intake, diagnosis, and treatment levels.

Impressionistically, certain results can be indicated. Group psychotherapy helps children feel unconditionally accepted by the therapist and the group members. Failures become seen as part of each child's development. Complexes of feelings and ideation gain expression. Feelings of guilt, anxiety, inferiority, and insecurity find relief. Affection and aggression are evidenced without retaliation and danger. In sum, group psychotherapy of children and adolescents still remains young and undeveloped in its full potential for study and treatment.

Suggested Cross References

For further information regarding group therapy, see Section 34.6 in Area G, on psychiatric treatment. That same area also contains Chapter 37, on evaluation of psychiatric treatment. Fundamental concepts of group processes are discussed in Section 4.2.

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other measures if appropriate agents are chosen and the dosage is regulated properly. Drugs can then facilitate the educational and experiential aspects of treatment if the psychological meaning of the medication to children and their parents is treated with understanding.

Rationale and indications. With children, as with adults, one prescribes psychotropic drugs for certain target symptoms. Drugs are most effective in reducing psychomotor excitement. Optimally, the reduction of impulsivity and irritability is accompanied by lessened anxiety, improved attention span, and more organized behavior. To a lesser extent, drugs can increase spontaneous activity and affective responsiveness in states of apathy and inertia.

A trial of drug therapy is indicated for such symptoms if appropriate psychotherapeutic and environmental measures do not quickly relieve the child's subjective distress and restore optimal functioning. This judgment differs from adult therapy to the extent that children are more dependent on and responsive to the adults who care for them. One must evaluate the relation of the child and his symptoms to his family before introducing drugs. Since children's symptoms usually change more rapidly than do adults', one can often evaluate a child's response to ambulatory or institutional psychiatric treatment within 2 to 4 weeks.

If symptoms disappear completely, in the child's usual environment, with full resumption of social and academic activities, with the use of social manipulation and psychotherapy alone, obviously no additional treatment is indicated. However, if symptoms or a restriction in function persists after 4 weeks, one should not withhold drugs that may accelerate recovery because the child is responding slowly to other measures. Months or even weeks of exclusion from normal experiences at critical periods in a child's life may leave irreversible deficits. A school phobia is an outstanding example of a situation that should be treated as a medical emergency. A prompt return to school can prevent chronic disability, and drugs should be added quickly to the total treatment program if needed to accomplish this end. Even when the damage from delayed recovery is less obvious, one must weigh the slight chance of harm from drugs against the limitation in the child's function and the strain imposed on his family if drugs are withheld. If an acute crisis demands immediate medication, drugs should be withheld later on to evaluate the child's own capacity for reintegration and to determine whether medication must be continued.

Results and goals. Pharmacotherapy should be used as a part of the total treatment program directed toward promoting optimal development of the disturbed child. By modifying appropriate target symptoms, drugs facilitate the other aspects of therapy in children with schizophrenia and organic brain disease and with moderate to severe primary behavior

43.3 ORGANIC THERAPIES

BARBARA FISH, M.D.

Psychopharmacotherapy

Since 1940, amphetamines, anticonvulsants, and antihistamines have been used to treat children with behavior disorders. The introduction of chlorpromazine and reserpine increased the range of effective pharmacotherapy. Drugs are now as important an adjunct in the comprehensive treatment of disturbed children as they are in the treatment of adults. The fact that the child is a growing organism creates special problems in evaluating the effects of drugs.

However, experience has demonstrated that drugs can control symptoms that do not readily respond to

disorders. Pharmacotherapy may enable severely disturbed children to participate in group activities and special classes; it helps others become amenable to psychotherapy and education that would otherwise be impossible. Drug therapy can also accelerate the treatment of less disturbed children. For example, some neurotic children with persistent anxiety, inhibitions, and phobias become more spontaneous and increase their adaptive functioning, participating more fully in psychotherapy and schooling, if they are given drugs. The younger the child, the more often is psychiatric disturbance of any type expressed in hyperexcitability, hyperactivity, and disorganized behavior that can respond to medication.

Limitations. When drug-susceptible symptoms are treated, the extent of improvement in over-all psychopathology is limited by the initial severity of the disorder. The more severe, unchanging deficits in function appear to have the same prognostic significance in children as do long duration and chronicity of symptoms in adults.

Children with severe mental retardation and fragmentation of functioning, associated with organic brain disease or schizophrenia, are the most likely to retain residual defects. However, in the absence of effective drug treatment, they respond minimally to educational therapy, milieu therapy, and psychotherapy. In less impaired children, hallucinations, perceptual distortions, and thought disorders may subside or disappear with drug treatment.

Drugs can modify a child's responsiveness to his experiences, but chemicals alone cannot undo learned behavior, character patterns, or neurotic attitudes. Thus, aggressive behavior responds to drugs only if it is associated with affective or motor outbursts. Less explosive negativistic children often experience little subjective discomfort and may resent the physiological changes produced by drugs, feeling these to be a threat to their autonomy. Whether drugs can improve learning and intellectual functioning and, if so, in which types of children has still to be determined.

Choice and regulation of drugs. As with adults, pharmacotherapy with children should start with the mildest drug that may be effective. The dose should be increased regularly until symptoms disappear or until the first signs of excess dose appear (mild headache, fatigue, irritability, etc.), to make sure that the useful dose range has been fully explored. Young children rarely report such symptoms. One must ask and look for malaise, anorexia, weight loss, or sudden behavioral deterioration associated with increases in dose, which may indicate that the dose is too high for the particular child. The child's alertness, attention, and performance in school must be followed as carefully as the adult's performance on his job to determine whether the dose is insufficient or too high.

The child's response to medication may indicate

that a more sedative or more stimulating mild drug is required. Otherwise, one should explore more potent drugs in the same manner and not try a haphazard succession of drugs of similar type when symptoms persist with the highest tolerated dose of a mild drug. The optimal dose is the level that maximally reduces symptoms and increases function without causing discomfort.

In mild disorders, where symptoms disappear with mild medication, drugs need be continued only for a brief period, to give the child and his family sufficient time to establish a new level of adaptation in the absence of symptoms. In severely disturbed children who do not get complete relief from symptoms even with potent medication, pharmacotherapy may need to be maintained, just as it is with chronic adult patients.

In general, more potent drugs are required for more severe disorders, but the standard diagnostic categories provide only a gross guide to severity. In children, severity within a diagnostic group increases with greater intellectual, perceptual, and neurological impairment and with greater affective and motoric disturbance. Hyperactive and hypoactive children may react differently to drugs. There are also individual differences in relative sensitivity to the sedative and stimulating properties of different drugs.

The clinician should become familiar with a few representative minor and major tranquilizers and stimulants that span the spectrum of potency and differential effects. The following discussion is limited to instances in which children's behavioral and central nervous system responses differ from those of adults. The possible systemic toxic effects require the same precautions as for adults. Young infants require special precautions.

Major tranquilizers

Phenothiazines. Extensive experience has demonstrated that these compounds are highly effective in moderately to severely disturbed children with primary behavior disorders, schizophrenia, or organic brain disease.

Dimethylamine series. The major difference in action from adults is that extrapyramidal reactions are rare in children and can be terminated promptly by reducing the dose. The relative potency of different members within this group is the same for children as it is for adults.

Piperazine series. These drugs are especially useful in hypoactive schizophrenic or severely neurotic children who require drugs as potent as the phenothiazines but who tend to be depressed by therapeutic doses of chlorpromazine. Severely apathetic schizophrenic children with I.Q.'s under 70 may require and tolerate larger doses of trifluoperazine by body weight, compared with adult patients, without any signs of dystonia. If these children are very young and respond to the drug, their motor skills, social respon-

siveness, and language may improve. Fish et al. demonstrated that these effects were significantly greater than placebo in mute schizophrenic children who are too impaired to respond to psychotherapy.

Less impaired children tend to be more sensitive than adults to the stimulating effects of these drugs; small doses produce irritability, agitation, and dyskinesia. The adult dose adjusted strictly for body weight may be 2 to 5 times too high for such a child (see Tables I and II). Trifluoperazine (Stelazine) may be 20 to 100 times as potent as chlorpromazine in the same child in all but the most retarded schizophrenic children. Fluphenazine (Permitil, Prolixin) is more potent per unit dose than trifluoperazine. Prochlorperazine (Compazine), perphenazine (Trilafon), and thiopropazate (Dartal) are about 5 to 10 times as potent as chlorpromazine in the same child.

Piperidine series. Thioridazine (Mellaril) does not

TABLE I

Major Tranquilizers: Suggested Dosage by Weight for Children^a

These doses are intended as a general guide to indicate the relationship of children's doses to adults'. See the text for discussion.

Name of Drug	Average Dose	Dose Range
	mg./lb./day	
Chlorpromazine (Thorazine).....	1	0.5-4
Prochlorperazine (Compazine)...	0.1	0.05-0.15
Trifluoperazine (Stelazine)		
Hypoactive retarded schizophrenics..	0.25	0.05-0.7
All others (see text).....	0.05	0.01-0.1

^a From Fish, B. Treatment of children. In *Psychopharmacology*, N. S. Kline and H. E. Lehmann, editors. Little, Brown, Boston, 1966.

TABLE II

Major Tranquilizers: Suggested Doses for Children 6 to 12 Years^{a, b}

Name of Drug	Range of Total Daily Dosage ^c	Total Dosage Divided into Number of Doses per Day
	mg./day	
Chlorpromazine (Thorazine).....	50-400	1-4
Prochlorperazine (Compazine).....	5-15	1-2
Trifluoperazine (Stelazine)		
Hypoactive retarded schizophrenics...	2-20	1
All others (see text).....	1-10	1-2

^a From Fish, B. Treatment of children. In *Psychopharmacology*, N. S. Kline and H. E. Lehmann, editors. Little, Brown, Boston, 1966.

^b Older children may require adult doses.

^c Some children may require and tolerate higher doses.

TABLE III

Mild Stimulants and Tranquilizers: Suggested Dosage by Weight for Children^a

Name of Drug	Average Dose	Dose Range ^b
	mg./lb./day	
Amphetamine.....	0.1	0.05-0.2
Chlordiazepoxide (Librium).....	0.2	0.1-0.5
Diphenhydramine (Benadryl).....	2.0	1.0-5.0
Meprobamate (Equanil, Miltown).....	7.5	2.0-15.0

^a From Fish, B. Treatment of children. In *Psychopharmacology*, N. S. Kline and H. E. Lehmann, editors. Little, Brown, Boston, 1966.

^b Some children may require and tolerate higher doses.

appear to have any advantage for children over chlorpromazine that outweighs its additional systemic toxicity, since chlorpromazine-induced extrapyramidal symptoms are not a problem in children. Since mepazine (Pacatal) has a relatively high incidence of toxicity in adults, its use is not advised for children.

Rauwolfia alkaloids. These drugs have a less reliable action than the phenothiazines and are now generally reserved for severely schizophrenic children who have not responded to phenothiazines.

Minor tranquilizers. These drugs are primarily useful in mild to moderately severe neurotic and primary behavior disorders, comparable to their use in adults. The major difference from older patients is that children with moderately severe organic and schizophrenic reactions are frequently helped by certain of these mild medications. Prepuberty children, unlike adults and adolescents, do not tend to become addicted to medication.

Diphenylmethane derivatives. Diphenhydramine (Benadryl) is most effective in disorders associated with hyperactivity, but it also reduces anxiety in very young children who are not hyperactive. It may be helpful even in moderately severe organic or schizophrenic disorders, although it is not potent enough for the most severely disturbed children. Unlike the other drugs, diphenhydramine drops in effectiveness at puberty. Young children tolerate doses 2 to 4 times higher by body weight than do adults, and the drug reduces symptoms before producing drowsiness or lethargy. After 10 to 11 years of age, children respond like adults: the drug frequently produces malaise or drowsiness and is most helpful as a bedtime sedative (see Tables III and IV).

Substituted diols. Meprobamate (Equanil, Miltown) appears to be less effective for hyperactivity than diphenhydramine in the same subjects, but, unlike diphenhydramine, it continues to be effective in neurotic children into adolescence (see Tables III and IV).

Miscellaneous. Chlordiazepoxide (Librium) has a sedative action in some children comparable to the

most effective minor tranquilizers. In other children it stimulates speech and thought associations, like the amphetamines, but produces a more prominent euphoria. This effect is therapeutic for some depressed, hypochondriacal, and inhibited children. In susceptible children, however, this action is associated with toxic excitation and disorganization of thought and behavior before any therapeutic effect occurs (see Tables III and IV).

To date, the large number of other minor tranquilizers have shown no special actions that differentiate them from the three drugs described above; in fact, many appear to be weaker—even totally ineffective—and more variable in their action in the same patient.

Stimulants and antidepressants. Amphetamines relieve anxiety and inhibitions in neurotic children, especially those with constricted speech and affect, with learning difficulties, with school phobias, and with disturbing sexual preoccupations. Reports that doses up to 40 mg. a day quieted hyperactive children with organic brain disorders have not been confirmed by others who used a maximum of 20 mg. a day. Subjective discomfort, anorexia, and weight loss occur frequently in doses over 15 mg. a day (see Tables III and IV).

Antidepressants are indicated in the depressions of adolescence, comparable to their use in adults.

Anticonvulsants and hypnotics. Early reports of the effectiveness of hydantoin compounds in the treatment of children whose behavior disorders were associated with nonspecific electroencephalographic abnormalities have not been confirmed by later workers.

Hypnotics have not been demonstrated to be effective in psychiatric disorders of prepuberty children. Barbiturates may actually increase anxiety and disorganization in severely disturbed children. Chloral hydrate or mild tranquilizers usually suffice as nighttime sedation, unless insomnia is associated with a severe disorder requiring major tranquilizers.

Pharmacotherapy combined with psychotherapy. The use of drugs in conjunction with psychotherapy presents some differences from the treatment of adults. Young children generally accept medication in a matter-of-fact fashion as something doctors give to make them better. Adolescents tend to regard medication more suspiciously as an interference with their autonomy. This attitude requires the same sensitive and skillful handling as other aspects of adolescent therapy. Since children typically tend to deny physical and psychological difficulties, they are usually all too ready to terminate medication as soon as their distress is lessened. Seriously disturbed children who need maintenance drug therapy must be helped to understand that medication is to reduce their oversensitivity at the times in their life when this becomes necessary. Rarely, an older neurotic child may use medication in the interest of his hypochondriasis or to gain attention, and this psychologi-

TABLE IV
Mild Stimulants and Tranquilizers: Suggested Doses for
Children 6 to 12 Years^{a, b}

Name of Drug	Range of Total Daily Dosage ^c	Total Dosage Divided into Number of Doses per Day
	mg./day	
Amphetamine.....	5-20	1
Chlordiazepoxide (Librium).....	10-50	2-4
Diphenhydramine (Benadryl).....	100-500	4
Meprobamate (Equanil, Miltown).....	200-1600	2-4

^a From Fish, B. Treatment of children. In *Psychopharmacology*, N. S. Kline and H. E. Lehmann, editors. Little, Brown, Boston, 1966.

^b Older children frequently require adult doses.

^c Some children may require and tolerate higher doses.

cal problem must be resolved in psychotherapy. Parents should be told that, at best, drugs produce only quantitative changes and that the child will not be cured or made over. Discussions of all the other measures needed to help the child will emphasize this point.

The therapeutic meaning of biological measures, verbal interpretations, and environmental restrictions depends on the conscious and unconscious attitudes of all the participants. In the treatment of children, the parents' attitudes to medication and the other aspects of treatment must be dealt with as part of the therapeutic process. Drugs would destroy therapy if the doctor used them as a quick expedient to avoid responsibility for the child's complex problems in living or if he saw drugs as the ultimate weapon of authority to enforce compliance on a problem child or if he felt drugs were a measure of desperation to be used only after all other measures had failed. Children differ from adults only in that they are frequently more acutely aware of the doctor's unconscious intent and are less tolerant of his rationalizations. If drug therapy is put into its proper perspective by the physician, medication itself can then be accepted readily by parents and child as simply another way in which the doctor is trying to help the child.

Convulsive Therapy

In the United States, Lauretta Bender has had the most experience with this form of therapy in prepuberty children, having treated over 500 children since the early 1940's. She abandoned pentylenetetrazol (Metrazol) treatment when electroconvulsive therapy (ECT) was introduced because the latter was technically simpler to administer. She uses a standard series of 20 ECT treatments, of 100 to 110 volts and 0.1-second duration, administered with a Reiter apparatus, without premedication.

Bender considers ECT to be a valuable adjunct in a comprehensive treatment program for schizophrenic children. She believes that it acts as a nonspecific physiological stimulant "to stimulate biological maturation, to pattern primitive embryonic plasticity, to mobilize anxiety in the apathetic autistic child and to reduce anxiety in the pseudo-neurotic child." She advises against combining ECT with phenothiazines, since the latter lower the convulsive threshold. Her studies reveal no detrimental effect on development. In Sweden, Annell has used insulin shock therapy for schizophrenic children with similar results.

Psychotic adolescents who require convulsive therapy are those who resemble their adult counterparts.

Lobotomy

Freeman, the foremost proponent of this procedure in adults, reported on 12 psychotic children under 14 years of age and noted that some decrease in excessive motor activity was observed but that "the results in children compare unfavorably with the results of psychosurgery in adults." In principle, the irreversible destruction of tissue in the growing brain is not recommended.

Suggested Cross References

For further information regarding the organic treatment modalities used in psychiatry, see Chapter 35, which contains sections dealing with tranquilizers (Section 35.1), antidepressants (Section 35.2), electroconvulsive treatment (Section 35.5), and lobotomy (Section 35.8). Fundamental concepts of psychopharmacology are discussed in Section 2.3. Application of the treatment methods discussed in this section to the various psychiatric disorders of children are described in the sections in this area dealing with the specific syndromes.

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43.4 RESIDENTIAL TREATMENT

MEYER SONIS, M.D.

During the past decade increasing attention has been focused on the need for more residential centers to provide a specialized program for children with behavioral symptoms not amenable to out-patient psychiatric care. Under the pressure of this need, it has been assumed that there is greater uniformity in such specialized facilities than is the case. A lack of uniformity exists not only in terms of which child is best served by which facility, but also in terms of the pattern of organization, administration, staffing, and programs to be found in these institutions. Such a lack of uniformity is not a criticism of the residential treatment center but is best viewed as a symptom of the historical evolution of the facilities.

This history is intertwined with the evolution of concern about children and their care and with the evolution of clinical knowledge of the psychiatric disorders of children. Residential treatment centers are the result of attempts in Europe and America to view the child as separate from the adult and to resolve the social, medical, ethical, and educational problems of the child who has deviated in his development.

History

Early history. For centuries in Europe, the only consistent concern and care for the poor and neglected children and adults was manifested through the auspices of the church. In 1267 A.D., for example, English law penalized the guardian of a child for waste but did not require his accountability for any child abuse. Until the Poor Law of 1601 in England, there was no concept of governmental responsibility for the welfare of children. Prior to this, children were often imprisoned, abused, and exploited; by law they had no rights. The Poor Law established public responsibility for the support of the poor—within which group were to be found many children with physical, mental, and emotional handicaps—and brought about

the development of the institution called the poor house or almshouse. It was not until the amendments to this law in 1868 and 1889 that parental neglect of children became punishable as an offense, and authority was given to the State for removal of children from their parents for such an offense. Such removal, however, placed the child in a state of apprenticeship to others.

In this country the concept of public responsibility as evolved in England was carried over and modified in keeping with New World concepts and needs. Asylums and almshouses were established by the local authorities for those who could not work or who were too old, crippled, or insane. Though neglected, retarded, and emotionally disturbed children were sometimes cared for by benevolent citizens or the occasional orphanage of a church, most of these children were mixed with unfortunate adults in the almshouses.

In the 1800's, the emergence of the view of children as separate and distinct from adults manifested itself in a variety of ways: the establishment of specific hospitals geared to the special needs of children; the emergence of pediatrics as a medical specialty; the initial movement to organize institutions for delinquent children; the admission of children identified as mental retardates to institutions for custodial care; the nucleus of the future juvenile court; and the prominent emergence of private, voluntary children's aid societies. In the organization and development of these private voluntary societies, aimed at providing care for dependent and neglected children, is to be found one major root of the future residential treatment center. These private agencies, many of them under the auspices of various religious denominations, sprouted throughout the country and were administered by and through humanitarian citizen interest.

Many children were indiscriminately placed in one institution or another. In most if not all of these various settings, little time or effort was spent in assessment of a child's particular needs. Behavioral symptoms as such in these children were of no interest unless such symptoms produced disciplinary problems for the institution. These children lived under rigid routines with moral and religious training predominant and without enough staff or funds or knowledge to attend to their needs. By 1900 many children, labeled as dependent and neglected or retarded, but with behavioral symptoms indicative of emotional disorders, were to be found in almshouses, orphanages, state hospitals, jails, training schools, and group homes. As yet, specialized programs and facilities for the disturbed child were not available.

Twentieth century. In the early 1900's several major developments took place, with each development playing a part in the formation of the other root of the future residential center. Social work evolved as a profession and brought with it the change of the trained layman to the professional. The contributions of psychoanalysis and psychobiology indicated

the importance of early child development and the environmental influences of child-rearing practices. The mental hygiene movement emerged and prepared the public for a more positive attitude toward the mentally ill and their need for specialized facilities. The child guidance movement flourished and brought with it specialized services for the child and the use of a team approach to the diagnosis and treatment of the emotionally disturbed child. The Children's Bureau, formed in 1912 as an arm of the federal government, drew attention at the national level to the needs of children.

As social work practice in the 1900's began using principles of social diagnosis and treatment and knowledge of programmed living for children, many of the private children's aid societies refined and changed their functions from the care, placement, and management of children to placement for the treatment of children. In many orphanages, group homes, and homes for dependent and neglected children, the well-intentioned laymen who wished to help children found their programs less effective for these children and increasingly required social workers to help them move toward professionalism in their programs. Some of these institutions, through experiences of their own and in association with social work, acquired skills of their own in the group care and management of children. They found, for example, that children maintained in a somewhat controlled setting were able to benefit from the warmth of available relationships. As the field of social work continued to develop, with emphasis now on the knowledge and skill necessary for planning and directing the daily lives of groups of children, the profession of social group work rapidly gained influence in many of the institutions providing care for dependent and neglected children.

The 1930's and 1940's. Perhaps the greatest impetus toward a change in these social agencies occurred in 1935 with the Social Security Act and its Aid to Dependent Children, which enabled many children, formerly seen as dependent and neglected children, to remain with their mothers. Increasingly, many of the agencies, formerly offering a group living program for dependent and neglected children, now found themselves with an increased number of referrals of disturbed children. Such agencies moved increasingly from their administrative base of volunteers and laymen to that of a professional staff, either totally or in part, depending on their former tradition. Many of these agencies, retaining their roots in social and religious orientation, acquired staff in response to these pressures. With a new emphasis on providing children with daily care while utilizing the environment to modify behavior, other professions joined the social work staff—social group workers, educational experts, recreational and occupational therapists, and psychiatrists. With this new emphasis on longer term growth processes for children, these agencies, through various

patterns of staffing and programming, began to provide for the child's total needs in terms of living, schooling, physical well-being, and recreation.

During that same period of time, as the social agency was evolving into a form of residential treatment center, the medical community was also undergoing change as a result of the developments influencing the social agency. The public and private psychiatric hospitals, whether state hospitals or institutions for defective children, had recognized the inappropriateness of their facilities for children and had expanded their function to include specialized wards for disturbed children. Parallel to this, in 1930, the first specialized facility was established for the study, diagnosis, and treatment of seriously disturbed children and their parents and was followed by many more of these psychiatric in-patient services. These specialized services were to provide a program of treatment based on a comprehensive diagnosis and were established as part of a larger psychiatric hospital or on an independent basis.

Within these medical settings, often hospital-oriented, many problems and issues began to emerge as the routine of the hospital ward and the structure of the traditional medical service was stretched to include the flexibility needed for child living as well as for patient care. In some settings, strong orientations emerged, leading either to a physiological bias in diagnosis and treatment or to a psychoanalytic bias in emphasizing individual dynamics. It became clear that knowledge of childhood psychopathology and the treatment of such were not enough and that more knowledge was necessary about using the environment as a tool in bringing about psychotherapeutic changes. In some of these treatment hospitals, much emphasis was placed on the utilization of the nurse as a therapeutic arm of the physician, but they discovered the need for greater flexibility and knowledge of children on her part. In some settings this issue of nursing care was managed by the requirement of specific training for child psychiatric nursing; in other settings the nurse was relieved of the daily care of children by development of nursing counselors, child care workers, or child aides.

In the early development of psychiatric hospitals for children, many children were referred to or dumped into these hospitals as a last resort, and in their acceptance by the hospital the children were literally disowned by the community. As a result, the hospital acquired a static population, and treatment programs reverted to custodial care. Some of the settings tended toward a concept of treatment biased heavily in a particular direction, depending on the orientation of its practitioners. There was a deemphasis of the original design of such centers to that of treatment based on a comprehensive diagnosis.

In the 1950's. By 1950, residential treatment of emotionally disturbed children had become loosely defined; it was a descriptive term that de-

pended greatly on the setting within which the service was offered.

In 1951 the Child Welfare League of America undertook a study of residential treatment of emotionally disturbed children. The report of their results stated: "From the beginning it was apparent that any attempts to develop firm criteria or standards was definitely premature. Rather, it was believed that a description of differing methods of practice might serve eventually to furnish a yardstick against which deviations of sharp differences could be measured and evaluated."

In 1956, partly in response to the growing need for evolving uniform criteria regarding residential treatment centers, a Conference on Inpatient Psychiatric Treatment for Children was held under the auspices of the American Psychiatric Association and the American Academy of Child Psychiatry. Recognition was given to the fact that the in-patient treatment of children was as yet a new field of development, a field that reflected the "concepts and practices of child psychiatry, in itself a relatively new field." Recognition was also given to the many questions as yet unanswered, such as the role of the child care worker, the need for epidemiological studies, more valid data as to judgments on the use of residential treatment and its efficacy. In this conference, a definition of a children's psychiatric hospital or unit was agreed on, and uniform criteria of physical plant, location, costs, personnel, staff-patient ratio, and treatment processes were developed for such units. A children's psychiatric hospital or hospital unit was defined as "a medical facility established for the diagnosis and treatment of children suffering from psychiatric disorders in which the psychiatrist carries medical and corresponding legal responsibility for the diagnosis and treatment of the patient." It was further felt by the conference participants that "the use of the word hospital for the specific type of service under discussion will help the community recognize this service as one in a range of services, each having its own function."

Evolution to present status. The residential treatment center and its concept of residential treatment for disturbed children emerged from the roots of the social and welfare needs of children and the medical needs of children with behavioral symptoms. These roots can still be found in the residential treatment of children. In the evolution of these two main streams there can be no doubt of the various problems and issues that have positively or negatively influenced the residential treatment center and its current patterns of administration, organization, staffing, and programs.

In the residential treatment center that emerged from the orphanage, child care institution, or group foster home, the focus on the disturbed child emerged from concern for the dependent and neglected child. In many of these institutions, the tradition of humani-

tarian motives, of doing good for children, making up for their deprived backgrounds, and providing moral examples for them to follow became competitive with the principles of scientific rigor in diagnosis or professional practice and treatment. The concept that disturbed children needed more than love became difficult to accept or put into practice through an organized and designed program that was aimed at more than simply social adjustment. The issues of changing from a lay administrator, a program dependent on a voluntary staff of charitable interested citizens, and a staff who simply liked children to a professional organization were symptomatic of this evolution. In the evolution of the orphanage to a residential treatment center, much experience had been gained in the care of groups of children but little experience in utilizing the knowledge of individual children. Like Topsy, the orphanage just grew into a residential treatment center, adding staff as needs arose, changing patterns as pressures mounted, moving from tradition to knowledge—but always with the base of its operation in the root of a social or welfare agency.

On the other hand, the residential treatment center, taking root from the medical stream, grew consistently from the professional base of psychiatry as a clinical science. This growth was not without its problems—problems that arose as a result of the competition between the scientific rigor of medical tradition and structure and the needs of children as social organisms. The starched white uniform became a symbol of sterility and was changed as the hospital ward structure evolved into a home atmosphere. The knowledge of the individual children had to be balanced now with knowledge of group transactions, caring for groups of children, and professionalizing humanitarian motives. The child guidance plan, so useful in the out-patient treatment of children, had to be expanded to include the teacher, the nurse, the nurse-counselor, the child care worker, the dietitian, the maintenance staff—but in such a way as to have the environment become a therapeutic force to support individual psychotherapy.

Types of Residential Treatment Centers

At the present time, despite the previous attempts to develop uniformity of criteria and despite the pressing need for data comparability, it is difficult to estimate the number, types, similarities or differences in program, or efficacy of residential treatment centers with any degree of accuracy. For example, in the Child Welfare League Study of such centers in 1961 (Hylton), a list of 120 institutions offering some type of program for emotionally disturbed children was compiled, but of this number only 27 were eventually deemed suitable for study by the broad criteria established. Eliminated from this study, for example, were centers that were primarily school programs, group homes, units of mental hospitals, and research units. In this same study, "to the best of their

knowledge, 4,600 children were in care at 80 residential treatment centers in 19 states."

Despite the heterogeneity of residential centers and within the limits imposed by the current reality of our knowledge, it is possible to present a profile of residential treatment and residential treatment centers as currently in practice.

Kinds of referrals. Of all referrals made to residential centers, only 15 to 20 per cent are accepted, with the majority of referrals not accepted, interestingly enough, on the basis that residential treatment is not indicated. Other reasons for nonacceptance of the referral are unavailable space, center policy, and inappropriate age. Most referrals to such centers are made by social and child welfare agencies, but this may depend on the auspices of the center; that is, the residential treatment center integral to a child psychiatric program may accept most of its referrals from within its own program. In a study of 1,000 children referred for residential treatment in New York State, "less than 25 per cent of the children have lived only in their natural homes, while 40 per cent of the children have lived in four or more homes or institutions, and three-fifths of the children did not have a continuous relationship with both natural parents."

Kinds of children. The majority of children served in residential centers are between the ages of 9 and 14, with the range between 5 and 17 years of age and with a ratio of more boys than girls. There are only a few centers available for adolescents at the present time.

The children served range from the child diagnosed as psychotic to the child with an adjustment reaction of childhood or adolescence; very few are diagnosed as having a chronic brain syndrome or as suffering from mental retardation. Studies have suggested that the spread of diagnostic categories in various residential centers indicates a random selection. It seems that this selection may be based on the nature of behavioral symptoms, the age of the child, the degree of parental alienation from the child, and the capacity of the institution to cope reasonably with the child. For example, in residential centers the child who is more aggressive, less difficult to reach, but more disoriented is often the younger child; the older child is less aggressive, more difficult to reach, and less disoriented. In other words, the residential center can cope more reasonably with the younger child who is severely disturbed and with the quieter adolescent. The average length of time that children remain in residence is about 2 years.

Kinds of institutions. Currently, if a profile were drawn of institutions within which the emotionally disturbed child is found and within which residential treatment is the service offered, the following patterns would emerge.

Placement units. These institutions, the numbers of which are impossible to ascertain, are under private

auspices and indirectly supported financially through contract for service with city, county, or state welfare departments. The institutions are thought of as providing treatment for emotionally disturbed children, but they are really providing group care, management, or custody, of a substandard nature, to the children in residence. These institutions are inadequately staffed, with an insufficient number of staff to provide a constructive program, and with most, if not all, of the staff untrained and ill equipped for the task. Many of the children in these institutions are there for placement purposes as a result of behavioral symptoms that have made them unmanageable in the community and have brought them to the attention of the courts and child welfare services. These children have seldom had the benefit of psychiatric examination and, if examined, would reveal extreme social pathology in addition to whatever psychopathology is present.

Residential center units. These institutions, the numbers of which are greater than the psychiatric in-patient units, are primarily under private auspices and financially supported through federated (Community Chest and various religious charities) and public (city, county, state, or welfare department contract for service) sources. These institutions are primarily under social work administration, direction, and practice. For emotionally disturbed children they offer a program of therapeutic care, complemented or supplemented by individual or group psychotherapy. In most of these institutions, the physical plant and program provide for almost all of the child's needs, such as living, schooling, routine medical care, recreation, and socialization. An adequate staff-child ratio is maintained to carry out the program. Some of these institutions utilize the community resources, if possible, for the education, recreation, and socialization of their children or for treating a child who requires hospitalization.

In these institutions, procedures and daily living are established in such a way as to involve staff members in meaningful opportunities for constructive interaction with the child. The professional and nonprofessional staff in such an institution covers the spectrum of social work, social group work, clinical psychology, activity group therapy, educational specialists, recreation staff, child care supervisor, child care worker, maintenance and kitchen staff, pediatrician, psychiatrist, art-drama teacher, dentist, and neurologist. In many of these institutions, the psychiatrist is utilized as a consultant—serving as a member of an admissions committee, supervising others in their psychotherapy of children and parents, or providing in-service training—or else he is employed as a staff member to provide psychiatric treatment for selected children.

Many of the children in these institutions are probably the least disturbed—severity of symptoms, intensity of behavior, diagnosis, chronicity—of all the

children in residential treatment centers. Most of these children are children of disturbed parents who have not been able to cope with the child.

Psychiatric in-patient units. These institutions are under psychiatric administration, direction, and practice. By design, organization, and procedures, they offer a program of psychiatric diagnosis and treatment of the emotionally disturbed child and a treatment regime that includes the daily care of the child. These institutions are under private, public, or university auspices and on the whole are integral to other child psychiatric services. They are utilized many times as a clinical facility for purposes of training in psychiatry and child psychiatry. Financial support of the institution depends on its auspices, with a source of funds similar to that of the residential treatment center.

As with the other residential treatment centers, these are self-sufficient in physical plant and program and provide for almost all the needs of children. In addition, they can provide more totally for the medical needs of the children within residence.

There are many similarities between these psychiatric in-patient units and the residential centers, but the differences are accentuated by the former's deliberate focus on a design of psychiatric diagnosis and treatment. This focus permeates the organization, program, staff philosophy, and goals. The nature of the organization as a psychiatric facility provides for the integration of all staff purposes under the leadership of the psychiatrist and with the basis of decisions about the child integral to therapeutic goals.

The children in these institutions are more disturbed than children ordinarily found in the residential centers. Their behavioral symptoms are more extreme, but they are manageable in such a setting. Since the psychiatric focus is basic, there is more opportunity for individual psychotherapy. For example, the Child Welfare League Study of 1961 stated, "The lowest child-psychiatrist ratios occur in the large psychiatric training centers, with ratios from almost two children per psychiatrist to seven; these same centers have the largest number of children in therapy with psychiatrists."

Since the ideal of involving all parents in active treatment cannot be carried out in practice, various patterns are developed to manage this issue, such as periodic 2- or 3-day visits of the parents, psychiatric or casework treatment of parents in their own community, and a policy of accepting only children whose parents are able to be involved in their regular treatment regime.

State hospital units. These institutions, under the auspices of a state mental health or hospital system, are under psychiatric administration and direction. Many offer programs of long term care and treatment of children with chronic psychiatric disabilities. The patient population of these institutions reflects this chronic disability in terms of diagnosis

(chronic brain syndrome, childhood schizophrenia, severe behavior disorders, mental retardation), age (more adolescents), social pathology, nature of behavioral symptoms (intense, severe, aggressive, chronic), and unavailability of community resources to these children previous to admission.

These institutions are also self-sufficient and provide for the total needs of children insofar as physical plant is concerned, but not in terms of total program. Most of these institutions have insufficient professional staff to carry out a program of total long term care and rehabilitation.

Problems

Of all the children descriptively diagnosed as emotionally disturbed and mentally ill, the children whose behavioral symptoms produce a guarded prognosis—controversial in terms of etiology and mode of treatment and yet severely in need of a comprehensive program of care and treatment—are also the children who face the problems produced by the evolutionary history of the residential treatment center. Problems for the child, mental health professionals, and community are not simply those of insufficient community facilities but also those of heterogeneity of definitions, approaches, ideologies, programs, methods, practices, and results. Problems have also been compounded by the community attitude toward the disturbed child.

A comprehensive exposition on the subject of residential treatment of children does not as yet exist, but fragments exist in the professional literature, studies published and unpublished, programs and conferences held, and the collective experiences of the various residential treatment centers. If an exposition were to present the relevant issues, it would of necessity have to include the problems of etiology, diagnosis, and treatment of the psychotic child; the differences and similarities between the child diagnosed as symbiotic, autistic, atypical, and schizophrenic; and the knowledge available for the diagnosis and treatment of the brain-damaged child. It should contain discussion of minimal brain damage, soft neurological signs, perceptual motor deficits, body image, developmental arrest, learning disability, and special sensory deprivation. Such a study should discuss the issues in the diagnosis and in the treatment regimen prescribed for children whose behavioral symptoms reflect child-rearing practices as well as neuronal disorders, genetic abnormalities, developmental phase, social pathology, psychopathology, nutritional imbalance, or parental disorder, or any combination of these.

In addition, such an exposition would include the various theories of child development, as this knowledge can be applied to the daily care of children; the difference between the practice of psychotherapy and social casework, care, and treatment; the education, training, and experience of the child care worker,

counselor, and therapist and their role differentiation; a discussion of medical-legal responsibility and its implication for the mental health and illness of children; the need for new laws governing child welfare practices and commitment procedures; and more answers to the many questions posed in 1956 by the Conference on Psychiatric Inpatient Treatment of Children.

Though such an exposition must await the further developments of the behavioral clinician and scientist, the past history of the residential treatment center does suggest the lessons to be learned from this history.

Use of Residential Treatment

Residential treatment has become a term synonymous with a therapeutic prescription for a child with behavioral symptoms that are indicative of serious pathology and prognosis, supported, maintained, or aggravated by the environment within which the child lives and an environment already suspect as an etiological agent. It is also a prescription for a child with symptoms not amenable to therapeutic intervention ordinarily available to the child while living in the environment but believed to be amenable to a treatment program offering: (1) separation of the child from this environment, (2) a corrective emotional experience through daily care, (3) an opportunity for the child to maximize his ability to make use of individual psychotherapy, and (4) an opportunity for the parents, now temporarily relieved of the child, to maximize their capacity to make use of psychological help.

The separation of the disturbed child from his environment can produce anxiety in the child that can be constructively used in his behalf if a physical environment can be made available for him to explore, manipulate, experiment with, and exploit. This environment should be one in which routines can be supplied as orientation for the child, not as imperatives of nature; one in which controls can be instituted to signal the limits of the environment and the limits of safety and to act as a comfort to the child when he fears abandonment while he probes the unknown.

This prescription can be an effective one to the extent that: (1) a comprehensive diagnosis is the basis of fitting the prescription to the child; (2) such a diagnosis also establishes the determinants of whether the child with behavioral symptoms can make use of separation as the therapeutic agent (placement), of separation and therapeutic care as the vehicle for change (residential center), of separation and therapeutic care as the entree for treatment (psychiatric in-patient unit), or of separation and controlled therapeutic care as the vehicle for psychiatric rehabilitation (state hospital); (3) residential treatment is integrated with the total range of clinical and non-clinical services available for the child with behav-

ioral symptoms, i.e., out-patient child psychiatric clinics, day care centers, acute service, specialized educational classes, foster and group homes with professional and semiprofessional staff, halfway houses, summer camps; and (4) the recommendation for residential treatment includes responsible plans for maintaining the relationship of the community to the child while the child is in residence.

Suggested Cross References

Also see Chapter 36 for a discussion of milieu therapy.

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ment centers are connected with hospitals, constituting one part of the range of services provided.

Therapeutic Factors

Milieu. Since the child spends a great part of his waking hours in the day treatment center, the establishment of a therapeutic climate is necessary to aid his rehabilitation, to enhance treatment, and to avoid antitherapeutic developments. Milieu embraces such factors as the degree and form of structure, the consistency of experience to which the child is exposed, the measures used to reduce anxiety and provide satisfactions, the management of undesirable behavior, the apportionment of the therapeutic responsibility among various staff members, and the staff attitudes toward one another.

Therapy. The emphasis that psychotherapy is given varies. Some centers see the operation as a framework for intensive psychotherapy; others view the milieu, opportunity for relationships, and removal from the home for a large part of the day, as the therapy itself. Psychotherapy within a center where the child necessarily relates to many adults in addition to his therapist, e.g., teachers, social workers, psychologists, aides, nurses, household and clerical staff, differs from psychotherapy that is temporally and geographically separated from the balance of the child's activities.

Therapists usually spend less time with the child than do other staff members, and therapists may not be present when significant situations occur. Therapy hours often compete with other scheduled events. Since the population in day centers is comprised of quite severely disturbed youngsters—largely psychotic, severe personality disorders, and chronic brain disorders—the ego-supporting therapies and pharmacotherapy are widely used. Therapeutic methods, such as the application of group techniques to the classroom, the use of individual teachers for corrective object relations, and emphasis on the "life space" interview, evolve from the special features of the day treatment center.

Education. In a day treatment program, school constitutes most of the child's day. Hence, there has been a close association between day treatment and special education of the emotionally disturbed child. Almost all day centers have an intramural school, since the regular school environment is one of the critical areas of failure for which children are referred. Because school can serve as a vital therapeutic instrument, the educational experience should be integrated into the total treatment plan.

The therapeutic value of coordinating education and therapy lies in the provision of a controlled environmental experience in which therapeutic gains can be reinforced, self-esteem and peer identification can be promoted, and techniques for coping with the environment and for developing useful defenses against impulses and anxiety can be provided. The school

43.5 DAY TREATMENT

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Definition

Day treatment, sometimes termed day care or partial hospitalization, is that form of treatment in which the child spends the major part of the day in the treatment center, returning to his home for evenings and weekends. This method of therapy is relatively new, having been introduced in the early 1950's. It is designed to serve children who require more therapeutic intervention than is offered by a child guidance clinic but who need not be removed from their homes for residential therapy. Many day treat-

teacher, with her educational understanding of behavior, methods, and goals, should participate in the over-all treatment plan in order to utilize the therapeutic potential of the classroom and to avoid aggravation of the child's problems.

Treatment of parents. Since day treatment is predicated on the idea of children remaining in their homes, treatment of the parents is indispensable to obtaining optimum results. Parents of children disturbed enough to require day treatment have a high incidence of psychopathology, much of which interlocks with that of the child. The goal of therapy is the improvement of parental function and the reduction of the parental contribution to the child's illness, so that the child can remain in the home and sustain the gains achieved by treatment. Various forms of therapy are used—individual, group, joint, family.

Rationale

Day treatment is based on the assumption that children who would ordinarily be referred to residential centers are capable of achieving comparable gains while remaining in their homes. Helping a child within the home and community has the advantage of permitting simultaneous change in child and parents so that readaptation is facilitated. It avoids the anxiety and loss of self-esteem attendant on separation from the parents, the geographical distance that works against effective parental treatment, and the disadvantages of institutional living. The burden of management of the child is shared by the family, and the cost is lower than in residential institutions.

Indications and Contraindications

Day treatment is indicated for those children requiring long term treatment for an emotional disorder that has seriously impaired their social and academic adjustments. It is also useful as a transition between hospitalization or residential treatment and a complete return to the community. It is contraindicated for children who are homicidal or suicidal, who come from homes where responsible parental functions are not provided, or where parental psychopathology fosters the continuance of the child's illness or is too massive to permit the child's improvement within the home.

Goals and Results

The goals of day treatment are the return of the child to community facilities and the maintenance of gains. Only one study comparing the results of this mode of treatment with others dealing with similar groups of children has appeared. According to this report concerning schizophrenic children, those showing concomitant evidence of brain damage who came from normal families showed improvement comparable to that of controls in residential treatment. Nonorganic schizophrenic children, presumably having a larger re-

active factor in their illness, did better in residential treatment.

Suggested Cross References

More detailed descriptions of the therapeutic modalities mentioned in this section, such as psychotherapy and pharmacotherapy, may be found in Sections 43.1 and 43.3 in this chapter. General principles of psychiatric treatment are discussed in Area G. The problems of educating children with psychiatric disorders are discussed in Section 43.6.

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43.6 PSYCHIATRY AND THE SCHOOL

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Education is the process by which a culture prepares its young to assume an appropriate role in the social structure. Although this process begins at birth, in Western culture it begins to be transferred from the parents and the home environment into the formalized social institution of the school when the child is about 6 years of age. Readiness for formal education, as determined by law, is based on theories of neurological maturation and psychological development, that is, resolution of infantile family conflicts and achievement of latency.

Going to school is the child's first systematic separation from home and his first exposure to the administrative structure of society. The child must attempt to adjust to a strange adult and to a large peer group. He needs to perform tasks from which escape is difficult. His attitudes toward teachers, children, and work bridge the gap between his early experiences with parents and siblings and later experiences in adult life. The years a child spends in school influence his total personality, affecting the values he ascribes to himself, his relations to others, his potential for work productivity, and his life adaptation. School, therefore, offers a rich opportunity for the enhancement of mental health. School affects the total child population, cutting across all socioeconomic groups, with a captive attendance throughout childhood and adolescence, and with both a legal and a so-

cial hold on the child. School is committed to the welfare of children, providing the only compulsory professional contact between society and the child. Early detection of emotional disturbance and application of preventive measures are possible within this habitat of all children, and therapeutic measures can be undertaken in situ.

History

Problems of learning and manifestations of cerebral pathology have interested physicians for many years. Itard and Séguin studied mental retardation, and Montessori devised educational procedures for retarded and normal children, stressing sensory and cognitive development. However, the advent of psychoanalysis marks the real beginning of widespread clinical focus on education. Freud's concept that anxiety results in repression and symptom formation and that neuroses were caused by excessive control of impulses led to the idea that psychopathology could be prevented by giving children freedom to develop without the traditional repressive techniques employed both by authoritarian parents and by schools. These ideas coincided with those of John Dewey, who stressed the value of learning through individual experimentation, with limited interference from books or teachers.

Progressive education, predicated on the idea that children, if left free to use their own powers of exploration, would learn about the world through natural curiosity and warm interpersonal relationships, developed from the ideas of Freud and Dewey. Their considerable impact on American education began in the 1930's, but the initial optimism about progressive education waned as it was found that it resulted in no diminution of neurotic disturbance. Apparently innate factors and crucial life situations influence the child's psychic development despite modifications of school attitudes. Extremes of educational practice, either traditional or progressive, are not common today, most educational systems occupying a middle ground.

Following World War II, there was a shift in emphasis from theoretical contributions to educational philosophy to an emphasis on the therapeutic alleviation of the specific educational problems of disturbed children. Along with this change, there was considerable discussion of the prevention of mental illness through the cooperative efforts of clinicians and educators, but the systematic implementation of this concept has been limited.

Role of the Psychiatrist in the School

In the past, psychiatrists functioned largely as theoreticians for experimental educational models and occasionally as consultants, usually for special or private schools. Child psychiatrists, in their practices, have had to deal with school as an important

aspect of the child patient's life. Actually, most referrals of children for psychiatric evaluation originate with school problems. In the past few years, the role of the psychiatrist has expanded in connection with the tendency to develop special classes, with emphasis on community psychiatry, and with increasing acceptance by educators of the value of the psychiatric contribution. A 1963 survey indicated that 174 child psychiatrists work with schools in some capacity. This number has probably increased considerably since, but, as there are over 40 million children in the public schools, the proportion is a very small one.

As a consultant to the school, the psychiatrist acts as a specialist in the understanding of human behavior and its developmental derivatives, both innate and environmental, of motivation, and of interpersonal intervention techniques.

Role in relation to educator. Because clinicians and educators do not share a common frame of reference or language and because status problems arise when one professional enters another's domain, the psychiatrist has many obstacles to overcome in translating his abilities and knowledge into a form useful to the educator. As separately viewed by the psychiatrist and the educator, the understanding of the source of disturbance, methods of intervention, and goals may differ widely. The psychiatrist preparing for school consultation should, therefore, be exposed to educational viewpoints, operational problems, and teaching methodologies; in so doing, he will find himself much more aware of the social forces operating on mental illness and of the extent of clinical and subclinical disturbance in the population.

Consultation. Psychiatric school consultation functions primarily in the areas of consultation to related mental health personnel working in the school (psychologists, social workers, guidance teachers, etc.), consultation to special programs for deviant children, and direct consultation to teachers in class and case management. In the last role, the psychiatrist is in the position of dealing with teacher-class-administration or with teacher-pupil-administration. This has some resemblance to the parent-child-society unit in therapy; but, since there is much less acceptance by educators of this interactional viewpoint, circumspection on the part of the psychiatrist is required. Errors in this area have probably been responsible for most of the difficulties in school consultation.

Teachers come with supposedly external problems—difficult pupils or restrictive administrative regulations—that may actually reflect internalized conflicts about achievement, identification, regression, rebelliousness, etc. The psychiatrist attempts to reduce the defenses of denial, intellectualization, projection, and avoidance and to bring feelings into the open without himself directly introducing the concept of the educator's role in the problem. The con-

sultant conveys his identification with and respect for the teacher's role by relating his own experiences, especially those that counteract his omnipotent image, by demonstrating methods of coping with problems, by communicating general mental health principles, by talking to the teacher as colleague and not as patient, and by recognizing the realistic limitations of both his and the teacher's roles.

Extending role. School consultants usually go through a process of role evolution, in which, after they are considered omnipotent, they are then tested as to whether they can identify with the educator. With successful completion of this phase, the next step is to be helpful on the level of applied psychiatry. Extension of consultative functions into matters of policy setting on an administrative level is the final stage. It is in this last capacity that the most effective preventive mental health measures can be introduced. Pertinent psychodynamic principles can be incorporated into the total educational experience of the child, embracing such areas as teacher-child relations, group and developmental dynamics, school morale, curriculum selection, and teacher training and supervision.

Psychiatric Disorders Related to School

Learning disorders. Learning disabilities are one of the commonest causes for which children in latency and adolescence are referred for psychiatric evaluation and treatment. About 10 per cent of school age children are reported to have learning difficulties of sufficient degree to require special services outside of the regular classroom. Incidence in boys is greater than in girls in a ratio of 8 or 10 to 1. Although there is no absolute correlation between emotional disturbance and learning disorders and although some children with severe pathology learn very well, there is, on the whole, a close relationship between the factors, regardless of the origin of the learning disability.

Etiology. The majority of children suffering from difficulties in learning appear to do so on the basis of a constitutional, neurological deficiency. Maturation lags in the sensorimotor, perceptual, and integrative systems appear to be responsible for difficulties in auditory and visual discrimination, laterality, memory, symbolization, and expressive language. Even in these cases, however, the effects of poor learning experience often lead to emotional disturbance, which complicates the diagnostic and therapeutic procedures.

Aside from those children with a biological basis for disability, there is a group of children with intact neurological equipment who present a picture of psychogenic learning impediment. This group has received considerable attention in psychiatric literature. Although any aspect of learning may be affected by psychological factors, reading disabilities are by

far the most common and most disabling of the learning disorders.

Psychologically, intellectual activity is considered a function of the ego (perception, cognition, integration, reality testing), and inhibition of it represents a restriction of ego function as a result of conflict between impulses and the superego or the outside world. The child's early experiences within the family, especially in the areas of intake of food (which is symbolically equated with intake of knowledge) and curiosity (in efforts to understand birth, growth, death, sex, and bodily functions) influence the child's freedom and interest to learn.

In addition to attitudes toward the intake of knowledge, early attitudes toward the parent affect the learning process. The teacher is identified by the child with the parent, and children learn initially in order to please the teacher and gain his praise and rewards. The teacher-child relationship is, thus, the major tool for learning. Only later, toward adolescence, does the ego-ideal develop and take over as the chief motivator. If the development of relations between parents and child has miscarried in the preschool period, with inadequate resolution of infantile conflicts in aggressive and sexual spheres, the child is not ready to learn within the teacher-child relationship, and learning disorder may result.

Psychogenic learning disabilities. Some examples of psychogenic learning disabilities are the following.

Early negative conditioning. Early unpleasant school situations—such as a harsh teacher; a temporary handicap like undetected poor vision; excessive competition; poor health, leading to excessive absence; being ridiculed; and fear of aggressive peers—can lead to negative associations to school and consequent avoidance of learning.

Oppositionalism. A power struggle with the parents, derived from earlier periods of psychosexual development, may be carried over to the teacher-child relationship, causing the child to use his energies to defeat the teacher and parents in their efforts to make him learn.

Intolerance for anxiety. Children who have been excessively shielded from frustration, challenge, or unpleasant emotions may find intolerable the tension necessitated by initial experiences and expectations outside the home with a strange adult or peer group. They may react with regression or avoidance.

Threat to omnipotence. Children who have developed a defense of omnipotence against perceived threats from the environment have difficulty in putting themselves in the vulnerable position of learner with the teacher and the other children and may react by attempts to divert the class' attention to something in which they excel—often mischief.

Fear of learning. The act of learning may be equated with aggression or sexual curiosity. To look, to see, to know, or to display mastery of knowledge may produce a conflict with the superego or with the

environment relating to earlier unresolved competition with parent or sibling. Fear of retaliation may lead to inhibition of one or several of the ego functions necessary to learning. Carried further, the child may assuage guilt over drives by punishing himself by not learning—for example, by appearing stupid.

Negative symbolic associations to specific learning items. Occasionally, a child forms a unique, personalized association of a negatively charged nature to a minute item or limited area of learning, such as the sexualization of a letter or the castration or deprivation implication of subtraction, which interferes with learning in that circumscribed area.

Deflection of attention by intrapsychic conflict. Some children may be so preoccupied with intrapsychic conflicts on a conscious or unconscious level that the ego is not free to direct enough attention to the learning process to be effective. The ritualistic obsessive-compulsive child is an example of this.

Retardation of secondary process thinking. Since most learning experiences are oriented toward symbolic materials, the child must have the capacity for logical, abstractional, cause and effect, time-sequenced thinking. In psychotic children, primary process thinking may predominate and impair comprehension of symbolic material.

Lack of motivation. Because of special familial circumstances or because of alienation from the cultural mainstream, a child may attach no importance to learning. He is unable to identify with the teacher and derives no satisfaction from mastery of process because the goals of school are meaningless.

Prognosis. Prognosis of the conditions just described varies considerably, depending on the source of the disability, the underlying diagnosis, its severity, and the type and duration of treatment. On the whole, prognosis with emotional disorders of learning is considered more favorable than with those disorders having a neurological basis. Certainly complete restitution of function is possible in the former; in the latter, follow-up studies indicate a persistence of difficulty into adulthood.

Treatment. Therapeutic intervention in emotional disorders of learning must be 2-fold. Where there are continuing blocks to the absorption and integration of knowledge, therapy must be devoted to the amelioration of these blocks. However, children with such disorders are almost always markedly deficient in the necessary skills and requisite knowledge commensurate with their ages, and they will not automatically catch up as a result of treatment. This necessitates the addition of remediation procedures, either concomitant with or following psychotherapy. Although remediation usually requires two professional persons, a therapist and a teacher, efforts to combine this role in the form of therapeutic tutoring have recently been reported. In this process, the learning block and its origin are dealt with simultaneously.

School phobia. "School phobia" is a term used to describe the condition in which a child refuses to attend school because of an irrational fear. The term "phobia" is used in the general meaning of aversion rather than with the implication of the phobic mechanisms of displacement, projection, and externalization, which are not present in all cases.

This syndrome appeared comparatively recently, within the past 3 decades, as a result of compulsory education laws, which made school attendance mandatory up to a certain age, and the syndrome has since been steadily increasing. It accounts for about 2 to 8 per cent of referrals to child guidance clinics. The incidence is about the same for boys as for girls. Occurrence is highest up to the 4th grade, decreasing thereafter. School phobias seem to come from homes in which middle class child-rearing practices are employed.

Diagnostic groupings. The diagnostic groupings underlying the symptom fall into three main categories. Most cases are psychoneuroses, with anxious, obsessional, hysterical, or depressed features. The ego strengths of this group are generally good, as evidenced by adequate or even superior performance in social and intellectual spheres outside the circumscribed symptom.

A second group suffers from personality disorders. They may represent a more insidious, severe, or chronic stage, and they appear more commonly in older children. In these cases, the ability of the ego to integrate the demands of drives, superego, and reality is impaired, and defenses of withdrawal, regression, and projection are present, which result in a constricted personality with little energy beyond that used to cling to the mother.

The third group is a psychotic one, in which the inability to attend school is only one manifestation of the severe underlying illness.

Etiology. School phobia is considered to be rooted in the mother-child relationship. Early dependency ties to the mother have not been resolved because of the mother's need for the attachment. The mother is usually indulgent and devotes herself to gratifying the child's infantile needs, with considerably underlying hostility and guilt. School, the first enforced separation of the symbiotic unit, produces a climate for separation anxiety. The episode is precipitated when imbalance in the mother's emotional equilibrium, due to marital or family-of-origin factors, coincides with an exacerbation of anxiety in the child. Because the child is overvalued at home, school is a challenge to his omnipotence. He may, therefore, be very sensitive to any narcissistic threat. There is often great repressed hostility toward the mother for preventing the child's developing autonomy, and with this symptom the child both satisfies and frustrates the love object. He may also satisfy his need to avoid growing up into a sexual being by remaining a dependent, presexual baby. The father usually plays

a role supporting or enhancing the psychopathology of mother and child.

Clinical features. The typical pattern in school phobia is that of an early latency child who, without apparent reason or as an ostensible consequence of some minor event, expresses great fear of school and wishes to remain at home with his mother. He often has above average intelligence and has previously done well in school. The onset usually follows a weekend or holiday. The child may complain of stomach ache or other pains and may vomit. Bribes, threats, and pressures produce panic and great resistance to returning to school.

School phobia differs from truancy primarily in that anxiety, somatic symptoms, overattachment to family, high valuation of school, and internalized conflicts are present, but acting out and antisocial behavior are absent.

Prognosis. School phobia has been referred to as one of the emergencies of child psychiatry, since the prognosis varies inversely with the length of absence from school. Prolonged absence aggravates the psychodynamic conflicts and adds secondary gains to remaining away from school. The prognosis for return to school is generally good, especially in the psychoneurotic group. Those cases in which there is no return or where absences occur throughout the school career fall into the severe characterological or psychotic group. However, about half of all children continue to manifest subclinical symptoms, such as chronic anxiety and vague somatic complaints, throughout their school careers. The prognosis is less favorable in boys than in girls. This may be due to differences in social expectations of independence directed toward the two sexes, as reflected in a syndrome that is primarily a result of faulty development of autonomy. Prognosis also correlates with the degree of parental pathology.

Treatment. Because school phobia involves child, parent, and school in an interlocking relationship, therapeutic efforts must be directed to all three aspects from the outset. The child should be engineered back to school as quickly as possible, utilizing whatever manipulations of class placement, hours, and the like are necessary. Simultaneously, both parents and child should enter psychotherapy for clarification of the dynamics that have resulted in the pathological interrelationships. The return to school cannot be considered to have any therapeutic significance without resolution of the underlying dynamics, as recurrence of refusal to attend is certain.

Because of the primarily familial origin, family therapy has been used successfully. Attempts have been made to treat school phobia within the school, where therapeutic support for attendance can be provided and where school personnel can aid in therapeutic efforts. It is also possible to administer therapy in the home, where the therapist aids parent and child in the physical return to school. For more severe cases,

hospital therapy, which provides separation from family pathology, is used. Deconditioning of the negative associations to school has also been attempted.

The Culturally Deprived Child in School

Interest has focused recently on a large group of children from the lowest socioeconomic class, who show a disproportionately high incidence of learning disability and behavior disturbance and who have a high rate of school failure. In this group degree of retardation in learning is considerable, and only a small proportion of these children complete high school or enter college as compared with the rest of the population. These children have been referred to as "culturally deprived," "culturally alienated," and socially or culturally "disadvantaged."

Members of this group come from poverty-stricken families alienated from the mainstream of culture who can provide only minimal sustained parental stimulation and opportunities for the children to learn and explore the world. The culturally deprived child enters school with lags in cognitive and verbal skills which incapacitate him from meeting the expectations awaiting him. As a result of this, the child gradually falls behind academically, and behavior problems increase.

Among specific handicaps are (1) limitations in the ability to use abstract symbols, abstract cognitive processes, and complex language for interpretation and communication, with compensatory overemphasis on motoric modes of problem solving; (2) low motivation for academic learning, with inability for sustained application to tasks and goals selected by others; (3) deviance from the perceptual modes commonly employed in schools, such as short auditory attention span and predominance of understanding in spatial rather than in temporal terms; (4) low level of identification with the teacher, whose intellectual pursuits are considered feminine, and, conversely, a high level of identification with peers displaying physical prowess and resistance to authority.

On the other hand, culturally deprived children may possess certain skills and competencies that are superior to those of their middle class peers but that are not fully utilized in school. Among these are accuracy of certain social perceptions, resourcefulness in the pursuit of self-selected goals, sustained involvement in a self-selected task, capacity for independence in self-care, and high capacity for spontaneity of response.

The possibilities for culturally deprived children to obtain optimal benefits from educational experiences without special help are limited. The long range social implications of their school failure are considerable, as it is this group of children who, in mid-adolescence, enter the labor market with insufficient skills for current industrial technology and from which the ranks of the unemployed, the petty criminals, and the drug addicts are formed.

Rehabilitation programs. In an effort to combat the handicaps and utilize the strengths of these children, various special school programs have been instituted throughout the country. These programs have as goals the prevention of initial or continuing failure and the remediation of social, cultural, and academic gaps in the education of the child. Innovations in curriculum have been introduced, with special focus on reading and language, including the use of new teaching techniques and new materials, such as reading primers featuring urban, racially integrated, and realistic characters. Team teaching, which employs specialists in the various curricular areas, and ungraded classes to reduce the onus of retardation are being used. Extracurricular stimulation, such as trips and clubs during and after school and on weekends and vacations, attempt to fill gaps left by the home. Efforts to bring parents closer to the school, to increase guidance programs, to reduce the size of classes, and to recruit better teachers to schools in disadvantaged areas are in operation.

Preventive programs. On the preventive side are the preschool programs. Proceeding on the assumption that the culturally deprived child is, at 5 or 6 years, already handicapped in educational readiness, these programs begin when the child is 3 years old and attempt to provide in school the stimulation heretofore left to the home. All these efforts attempt to bring the lower class child into consonance with the middle class school on the assumption that, despite the continuing differences in lower socioeconomic group concerns and interests, all or most lower class children can enter the middle class through education. Another view would assume that, until the school modifies its goals and concerns to meet the cultural needs of different groups, these children will continue to be at a disadvantage.

Education of Emotionally Disturbed Children

It is estimated that 5 to 10 per cent of school children are sufficiently disturbed to require clinical help. Although private institutions have provided education for disturbed children for a number of decades, special classes for emotionally disturbed children under the auspices of public education are of relatively recent origin. Pressures for these classes came from teachers who were experiencing difficulty in containing and educating certain children and from parents concerned with their children's educational failures or exclusion from school because of emotional illness. Additional influencing factors have been the emphasis on reaching the nonpatient population, such as those who do not seek treatment, and the realization that treatment facilities are too limited and individual treatment too lengthy and costly for the numbers of children requiring it. Psychiatrists and other clinicians have recently shown an interest in education as a treatment of choice as a result of disappointment with the effec-

tiveness of psychotherapy with certain groups of children, such as schizophrenics, and lower class urban children with conduct disturbances.

Along the continuum are programs emphasizing therapy, others emphasizing academic achievement, and still others based on personality or learning theory. Mention may be made of (1) the use of audiovisual or teaching machines to instruct children, usually psychotic, for whom human interaction is anxiety-producing; (2) use of behavioral conditioning with simple immediate reward and punishment systems to induce desired behavior in primitive children; (3) emphasis on sensory, perceptual, or kinesthetic procedures as a basic remediation measure for major learning disorders; and (4) use of curricula designed jointly by clinicians and educators to reduce anxiety, emphasize mastery, support ego functions, and the like.

Special classes, ranging in size from 2 to 15 children, exist within public schools, clinics, hospitals, residential treatment centers, and as separate special schools, the last usually under private auspices. Although many existing classes are a desperate holding action for children excluded from regular classes, some attempt to provide active treatment programs. Programs range along a continuum with regard to theory and methodology.

Therapeutically oriented programs. Therapeutically oriented programs are based on the assumption that a therapeutic milieu or technique is the most effective route to therapeutic and educational goals. Such programs are most often attached to hospitals or clinics, where clinical personnel are available and influential in planning and carrying out the program.

Academic achievement programs. Programs that focus on academic achievement are based on the assumption that maximum exploitation of the educational potential of the disturbed child is the shortest route to his rehabilitation. These facilities are usually designed and implemented by educators. Clinical consultation may be minimal.

Types of disorders. Although the diagnostic range of children requiring special education is wide—covering severe neurosis, chronic brain syndrome, adjustment reactions of childhood, and psychosis—most of these children from the educator's point of view fall into two behavioral categories: (1) the acting out or disturbing child and (2) the fearful, withdrawn, or disturbed child. The former constitutes the majority, with prevalence throughout elementary and secondary schools. Most pressure for special education is, for obvious reasons, for this group of children, but less work on special programming for them has been done. The fearful or withdrawn child, although in the minority and with greatest prevalence in preschool and elementary school, has received more clinical attention, and there has been a greater development of special programs for such children.

Actually, all school behavior disturbances are determined by anxiety, although this may not be externally apparent. The child who acts out instead of internalizing is either showing a symptomatic variation of conflict resolution or, because he comes from a subculture whose standards differ from those of the school, is made anxious by being forced to accommodate to alien standards and thus resorts to the adaptive modes to which he is accustomed. These adaptive modes are intolerable in the usual school setting.

Differences among the types of children who cannot seem to profit from regular classroom experiences are of great significance in educational programming, although overt symptoms may not always give the clue to the differences. For example, a highly anxious, neurotic child with inhibition of aggression may require a flexible approach allowing him the freedom to exercise autonomy and self-assertion. A schizophrenic child, anxious as a result of chaotic boundaries between self and nonself, may require a highly structured classroom milieu to aid in reducing ego disorganization. A child who acts out as an expectation of deprivation may require programming to reduce his constant search for gratification. A child who acts out as an expression of unresolved infantile omnipotence may need the experience of a firm teacher to aid in his adaptation to reality, an experience denied him at home.

The implications of psychodynamic understanding of behavioral symptoms affect not only classroom milieu and teacher attitudes but also educational methodology. Such aspects of programming as timing, routines, level of sensory input, use of materials, and choice of disciplinary measures or such aspects of curriculum as the ratio of fantasy to reality and the relationship of content areas to instinctual drives are influenced by one's understanding of psychodynamics and psychopathology.

Grouping. Because of the wide range of individual differences in children, the problem of grouping is significant. Where selective grouping is possible, homogeneity with regard to required milieu and teaching methodology is, on the whole, preferable. However, this concept must often be modified by peer relationships among the children. A child with a conduct disturbance whose behavior is aggravated by similar classmates may be better able to control impulsive behavior when he is with nonaggressive children. A group of schizophrenic children may become better focused on reality if they are influenced by peers with greater ego strengths.

Evaluation. There is considerable controversy about the trend toward establishing special classes for emotionally disturbed children. The tendency to subdivide children into special groups, according to deviation from the norm, has been marked in recent educational practice, but research evaluations have not, up to now, lent support to the greater value of

special classes in terms of academic achievement, although social adjustment may be improved.

In addition, special classes obscure the concept that some children's deviation may be less symptomatic of psychic distress than of a reaction to the frustrations resulting from conflicting needs of child and school. Clinicians have voiced objection to special classes because they decrease the clinical-educational investment in seeking modes of adaptation and deprive the deviant child of the benefits of normal peer groups. The ecological view of therapeutic intervention—that it is designed not to reconstruct the deviant child but to bring him into balance with his environment—recommends use of special costly resources, such as special classes and hospitalization, minimally, at times of crisis, with the goal of return to the regular facility as quickly as possible.

Long range evaluation of the effects on disturbed children and their peers of education in special versus regular classes is needed.

High School and College Psychiatry

High school and college coincide with the periods of early, middle, and late adolescence, with their physiological, social, and interpersonal stresses. The ego, which works at maintaining psychological homeostasis, is subjected to special stresses in this transitional period, and the results of these stresses are responsible for many of the emotional problems seen in high school and college students. School often becomes the arena to which the many conflicts are brought.

High school. The major psychiatric problems encountered in high schools, in addition to those of adolescence per se, are learning disabilities carried over from elementary school, low motivation, underachievement, behavioral problems, and the phenomenon of the early dropout.

The experience of entering high school, with its increased size, departmentalization, many teachers to relate to, and pressure for achievement, constitutes a stress for the 13- or 14-year old. He may react by loss of impulse control, inability to concentrate, and somatization—all resulting in underachievement and its secondary disadvantages. The adolescent with delinquent trends is resistant, hostile, and suspicious of school; it is here that the greatest conformity to authority and control is expected of him. His failures will be exposed to his peers, before whom he must maintain a strong facade. His adolescent narcissism is threatened by failure, and he avoids the danger by the acting out of rebelliousness. Since high school attendance is mandatory in this country and there are few alternatives available for the adolescent who is poorly equipped or motivated for it, the high schools and a good proportion of their students are deadlocked in a struggle in which there are few avenues for resolution.

Therapeutic programs. Therapeutic and other in-

intervention programs to aid in these problems include individual and group counseling and therapy, modifications in curriculum in the direction of greater activity and practicality and less formality, work-study programs, vocational training, smaller classes, remedial programs, and extracurricular enrichment. Results have been equivocal. Since there is a high correlation between family pathology and cultural deprivation and high school difficulties, preventive efforts in earlier years may be more effective. There is also room for experimental programs, particularly those based on the concept of practical alternatives to mandatory high school attendance.

College. There has been a steady increase in the number and size of college psychiatric services offered in the last 2 decades. Many institutions offer comprehensive diagnostic, counseling, and psychotherapy services. Where such services exist, they are used by about 10 per cent of the student body.

The 17- or 18-year-olds entering college are a selected group. They have performed well in previous schools, have higher than average intelligence, are highly motivated, and come from families with a high investment in them. Despite all this, insecurities abound. This is a period of transition to adulthood. For many it represents the first complete separation from home, with its consequent exposure to different standards and values and increased autonomy, responsibility, and freedom. The need to succeed competitively in academic, social, sexual, and possibly athletic spheres is very great. Problems in the areas of dependency, sexuality, self-esteem, and achievement of identity require resolution.

Etiology. Emotional problems in college students correlate highly with disturbed home environments. Divorce, discord, and mental illness are common. Family attitudes of inconsistent discipline, inadequate role differentiation, rigidity, overly high or unreal expectations, and unfavorable comparison of the child with other siblings seem to play a causative role in the student's adaptive breakdown in college.

Diagnosis. Depression, early schizophrenia, and all forms of neurosis and personality disorders with impulsive behavior predominate. Conflicts are expressed not only as psychic symptoms, especially anxiety and depression, but in the form of poor grades, inability to concentrate, somatization, overactivity, antisocial behavior, and a variety of sexual behaviors, including compulsive sexuality, homosexuality, and illegitimate pregnancy. Minority students attempting to achieve social mobility in college, students supporting themselves, students under pressure to achieve high grades, students from highly protected environments, and students moving from rural areas to cosmopolitan centers are all high risk groups. There is a seasonal incidence of difficulties at examination times, when the defenses of avoidance, evasion, rationalization, and projection break down. One of the greatest problems is the high drop-

out rate; 35 to 40 per cent of students do not graduate. This cannot be explained on the basis of lack of intellectual capacity, as there is no significant difference in I.Q. or extent of academic difficulty between those who remain and those who leave.

Treatment. Brief psychotherapy is very common in college services, partly because of policy and scarcity of staff but also because students are particularly suited to this form of therapy. They tend to make rapid emotional contact, are labile, act out transference feelings and unconscious conflicts, and exhibit a wide range of regressive and progressive swings. Their youth, physical attractiveness, intelligence, and verbal ability are also therapeutic assets but are risks for counter-transference phenomena, such as overidentification and overprotectiveness. Counseling programs, using faculty members as advisers in educational matters, are in wide use. Ideally, these should be integrated with psychiatric services, with the counselor handling minor emotional problems with consultation and referring more serious ones to the mental health service.

The practice of psychiatry within an institution dedicated to higher education is considerably influenced by the attitude of the administration and the faculty toward it. Colleges have traditionally espoused a policy of survival of the fittest, not of those less fit. The emphasis on the part of the college community on intellectualism, scientific objectivity, and the accumulation of knowledge is subtly opposed to the emphasis by the psychiatrist on affectivity, interpersonal relationships, and the importance of the unconscious. In practice, the college psychiatrist is often confronted with conflicts between students and administration in which his dual role as physician and college official requires delicate balancing. In order to function with any effectiveness, the practice of psychiatry at any college must have sanction and approval on the highest administrative level.

Suggested Cross References

For more information regarding the various psychiatric disorders that underlie school problems see Chapters 22, 40, 41, and 42.

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43.7 PSYCHIATRIC TREATMENT OF ADOLESCENTS

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This section describes some special characteristics of the initial phase of the therapeutic encounter with adolescents.

The Participants

The adolescent does not have the final decision about treatment and may feel disillusioned with and suspicious of all adults. The parents, on the other hand, do have the final decision and are often burdened with both guilt and anger. Furthermore, the adolescent is usually in a state of regression when first seen, and he usually expresses his emotions indirectly, through his behavior, rather than verbally. In addition, he has certain emotional needs that have to be met in treatment.

The most useful qualities in the therapist who treats adolescents are directness and flexibility—a willingness and ability to handle issues directly as they arise, a capacity to follow the trends in the patient's behavior without dogmatic theoretic bias, and an ability to alternate his therapeutic role quickly as the situation demands.

Consultation

Treatment can be viewed as a continuous process from the initial consultation until the termination of psychotherapy. With the first phone call, the therapeutic process begins as the therapist gathers information on the problem, formulates his approach, senses the focus of the parents' anxiety, and often advises them how to explain the consultation to the adoles-

cent, thereby minimizing such difficulties as the adolescent's regarding the consultation as punishment or an effort to force him to conform. The independence of the adolescent is indicated immediately by seeing him first, requesting his permission to see the parents, and stressing the confidential nature of the contract.

Unlike therapy with adults, therapy with adolescents places the burden of contact on the therapist; therefore, he must attempt as soon as possible to get an adequate appraisal not only of the patient's problems but also of anticipated transference reactions and resistances. Interviews with parents often help the therapist to this goal by providing evidence of their unconscious attitudes toward the patient. These attitudes will form the basis for later transference manifestations. Projective tests, such as the Rorschach, are also helpful.

Since the adolescent does not have final control and since the parents are often embroiled with anger, guilt, and denial, the therapist truly carries a parent-like responsibility. He must decide what treatment is necessary, whether or not the parents can afford it, and whether or not he is the appropriate person to conduct it. Few therapists can treat all adolescents. The way in which the therapist resolved his own developmental problems often makes him suited to one adolescent and unable to treat another. He then must formulate the situation in such a way as to maximize motivation for treatment. In order to deal with the parents' resistance, it may be necessary to emphasize the gloomy outlook if the adolescent does not receive treatment.

The parents' guilt about their role in the patient's problems should not be assuaged but should be used to motivate them to seek help. Conjoint treatment of the parents by a social worker gives added emphasis to the therapeutic impact, especially if the social worker is supervised by the psychiatrist treating the adolescent. The need to involve the parents varies with the developmental stage of the adolescent; the closer to early adolescence he is, the more necessary it is to involve the parents; the closer to late adolescence he is, the less necessary is parental involvement.

Initial Phase

If the consultation has been handled properly, the stage has been well prepared for treatment. It should be quite clearly implied to both parents and adolescent that the goals of treatment are the independence, health, and reality orientation of the adolescent. This is of great help in handling therapeutic issues when they arise later.

With the formal beginning of therapy, the therapist attempts to establish a therapeutic contact and contract by first understanding the patient's initial defensive maneuvers. Then he interprets these maneuvers in terms of their current interpersonal un-

conscious meaning rather than their historical context. More simply, the therapist attempts to understand the emotional message the patient is trying to convey by his behavior; then he reads it back to him. This technique establishes the therapist's interest and competence and tends to overcome the adolescent's suspiciousness and testing. The cornerstone of all therapy with adolescents is telling them what they feel, rather than expecting them to tell you, and then responding appropriately to the indicated therapeutic needs. Since the messages expressed are as varied as the number of patients one sees, the therapeutic responses also vary and include interpretation of the unconscious, direction, support, limit setting, interference with parents' destructive behavior, and interested silence. A case described below illustrates one response.

Dave, a 17-year-old boy, the third of three children, had a 3-year history of depression, culminating in a serious suicide attempt. He suffered from a severe character disorder of the deprived affect type, which was masked by a rigid obsessive-compulsive facade.

The patient's past history was that of a compliant, eager to please, subservient child; he was able to adjust fairly well throughout childhood until onset of adolescence, when his submissive relationship with his brother raised unconscious homosexual conflicts. He became depressed, left home for prep school in search of relief, went on to college, and finally made a suicidal attempt after a series of interviews with a psychiatrist.

Underneath his compulsive facade, the patient felt (1) utter futility at the possibility of anyone caring for him, (2) sadistic and masochistic fantasies and impulses, (3) homosexual impulses, and (4) great anxiety about control. Interviews with the parents revealed that, despite their verbal protestations to the contrary, they had little interest in or responsiveness to Dave. The father, constantly out of the home, atoned for his guilt by overindulging the patient materially and never attempting to set limits for him. The mother used the patient for emotional support and infantilized him.

In the interview with the patient, he presented a bizarre and rigid smiling face, which masked his underlying depression. He showed contempt for the father, doctor, and all authority figures, and he caricatured psychiatry. In addition, he gave a history of "putting people on," putting up a facade to see if they would discover his feelings behind it. He also hinted at several abortive and dismally unsuccessful attempts at heterosexual intercourse.

The consultation interviews suggested that the patient's initial transference reaction would be a feeling that the doctor, like all authority figures, was incompetent, was not deserving of respect or trust, and did not care about him. Therefore the therapist should deal with the patient's initial testing maneuvers by (1) confronting the patient with the feelings beneath his facade, (2) setting limits to help give the patient control, and (3) providing him with alternate ways of dealing with these feelings.

The therapy began with the patient's joking about the fact that he expected no help from anyone, didn't care about himself, planned more suicidal attempts but "was giving the therapist a chance." The therapist responded that the patient was trying to put him in a bind so that, if things did not go well, the therapist would be responsible for a suicidal attempt. The doctor then stressed that he could not accept this bargain—that, though the patient needed help, the therapist could not do the job alone; he required the patient's cooperation. The therapist then said that, if the patient wanted to commit sui-

cide, he would not be able to stop him but that this was a mis-carried effort to deal with his problems. Next, the therapist interpreted the patient's joking behavior as an effort to "put the therapist on." He pointed out that the patient had a long history of similar efforts with all people, efforts that were followed by a feeling of delight when the people were able to perceive his underlying feelings. Then the therapist noted that the patient's family was not interested enough to try to penetrate this facade.

When the therapist scheduled him for an early morning hour, the patient joked at great length about getting up early. The therapist brushed this aside with a simple comment that the patient was angry. The patient revealed that he had fantasies of throwing bricks through windows and of punching people in the nose. The therapist then tried to indicate alternate ways of handling these feelings by saying that, rather than smiling and making a joke about it, the patient should verbalize his anger.

During a reluctant but frank admission of sexual difficulties, the patient dramatized his regressive behavior by eating lollipops, playing with children's toys, refusing to get a job. The therapist, feeling that the relationship could sustain the challenge, told the patient directly that the regressive activity was a running away from his problem, probably because he felt he couldn't handle it; that he wanted to be a child to escape his sexual feelings, and yet he also wanted help; that he was working at cross purposes with himself, since it is not possible to have both—either he had to involve himself and use the help offered to deal with and master his problems, or there was truly little hope.

This example shows how the therapist, basing his approach on the dynamic constellation revealed in the consultation, actively attempts to establish a relationship by clarifying the current interpersonal unconscious meaning of the patient's testing behavior and then responding appropriately to the indicated therapeutic needs.

Suggested Cross References

See Section 43.1 for further information about psychotherapy with children and Section 34.1 for information about the general concepts of psychoanalysis and psychotherapy. Section 40.2 contains a discussion of the special characteristics and problems of adaptation of the adolescent.

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Chapter 44

Special Areas of Interest in Child Psychiatry

44.1 MATERNAL DEPRIVATION

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Maternal deprivation is one facet of the much larger issue of the role of early maternal care in personality development. Although the importance of mothering experiences in infancy and early childhood has long been recognized, it is only in the past quarter of a century that research evidence has begun to document the effects on the development of young children of a variety of inadequacies and deviations in maternal care. A comprehensive review of the research and clinical literature was prepared under the auspices of the World Health Organization in 1951 by Bowlby. On the basis of this review, Bowlby concluded that a warm, continuous relationship with a mother figure is essential for healthy personality development. This monograph activated the dormant concerns of clinicians working with children and also stimulated loose generalizations about the deleterious effects of any form of deviation from Western middle class patterns of maternal care. Subsequent reviews of the literature have tried to sort out the varied kinds of discontinuities, inadequacies, and distortions in maternal care that have been included under the rubric of maternal deprivation. These reassessments have pointed out the methodological deficiencies of some of the earlier investigations and some of the conceptual flaws underlying the interpretations of the data from these studies. These evaluations and the subsequent more focused research have not negated the basic conclusions of the earlier studies but have refined and extended them.

Deviations in Maternal Care

Four major kinds of experiences with potentially different implications for personality development can be distinguished in the research literature (Yarrow, 1961): institutionalization, multiple mothering, separation from a mother figure, and distortions in the affectional relationship between mother and child.

Institutionalization. The greatest share of data has come from studies of infants and young children who have experienced institutional care at some point in their histories. Conclusions about the effects of institutional care come from two major sources: direct studies of infants and young children living in institutional environments and retrospective studies of older children and adults with personality disturbances.

There is consistency in the general findings that infants subjected to prolonged residence in very poor institutional environments develop intellectual and personality deficiencies and disturbances. Not all aspects of development are equally affected by early environmental deprivation. Early motor functions that seem to be most dependent on maturation seem to be least affected; perceptual-cognitive and language functions seem to be most vulnerable. Evidence of intellectual and language retardation appear very early in infancy and become intensified with continued institutionalization. Perhaps the most serious effects attributed to institutional care are personality and character disorders. Infants growing up in institutions often fail to develop normal patterns of social responsiveness; they tend to become withdrawn and apathetic, and frequently they do not develop normal patterns of social discrimination. These early deviations in personal-social behavior are considered precursors of personality deviations in adolescents and adults characterized by poor impulse control, lack of appropriate guilt feelings associated with aggressive and destructive behavior, and an inability to establish close and meaningful interpersonal relationships.

Although the early literature suggested that severe intellectual retardation and personality disturbances were inevitable outcomes of early institutional care, recent research has found considerable variability in the level of retardation and degree of disturbance in children in different institutional settings. Moreover, similar personality and intellectual dysfunctions are often found in children who have been exposed to environmental deprivations and distortions in maternal care in their own homes. These findings lead one to question whether all the deviations in intellectual and personality functioning found in institutionalized

children can be attributed simply to one variable—the lack of emotional interchange with a single mother figure. It seems likely that the absence of the mother figure is associated with a number of other more direct variables operating in institutional and other environmental settings.

In recent years, studies have begun to analyze more precisely the dimensions of institutional environments. This research suggests that such variables as the following need to be considered in analyzing the impact of institutional care: the amount, the quality, and the variety of sensory and perceptual stimulation provided directly or mediated by the care-taker; the extent of opportunities for acquiring and practicing skills; the timing and appropriateness of the care-taker's responses to infant's behavior; the degree of continuity of care provided by a single mother figure; the quality of affectional interchange with substitute mothers. There appears to be a direct relationship between the extent of intellectual and language retardation and the degree of sensory and verbal stimulation in the institutional environment. Studies of extremely poor institutions on the one hand and studies of institutions that have attempted to provide individualized care and adequate stimulation on the other hand further corroborate the importance of these variables. Other studies have begun to identify some of the other factors that modify the effects of these environmental variables, such as the age of the child at the time of institutionalization and the duration of institutional care.

One aspect of the institutional environment that has been implicated in the development of deviant social responsiveness and later problems in interpersonal relationships is the lack of continuity in the mother figure. The multiplicity of care-takers tends to create an unpredictable environment for the young child; he has limited opportunity to develop consistent expectations toward one person. Moreover, care-takers are unlikely to individualize children and to adapt their handling to the child's unique characteristics, thus limiting the kinds of reciprocal interactions that are basic to the development of meaningful interpersonal relationships and normal patterns of identification.

Findings on the direct effects of impoverished environments on infants and young children are more clear cut than are the findings on the long term effects. Studies of long term effects tend to be limited because of a number of methodological inadequacies, the most important being the lack of control groups and unreliability of retrospective data. Several recent and more carefully controlled retrospective studies have begun to raise questions about the conclusions of the earlier retrospective studies. In studies by Howells and Layng and by Schofield and Balian, control subjects without any apparent symptoms reported early histories as pathogenic as those of the subjects with overt personality disturbances. Other in-

vestigators, such as Beres and Obers, Gregory, and Pringle and Bossio, present evidence that long term outcomes may depend on the character of the earlier experience, the age at which it occurred, and subsequent experiences in maternal care.

Multiple mothering. Although there is some evidence of the harmful effects of multiple mothering in institutions, multiple mothering is not always associated with severe deprivations or traumatic discontinuities in care. The presence of more than one mother figure may be associated with more varied stimulation in the context of individualized care. Studies of children in the Israeli kibbutzim, in university home management houses, and in other cultures suggest that being cared for by more than one mother figure may not be inherently detrimental to young children. Margaret Mead has suggested that children who are reared in cultures in which the child care functions are shared by a number of mother figures are better equipped to tolerate separation and often develop more subtle and more complex personality characteristics, presumably as a consequence of having more varied identification figures than children in cultures where a single mother figure is the rule. It seems clear that the effects of multiple mothering depend on the specific patterns of interaction between child and mother and on the larger social context.

Maternal separation. Maternal separation and maternal deprivation have often been used interchangeably. Although maternal separation frequently precedes deprivation of maternal care, deprivation experiences are not a necessary or inevitable aftermath of separation. It is important to distinguish between the effects of a break in the continuity of relationship with a mother figure and the effects of stimulus deprivation.

Maternal separation occurs under a wide range of circumstances, such as temporary separations involving operative procedures or short term hospitalization of the child for acute illness; hospitalization of long duration for chronic illness; temporary separations due to illness of the mother; permanent separations from parents due to death, desertion, incompetence, or cruelty of a parent; single temporary separations followed by the provision of a permanent substitute parental figure, as in adoption; recurrent separations from natural parents followed by institutionalization or foster home placement; recurrent separations from foster parents. The psychological significance for the young child of each of these different types of experiences is likely to be very different.

A break in the continuity of relationship with a mother figure is a disturbing experience for infants and young children, as evidenced by their behavior at the time and immediately following separation. The long term effects of separation experiences during infancy and early childhood are less clear cut. Several studies find a characteristic sequence of responses to

separation in hospitalized or institutionalized children. At first, separated infants tend to show overt protest and active seeking of human contact in an apparent attempt to find a substitute mother. This behavior is usually followed by active rejection of people. Finally, the child withdraws from his environment and shows depressed behavior. Bowlby has pointed to the overt as well as dynamic similarities between withdrawn, depressed behavior in infants and young children and mourning in adults. The progressively severe depressive reactions occur in children who are placed in impersonal environments without adequate substitute maternal care. Infants who are given individualized substitute maternal care may show similar initial disturbances, but the progression in severity of symptoms is not likely to occur.

As with sensory deprivation, the meaning of separation depends on the developmental level of the child. It is clearly very different for the 2-month old infant than for the 8-month old who is at the height of stranger anxiety. For the very young infant, separation may be perceived simply as a global environmental change. He may be aware of a changed physical environment—of changes in timing of daily events and in experiences of sleeping and feeding, in the speed with which his needs are gratified, and in the modes in which gratifications are provided. It is not until the infant has developed a focused relationship with a mother figure that the loss of a specific person becomes important. The period between 6 months and 2 years appears to be an especially vulnerable one.

There are no clear data on the extent to which the degree of disturbance at the time of separation is prognostic of the severity of later effects. The findings on the long term effects of early separation experiences are more equivocal than the data on the immediate effects. The implications of separation experiences for later personality development depend on a number of factors: whether the separation is temporary or permanent, the duration of a temporary separation, the total context of the child's life experiences, the number and character of previous separation experiences, the age of the child at the time of separation.

Perhaps most significant with regard to the long term consequences is the degree of trauma or deprivation subsequent to separation. It appears that brief, temporary separation experiences are not likely to have serious permanent effects, but serious personality disturbances may develop in children who have been subjected to repetitive separations associated with other traumatic and depriving experiences during infancy and early childhood. If temporary separations for medical care are handled skillfully to maximize the continuity in relationship with the parents and to minimize associated traumatic experiences, permanent damage is unlikely.

Pathological mother-child relationships. Fre-

quently included in the concept of maternal deprivation are the deviations in the mother-child relationship characterized by rejection, hostility, and ambivalence on the part of the mother—disturbances that are often rooted in personality or character disorders in the mother. Unlike the experiential deprivations attendant on lack of sufficient interaction with a mother figure or discontinuities in the maternal relationship, these deviations are primarily in the *quality* of the affectional relationship. The extensive clinical literature on this kind of deviating maternal relationship suggests effects (e.g., schizophrenic, depressive, and neurotic disturbances) which are different from those associated with deprivation, separation, or multiple mothering. The effects of severe disturbances in mother-child interaction are best understood if they are seen on a continuum with a wide range of attitudinal and personality characteristics of the mother and child-rearing patterns.

Variables in Maternal Deprivation

The literature emphasizes the complexity of the concept of maternal deprivation. A great variety of events and environmental circumstances precede, occur concomitantly with, and follow the separation of a child from his mother. For greater theoretical understanding as well as for more effective planning of therapeutic and preventive programs, it is useful to analyze specific variables rather than to attempt to deal with an undifferentiated global entity.

Recent human and animal studies have helped to define more precisely the significant components of the early environment and to identify some of the variables that interact with and modify early experiences. These investigations offer new theoretical perspectives for understanding the underlying mechanisms of early environmental influences. The major theoretical issues emphasized in these studies are: the importance of appropriate sensory and perceptual stimulation during infancy and early childhood; the concept of environmental contingencies in learning theory, pointing up the importance of the conditions under which stimulation is provided; the critical period hypothesis, which emphasizes the importance of the timing of experiences, that is, the point in the developmental cycle at which a specific kind of experience, trauma, or deprivation occurs; the increased understanding of constitutional differences and the accompanying emphasis on the selective responsiveness of the young organism to his environment; and finally the shift in emphasis from early environmental determinism to an awareness of the role of subsequent life experiences in reinforcing or ameliorating the effects of an earlier depriving or stressful experience.

Sensory deprivation. An important aspect of early maternal deprivation is sensory deprivation. The mother in the course of normal maternal activities serves both as a source of stimulation and as a medium for bringing the infant into contact with

appropriate environmental stimuli, sometimes enhancing and sometimes buffering the intensity of stimulation. The importance of sensory and perceptual stimulation in early development is well documented by a large body of experimental studies with animals. These studies indicate that severe sensory and perceptual deprivation in early life may adversely affect the development of the sensory processes and the basic underlying structures in the central nervous system. Hebb has emphasized the importance of early stimulation, postulating that early experience may influence later behavior by structuring the organism's perceptual capacities. Hunt, elaborating on Hebb's thesis, stated that "the intrinsic regions of the cerebrum must be properly programmed by preverbal experience if the mammalian organism is later to function effectively as a problem-solver."

Stage of development. There are conflicting opinions as to how early sensory deprivation, stress, or trauma begins to have an effect. A number of studies suggest that the younger the organism, the more vulnerable it is to adverse environmental impacts. A growing body of data, however, points to the importance of the developmental stage at which such experiences occur. The basic thesis of the critical period hypothesis is that sensitivity to given kinds of stimulation and vulnerability to specific types of deprivation or stress vary at different developmental periods.

In the studies of stimulus deprivation, there has not yet been much consideration given to the modalities of stimulation. Some data hint at differential effects of deprivation in given modalities at different developmental periods. For example, Harlow's research on infant monkeys suggests that tactile stimulation is of greatest importance during the earliest period of development but becomes less important later in infancy. We do not know whether one can generalize across species with regard to the relative sensitivity of given sensory modalities at different developmental points. With regard to separation experiences, it seems very clear that sensitivity to maternal separation is highly phase-specific. The effect on the young infant of giving up a mother figure before a strong dependency relationship has been developed is very different from the experience of separation during the period when a relationship with the mother is developing and after a focused relationship has been established. Similarly, the young child's reaction to the loss of a mother figure at later developmental periods may vary with the degree of autonomy he has achieved.

Individual differences. In addition to sensitivities and vulnerabilities characteristic of specific developmental periods, a growing body of evidence suggests the importance of basic individual differences in determining the impact of early experiences. There may be individual differences in general susceptibility to stress as well as differences in sensitivity to particular

kinds of stimulation. Recent studies have emphasized the extent to which the infant influences the kind of stimulation he receives and particularly how infant characteristics influence maternal behavior. With the development of techniques for measuring basic differences in autonomic functions and in physiological-behavioral responses, one can anticipate rapid progress in understanding the interaction of constitutional factors and early environmental influences.

Prognosis

Research is sparse with regard to the reversibility of the effects of early sensory deprivation and early separation, and the findings are equivocal. Data suggesting permanent damage have almost without exception been based on studies of subjects who have experienced recurrent severe deprivation or trauma throughout infancy, childhood, and often through adolescence. On the other hand, a number of follow-up studies find no severe impairments in adults who had been separated from their mothers in infancy and placed in various kinds of group settings preceding adoption. The interpretations of these findings, however, depend on the level at which the individual's functioning is assessed. Several investigators have speculated that, although these subjects were apparently making adequate adjustments, a deeper level of analysis might reveal psychic scars or distortions in psychic functioning that manifest themselves only under conditions of stress.

Maternal deprivation is not a simple etiological entity, and one can no longer make any easy generalizations about its effects. There is no given set of experiences or standard pattern of maternal care that insures healthy personality development or that leads inevitably to retardation and personality distortion. The new research and theoretical perspectives emphasize the complexity of the interrelationships among organismic variables, immediate environmental factors, and the total experiential context.

Suggested Cross References

Current concepts of the genesis of all the functional psychoses, psychoneuroses, and personality disorders involve hypotheses concerning disturbances and deprivations in the patients' early mother-child relationship. The reader is referred to Area F, on the psychiatric syndromes, and to Chapters 41 and 42 for detailed discussions of specific disorders.

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44.2 TWINS

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Twinship has received particular attention, for it has to do with a unique psychological experience and, in the case of monozygosity, a unique constitutional condition. Approximately 1 in 86 births is a birth of twins; between a third and a fourth of the total twin population are monozygotic.

Development

Early development. The development of twins is characterized by a number of special factors. The somewhat lower performance of twins, as compared with other children, may rest on the fact that very often—60 per cent of births—twins are born prematurely and may, therefore, have a biological handicap. They also have psychological variables. Personality differences in twins appear during the first years of life and are usually based on which of the pair is active and which is passive at a given time. Since the two children appear to function as a unit, one can observe a division of roles between them: when one twin is more active and dominant and initiates behavior, the other takes the more passive role. Thus, the active twin could develop more fully the traits of aggressivity and self-reliance, and the other would tend to become altruistic, submissive, and dependent. These features seem at first to be determined by physical differences at birth as to which twin is the stronger and better developed at that time. But as the other child becomes able to bridge this gap or to enjoy certain other advantages, these roles may be reversed.

Twinning. These early differences, which one would assume to lay the groundwork for the twins' divergent personality development, are modified by an important factor, which becomes operative as the twins grow older. Around the age of 3 or 4, the processes of identification and imitation and their reactions to their mirror images limit the significance of the earlier differences. One twin learns to enjoy the other's activities and to feel the punishment the other receives. This interaction, called "twinning," is

a most important influence on their further development. At this time, the twins begin to move away from the mother and to establish an independent interplay with each other. This mutual interdependence may result in a lack of individuation. Their emotional and physical proximity to each other at each phase of development throughout childhood makes the twin relationship different from that between siblings. This mutual interidentification and increasing interdependence may provide certain handicaps for twins, leading not only to difficulties in achieving individuation but also to limitations on their capacity for conceptualization and learning. Findings indicate that twins' intelligence measures are inferior to the levels of matched groups of nontwins. There is also a lag of linguistic development, which seems to be correlated with their difficulty in establishing a mental image of their own bodies (identity), as seen in the delay of the distinction between self and mirror image and the delay in use of the pronouns "I" and "me."

Mothers' reactions. Mothers seem to have a natural feeling of pleasure when they are first told that they may expect twins. After the birth, however, they may encounter unanticipated difficulties, which arise from the necessity of having to adopt at the same time a mode of interaction with two children with different characteristics. Some mothers even stress these differences in order to learn how to perform their task and to find the range of their own individual reactivity and sensitivity to their children. Others attempt to resolve the problem by treating the two children as one; they thereby feed into the problem of twinning. Thus, the mother, too, has to cope with the problem of similarity and dissimilarity, individuation or sameness. If the twins are to reach their own individual capacity, her attitude is decisive. Later, the tendency of the twins toward closeness to each other may give the mother the feeling of being excluded. If she enjoys the fact that the children demand less of her personal attention, she may foster the twinning reaction; if she resists their exclusion of her, she may find that twins are an exceptional burden. When the differences between the twins are overstressed, thus forcing a polarity of personality characteristics, there is, again, a retardation of individuation and an interference with full development. Thus, it is difficult for the mother to judge where the balance properly falls between concordance and discordance of interests and traits.

Sex. The sex of the twins and whether or not they are of the same sex has to be taken into account, as well as the environmental influences that may either assist or retard individuation. The situation is easier with fraternal twins. Psychological scales have revealed that opposite-sexed fraternal twins range in an intermediate position between identical twins and same-sexed fraternal twins. This may be related to the fact that girls tend to be the dominant part-

ners in the twin couple during childhood, reversing the indices of femininity and masculinity. Other findings show that twins, especially identical twins, marry less often than controls; and in one study 70 per cent of identical twins at 17 to 20 years of age still slept in the same bed. However, the assumption on the part of individual case studies that there may be a greater tendency toward homosexuality among twins is, as yet, not sufficiently substantiated.

Recommendations to assist development. Twins should not be treated as one; they should always be dealt with in terms of their separate individuality. Differences in their tastes, their rhythms, and their perceptions should be recognized and maintained. One should not praise, reward, or punish both twins as a unit. A most important contribution can be made in this respect by the school. If the twins are placed in separate classes, they can receive independent attention and thereby gain in individuation. One should not interfere with their natural closeness by separating them forcefully or too early. One should stress those characteristics that differentiate one twin from the other, characteristics that correspond to the natural talents and interests of each. The fact that most twins have each other to play with should not delay entering them into nursery school, where they will have the opportunity for exposure to other children of the same age.

Research on Twins

Twin research has received major attention, since it provides a unique opportunity to study the experiential factors of behavior and to delineate constitutional influences. The controversy between heredity and environment must be taken outside of an either/or proposition; it must be accepted that environmental variables can change the morphological and functional characteristics of the organism. Still, interest in the constitutional aspect of many of the psychiatric disorders has been most successfully explored through the study of monozygotic twins.

One of the great problems in twin research is the question of twinning, since this constitutes a unique environmental influence that in itself brings about a variance between the development of twins and that of other children. In order to exclude twinning as a factor, it is necessary to study monozygotic twins that have been separated from birth. Many investigations have been made into the development of twins who have been separated during their lifetime; very few can be found in which the separation occurred at birth.

Suggested Cross References

For a review of the genetic investigations of psychopathology that have used twins as subjects see Section 2.1.

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44.3 CHILDREN'S DREAMS

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The dream has been termed the royal road to the understanding of unconscious processes. It permits the study of psychic mechanisms and the examination of the wishes, fears, and conflicts that are unknown to the conscious mind. In modern times, particularly since Freud, there is more knowledge about the psychological content of dreams than formerly, but the physiological aspects of dreaming are just beginning to be understood.

Content of Dreams

Dreams in a child are quite important, since they can have such a profound effect on the child's behavior. During the child's first years, when the differentiation between reality and fantasy, between wish and fact, has not yet been fully achieved, the dream may be experienced by the child as if it were true or could be true; thus, the child has strong reactions to it, either of pleasure or, as is most often reported, of fears.

The dream content is to be seen in connection with the life experience of the child, his developmental stage, and the mechanisms specifically employed during dreaming. There is also a difference in the content of the dreams of boys and girls. However distorted the content of the dream may be, it is generally considered to be a reflection of life experiences, which continue to call for mental activity during sleep. In order to help the child, the therapist must find the relationship between his dreams and the realities of life.

Dream interpretation today is an important part of the armamentarium of psychotherapy. It has not diminished in importance during the last few decades at the hands of those who have learned how to use it. The significant approach is not so much toward the

understanding of symbolic meanings as it is toward the uncovering of those life experiences that contribute to the disorder. Primarily, it is to assist in the reconstruction of events and in the exposure of nonconscious wishes and aggression that are part of the pathology.

According to his psychic organization or his level of development, the child will react differently in his dreams to external situations; the changing content of the dream through childhood provides evidence for this. Some studies indicate that disturbing dreams reach a peak when the child is 3 years, 6 years, and 10 years old. At the age of 2, the child may dream about being bitten or chased; at the age of 4, there are many animal dreams, and people are introduced who can be either good or bad, who either protect or destroy. At 5 or 6, dreams of getting killed or injured, of flying and being in cars, and of ghosts become more prominent, exposing the role of conscience, of moral values, and of increasing conflicts around these themes. The earlier assumption, therefore, that the dreams of very young children are primarily of a wish-fulfilling nature, does not appear to be borne out. It is interesting to note that in early childhood aggressive dreams seem to occur rarely; instead, it is the dreamer who is in danger, which may reflect the child's dependent position.

Dreams and Sleep

Dreams and sleep are so interconnected that it is not possible to speak about one without referring to the other. Freud's original proposition that the dream is the protector of sleep has evoked new interest as the result of recent physiological experiments. The dream, which is a normal and essential psychophysiological phenomenon, may at times interfere with sleep.

At certain periods, a child wakes up from his sleep, disturbed by the content of his dream and extremely frightened; he is unwilling to return to sleep unless he is comforted. Pavor nocturnus is a severe state of fright in which the content of the dream overwhelms reality, so that the child remains frightened by the dream for an extended period of time. During night-terrors, the child remains in this "in-between" state, from which he cannot be fully aroused and restored to reality. The people around him either are not recognized or else are of minor significance as compared with the impact the dream still has on him. The dream seems to continue, even though the child's eyes are open. The child incorporates some pieces of his actual environment into the dream, or else he projects the dream into his environment.

Between the ages of 3 and 6, it is normal for children to want to keep their door open or a light burning so that they can maintain contact with their parents or view their room as they know it to be and not as they fear it to be. At times, they resist going to sleep in order to avoid the dream experience.

Disorders associated with falling asleep are, therefore, often connected with the dream experience. Rituals are set up as protective devices designed to make safer the withdrawal from the world of reality into the world of sleep.

When sleep disorders occur as the result of frightening dreams, it is important to open up the possibilities for helping the child cope with those experiences that seem to overwhelm him, by directing his inner needs into appropriate channels. Symptomatic help, such as sedation, may be useful to only a limited extent. It is generally agreed that, when a child comes into the parental bedroom to seek protection, he should be taken back into his own room and calmed while he is in his own bed so that the original sleeping arrangements may be maintained.

Since sleep disorders seem to be on the increase, more attention will have to be paid in the future to the relationship between dream and sleep, particularly in early childhood. Somnambulism is frequent; very often the content of the dream seems to release motor discharge, and the child tries to go to those persons and places that can offer him protection. There is an assumption that all those impulses not acted on during the day are acted on during the night, and studies have been undertaken to investigate this "balance"—as if those children who are more active during the day and who gratify their wishes and aggression are less subject to disturbing dreams. Pavor nocturnus sometimes occurs after puberty, and nightmares occur during both puberty and adolescence.

Diagnostic Use of Dreams

Many clinicians consider the dream to be an important source of information for the assessment of internal conflicts, for clues concerning the actual life situation, and for determination of the age-appropriateness of the child's development. Dreams are, therefore, used like projective tests for diagnostic purposes.

The emotionally disturbed are more sensitive to the dream, since dreams are, more often than not, disturbing to them. Discovery of the repression of dreams or of parts of dreams or the recall of specific sections of a dream can be of help in the assessment of the patient's mastery of his internal conflicts. Of particular significance is the repetitive dream, which affords evidence of a long standing conflict and aids in the reconstruction of those events that may have contributed to it.

The absence of dream material in the early evaluation of children may stem from the hesitancy to explore such an intimate part of the child's life as his dreams and fantasies. It has been noted that there is a reluctance on the part of the clinician to ask children about their dreams during the early interviews, in spite of the evident readiness of many children to speak about them.

The mechanisms of the dream show that uncon-

scious processes appear to be able to dispense with time and with the link between specific events and space. Condensation, displacement, substitutions, and symbol formations are distortions of reality, but they provide insights into the processes of unconscious psychic life.

Physiology of Dreaming

Over the last years, significant contributions have been made in the physiological aspects of sleep and dreaming. These findings indicate that dreaming is as necessary for the individual as sleep, and that the dream state should be considered separately from the biological conditions of sleep. It was found that the dream-sleep ratio is quite stable among adults. In adult life, 20 per cent of sleeping time is given to dreaming. The data accumulated show that, even in newborns, there is brain activity that is similar to the dreaming sleep. But it is doubtful whether dreaming is possible before speech—that is, before the existence of mental representations of the outside world.

Periods of rapid eye movements (REM) take place about 60 per cent of the time during the first few weeks of life; between 14 and 20 weeks, the figure is 40 per cent; around the end of the 1st year of life, it drops to 40 per cent of the total sleep time; by 24 months, these REM periods occur regularly and are uniform in length; between 3 and 4 years of age there is a marked reduction to 20 per cent; which is close to the adult ratio. All this indicates the importance for children of that state in life in which dreams occur and indicates the major role that dreams play during the early years of life. Further findings that REM or dreaming sleep is frequently accompanied by penile erections open up new possibilities for the correlation of dream content and biological processes.

Suggested Cross References

For further information on the physiology and clinical correlates of sleep and dreams see Section 2.4 in Area B, on the basic behavioral sciences. Chapter 6 contains a more detailed discussion of the psychoanalytic technique of dream interpretation used in the treatment of adults.

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COMMUNITY AND SOCIAL PSYCHIATRY

It is particularly appropriate that one of the final areas in this textbook should be devoted to community psychiatry. For the very structure of the volume has thus been emphasized. The basic behavioral sciences form the foundation of the edifice—and of the discipline it houses. And the edifice, as well as the foundation on which it rests, is strengthened and enriched as new “floors,” representing theoretical and therapeutic advances, are added to the structure. The floors which have been added to the structure most recently derive from the field of community psychiatry. These floors are in various stages of construction: some were completed only recently; others are being erected now, and still others are presently in the planning stage. Community psychiatry clearly constitutes an emerging field which, in fact, has not yet been defined precisely.

In the circumstances, a brief account of the historical evolution of this important subdiscipline may help to orient the reader to the content presented herein. In the general introduction to this volume, the editors emphasized the relevance of philosophical and socioeconomic developments in American history for the application of psychiatric theory. The history of community psychiatry clearly demonstrates the validity of this hypothesis. Thus, although Adolf Meyer recommended the establishment of the community mental health center some 50 years ago, the Great Depression of the 1930's and World War II provided the stimuli which led to the implementation of this recommendation. During the 1930's the concept that the government must bear a major share of the responsibility for the amelioration of social and economic stress gained increasing acceptance, and the social legislation which was enacted as a result, reflected this concept of collective responsibility. World War II, in turn, revealed that a large proportion of the population was

unfit for service in the Armed Forces because of a wide range of personality problems which either were apparent at the time of induction or became evident under combat. Thus, the profound concern with the mental health problems of society might be viewed as an inevitable outgrowth of the commitment of the 1930's, coupled with the awareness, gained during the 1940's, of the prevalence of mental illness.

At any rate, this concern continued to gain momentum. When, at the conclusion of World War II, the New York Academy of Medicine decided to initiate a series of lectures on the subject of medical experience in the War, it designated “Problems of Psychiatry and Human Behavior” as the theme of the first lecture in the series. In support of this decision, the President of the Academy issued the following statement: “The Committee lays pointed emphasis upon the fact that by far the greatest lesson which the War has taught, far greater in its significance for humanity than either atomic energy or the control of the infectious diseases, has been the recent revelation of the magnitude and multiplicity of the disorders of human behavior.”

The postwar concern with mental health culminated in the Community Mental Health Centers Act of 1963. In the years since, we have had an unusual opportunity to observe at first hand the influence of major social and political concerns on the field of psychiatry and, concomitantly, the influence of our professional concerns on legislation and society in general. The implications of this reciprocal influence for social progress, as well as for the progress of this discipline, bring community psychiatry to the forefront as a field which commands the attention and the talents of psychiatry.

Unfortunately, our efforts in this connection have been seriously hampered by the lack of consensus as to the function and scope of community psychiatry and community mental health programs, as to the specific

professions which are best qualified to participate in such programs, and on the extent of their participation. The sections included in this area deal with each of these issues either directly or by inference.

Caplan and Caplan have "set the stage" for this presentation by delineating the basic concepts of community psychiatry and tracing their historical development. Leighton and Leighton have recounted some of the pertinent studies in this field.

The function and scope of community psychiatry have been dealt with specifically from diverse viewpoints. Bertram Brown has identified those factors which have interfered with our efforts to delineate the function and scope of community psychiatry with some degree of precision. On the other hand, the section by Yolles, which consists of a "concrete" description of the United States Community Mental Health Program, might be regarded as a positive approach to this question. Similarly, the sections on primary, secondary, and tertiary prevention by Visotsky, Berlin, and Freedman, respectively, as well as Brotman's section on treatment of the impoverished, provide important potential guidelines for precise formulation of the function and scope of community psychiatry.

Finally, the nature and extent of professional participation in community psychiatry have been discussed by Greenblatt in two separate sections. The first of these focuses on mental health consultation; the second is concerned with the role of the community mental health worker.

Presumably, clarification of these major areas of concern will permit formulation of a satisfactory definition of community psychiatry and community mental health. The view stated by Brown in his section on the definition of mental health and disease is relevant in this connection. Specifically, while Brown is aware that mental health cannot be defined unequivocally at present, he maintains that this concept will be delineated gradually, concurrent with the over-all development of the field.

At times, the lack of agreement with respect to the "crucial" issue of definition has been cited as proof of the confusion which pervades this subspecialty. In fact, however, difficulty in definition should be regarded as an inevitable concomitant of a newly developing field. As experience and knowledge increase, definitions and structures will be discerned, and techniques and procedures will become institutionalized. One might even speculate that the present state of flux offers certain advantages, in that it provides opportunities for originality and creativity which may not be available once petrification has set in. In any event, there is little doubt that community psychiatry will be the burgeoning field of the late 1960's and early 1970's. This prediction, in itself, precludes premature, unqualified acceptance of what has been written or implemented to date, and, by the same token, it points up the importance of an "open mind" and eager anticipation of future developments.

A.M.F.
H.I.K.
H.S.K.

Chapter 45

Community Psychiatry. I: Basic Concepts

45.1 DEVELOPMENT OF COMMUNITY PSYCHIATRY CONCEPTS

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RUTH B. CAPLAN, B.A.

Community Psychiatry denotes the body of knowledge, i.e., theories, methods, and skills in research and service, which is required by psychiatrists who participate in organized community programs for the promotion of mental health, the prevention and treatment of mental disorders, and the rehabilitation of former psychiatric patients in the population. It supplements the clinical knowledge and skills which equip the psychiatrist to diagnose and treat his individual patients.

In this section we will discuss the main historical factors which have influenced the development of concepts of community psychiatry in the United States during the 20th century. We will then summarize current views on the essential elements of these concepts, discuss present day problems of terminology, and conclude with a brief note on the roles and responsibilities of community psychiatrists.

Historical Background

Overview. The concepts and practices of community psychiatry have been evolving for over half a century, and the manner in which various issues have been resolved during this time has led to the present orientation of the field. One such issue has focused on the extent to which psychiatrists perceived their responsibility toward the community, and the corresponding expectations of the general public. The nature of such obligations and expectations has depended, in large measure, on current theories of the etiology of mental disorder and on professional and popular attitudes regarding the efficacy of therapeutic and preventive programs. A second related issue has centered on the isolation of psychiatrists in remote

custodial institutions or within the walls of private offices, as opposed to their daily participation in community contacts within the core living space of the population, where they are exposed to the immediate impact of community pressures and the challenge of developing new ways of dealing with a diverse patient population in collaboration with other community care-givers.

Theoretical basis. At the turn of the century, psychiatry was in a state of transition. There were few alienists in this country, and the majority of these practiced in asylums for the insane, where they shared the isolation of the inmates. In fact, the scientific status of psychological medicine was low, not only in the eyes of the general public, but in the opinion of other medical specialties as well. The Presidential Address to the American Medico-Psychological Association delivered by P. M. Wise in 1901 to an audience of about 100 members and friends, mirrored this situation. In his speech, Dr. Wise made a plea for the respect and collaboration of fellow physicians and academic psychologists; he attempted to justify this claim for recognition by citing the scientific advances in psychiatry during the preceding half century with regard to the cause and management of mental illness.

The somatic theory of mental illness. At the beginning of the 20th century, psychiatrists subscribed to one of three theories as to the nature of mental illness. One of the dominant groups believed in the somatic origin of all such disorders. According to this view, mental illness was not an independent disease of the mind, but a symptom of an organic condition, such as brain lesions, endocrine imbalance, or a metabolic disturbance. In spite of its rational and scientific mien, in a sense, this theory had its origins in the deep religiosity of such 19th century psychiatrists as Pliny Earle, to whom the possibility of an independently corrupt intellect was unthinkable, since this would violate the doctrine of the immortal soul. Another influence was that of German psychiatry, particularly the nosological concepts of Kraepelin, who was interested not in the specific personality disorder of a single patient, but in categorizing the general symptomatology of

psychoses. It was due to the work of such scientists that psychiatry began to seem a real part of medicine, with circumscribed diseases and categorizable syndromes of symptoms, with diagnoses and prognoses. And in the United States it was this group which eventually managed to unite the American Medico-Psychological Association with the American Congress of Physicians and Surgeons in 1903, thus helping to end the previous organizational isolation of psychiatry from the rest of the medical community.

On the other hand, with regard to prognosis, this was a highly pessimistic school which offered little hope of recovery. Its adherents saw their role as providing isolated and fortified custodial institutions to house the unwanted and feared multitude of insane persons from public view and conscience. The members of the organic school seldom ventured into the community unless they were asked to testify in criminal trials. If, for one of a variety of political reasons, an alienist lost his hospital appointment, he might establish a private practice in neurology until a new institutional position could be found. In the early years of the 20th century, some of the most important contributions of this group were in biological research. And, eventually, individual workers tended to use selected patients in investigations of various treatment regimens, thus removing them from a huge, anonymous body of neglected inmates.

The hereditary theory of mental illness. Closely allied with this group were those who preached an applied Darwinism. According to this view, insanity was a hereditary taint which was Nature's way of casting off weak and defective members of the race. The clock of evolution was "speeded up," so to speak, so that nervousness and excitability in one generation could lead to "raving mania" by the third. Environment was seen to play a part in such degeneration, as it did in every Darwinian scheme. It was felt that those individuals whose brains were not fully developed were casualties of the complexity, speed, pressure, temptations, and frivolous literature of civilization to which they were unable to adjust. In 1904, an English alienist surveyed the apparently rising rate of insanity in London and predicted a similar and ever growing increase in mental illness in other industrial and urban areas. He found grim consolation, however, in his belief that city dwellers become sterile after the third or fourth generation, so that the flood of new cases could not last indefinitely. Salvaging the children of these degenerates was felt by some to be a futile task, since it would be impossible to counteract their tainted genes by education and healthy environment in less than two or three generations; it was, however, possible to protect the race by two forms of prophylaxis: the control of immigrants, who presented an alarming number of disorders, and eugenics.

Preventive concepts. In response to public pressure, an Immigration Act was passed in the United States in 1903 which excluded those who had been mentally ill up to 5 years before their application to enter this

country and authorized deportation of those persons who broke down within 3 years of their arrival. It was also felt by leading psychiatrists that public education and laws were necessary to prevent the mating of undesirable individuals who would only produce a growing number of public charges. This recommendation was supported by the results of surveys, such as the Jukes-Edwards and the Kallikak studies, comparing families of degenerates with the descendants of upright citizens. After these data were made public, laws were enacted in several states permitting the sterilization of the mentally retarded and of some types of criminals. Thus the concept that mental disorders might be inherited was apparently taken very seriously by many in the population. As part of his Presidential Address before the American Medico-Psychological Association in 1903, in which he made a strong plea for eugenics, G. Alder Blumer read a letter from a maiden lady in which she had written that she was pleased to learn of the advances in the kindly treatment of the insane, for, since several of her relatives had died of "softening of the brain" and similar maladies, she knew that she was destined for a similar fate and was consoled to think that she might expect some comfort during her own decline. The theory of hereditary insanity, although it undoubtedly burdened many such frightened laymen, served to give psychiatrists a sense of their own responsibility as guardians of the public sanity. Moreover, it brought them in contact with the public, insofar as they could engage in education and exhortation.

The sociocultural theory of mental illness. A third view contained aspects of the other two theories, admitting certain somatic and hereditary conditions, but emphasized environment, culture, and education, rather than bodily traits alone. Its adherents tended to focus on the symptoms of the individual patients, rather than concentrating on the disease itself as the primary topic of study. One of the more interesting of these positions was adopted by those workers who, wearying of the nosological controversies which were prevalent prior to the First World War, maintained that mental disease was not a distinct entity with independent causality at all, but was rather a deviation from a reality-based norm of behavior which could be precipitated by cultural, socioeconomic, and personal idiosyncrasies. Therefore, every case, unless it was a bona fide example of epilepsy, mental retardation, paresis, or some other obviously organic complaint, was to be considered in its own terms, and not stereotyped by a general and possibly meaningless categorization. Concurrently, psychiatrists began to make use of social workers to gather information about the family, as well as the occupational, and educational background of their patients, in the hope that it would shed some light on the causes of the disease, on the possible course of treatment, and on changes in the environment which might be advisable before the pa-

tient returned home. At the same time, treatment programs began to include occupational therapy, short courses of formal education, rational conversation, milieu and habit therapy, and other social methods in the cure of patients.

Preventive concepts. The adherents of this third view were highly concerned with prevention, sound treatment, and after-care. Some doctors noticed, for instance, that such scourges as alcoholism and general paresis seemed to occur mainly among members of particular ethnic groups, and rarely among others. Leaders of American psychiatry, such as Adolf Meyer, felt that prevention might be possible if these target populations could be educated to the dangers of these diseases, and if restrictions could be placed on houses of prostitution and on the sale of alcohol.

The belief that insanity was caused by harmful influences in the family or in the wider environment led psychiatrists to conclude that if these influences were forestalled, or if there were a change in the individual's environment, the disorder might be checked. Thus, they stressed the importance to the prospective patient and his family of seeking therapy in time to limit the personal and social damage of the illness. Since fearful stereotypes of mental disease and mental institutions often prevented the mentally ill and their families from applying for professional aid, some psychiatrists were particularly anxious to dispel public ignorance, misconceptions, and prejudice. To this end, they supported a new venture in the education of mental hospital nurses, for example, which would provide them with general training, so that when they left a mental institution they would be qualified to work in a general hospital, where they could spread realistic reports of institutional conditions. Similarly, the services of psychiatrists were exposed to public view through the establishment of psychopathic hospitals and wards and out-patient clinics or dispensaries.

The therapeutic concepts. Psychopathic hospitals and wards in major cities, such as the Boston Psychopathic Hospital, the Insane Pavilion at Bellevue in New York, and Pavilion F at Albany Hospital, offered refuge and emergency care for acute cases brought in by police or relatives. These patients were detained for an average of 5 days until it could be ascertained whether they required hospitalization elsewhere or were eligible for discharge. Psychopathic wards in city hospitals frequently provided an alternative to prison for alcoholics, epileptics, etc.; they provided a convenient central institution from which distribution could be made to distant and isolated mental hospitals with less inconvenience to the patient's family and friends; and they provided a safe-guard for those who did not need long term hospitalization, and who were thus spared the stigma of commitment. Out-patient clinics or dispensaries, like the one established in 1897 by Walter Channing in Boston, were designed to provide clinical experience for medical students, as well as treatment for patients in the early stages of disease.

It was hoped that prompt intervention would prevent further disturbance in patients who were undergoing an acute, but transient, emotional crisis, and cure more serious cases faster and more successfully than was possible when these patients entered a mental hospital as a last resort.

Implications for community psychiatry. A refrain runs through the writings of many of these physicians that there was an important future for psychiatry outside mental hospital walls. In 1909, for instance, Adolf Meyer visualized an entire community mental health program in which the various overlapping jurisdictions of such care-giving agencies as schools, police, and welfare could be unified into a single district containing a mental hospital. It would then be possible to conduct an integrated program of prevention, treatment, and after-care of mental disorder, with the psychiatrist in the hospital working in concert with teachers, police, welfare workers, and general practitioners in the community. Meyer also advocated the immediate implementation of a plan to involve family doctors in the treatment of hospitalized psychiatric patients. Presumably, this would maintain the interest of the general practitioner in a case which he might have to manage after discharge; it would also help to reduce his ignorance and fear of institutional life, so that he might realize the advisability of committing other patients before their illness became chronic. Thus, Meyer suggested that the family doctor be invited to tour the mental hospital, and that he be invited to attend staff meetings at which his patient was discussed. If he was unable to attend, he might be asked to submit a report of his experience with the patient, and the minutes of the staff meeting would be sent to him, in turn. Meyer also suggested that literature on conditions at the institution, commitment procedure, therapeutic developments, etc., be prepared periodically and distributed to general practitioners. He also advocated a program of public education to reduce the stigma of mental disorder and to develop mentally healthy attitudes and habits. He addressed many lay groups and often illustrated his thesis that insanity should not be a cause for shame by talking openly about the mental illness of his own mother.

Public education has remained a central issue in community psychiatry. Originally, it was felt that a more sophisticated population would probably be healthier mentally; that is, greater understanding of one another's needs and greater tolerance for deviations of behavior would reduce the incidence of mental illness. Such education should lead to improved methods of child rearing and to healthier ways of mastering life's problems. A second but not less important goal has been the enlistment of public support and the cooperation of civic leaders for the improvement of community facilities for the mentally ill.

Historical antecedents of community psychiatry

The mental hygiene movement. The movement of psychiatrists into the community was accelerated not

only by the development of professional theory, but also by the demands of the lay public. Clifford W. Beers in 1905 published *A Mind That Found Itself*, an account of his experiences as a patient in three mental hospitals in Connecticut. His book gained wide circulation and aroused much interest among laymen and doctors. This was a call to reform in the lay social action tradition of Dorothea Dix and Jane Addams. Like these great social reformers, Beers was inspired not merely by a desire for revenge against his tormenters, but by a humanized Protestantism current in the 19th and early 20th centuries. This movement, spreading out of New England, retained the traditional fervor and intensity of Puritanism, but substituted an ideal of love for man's fear of God. This extended into the temporal sphere, where it produced a feeling of duty toward the suffering and weak of humanity so intense that it transcended any possible diffidence that might arise in the face of complacent professionalism. All during the history of the mental hygiene movement, leadership was shared, not always harmoniously, between laymen and professionals. Lay involvement was evident not only among individuals actually working in the organization and among non-psychiatric professionals participating in its program, but also among the many foundations and philanthropies which have financed its operations for nearly 60 years.

Philosophy. In 1908, Beers and a distinguished group representing medicine, both general and psychiatric, law, religion, and education founded the Connecticut Society for Mental Hygiene, which was followed in 1909 by a National Society. The mental hygiene movement, led by such psychiatrists as Meyer, Salmon, Frankwood Williams, and many others, was greatly influenced by the concepts of public health. It recognized that modification was necessary in the traditional role of the psychiatrist, just as it had been in that of the public health physician. Emphasis was now to be shifted from a single patient seen during a single, temporary episode, to the superintending of the mental health of an entire community over an indefinite period of time. The Society viewed such a community as composed of individuals whose mental health was impinged upon by a variety of biological, social, and environmental factors. The Society thus identified its primary goal with that of the public health movement, in prevention as well as in cure, and in the prompt detection and control of unhealthy forces and of incipient maladjustment by means of research, legislation, all embracing community services, and public education. As C. E. A. Winslow, Professor of Public Health at Yale, and president of the Connecticut Society said at the 25th anniversary meeting in 1933, "It is an organized community response to a recognized community need."

Program. From the first, the mental hygiene movement was remarkable for its attempts at basic and realistic planning. During its first few years it col-

lected and distributed data on the standards of care and treatment of mental disease and of mental retardation; on the manpower needs, resources, and education of mental health personnel; and on mental health needs among the school age population. On the basis of such data, it was hoped that sound programs could be devised, and appropriate institutional growth, legislation, and budgeting could be instituted.

Military psychiatry. One of the early and most critical of these planning attempts was carried out by Thomas W. Salmon and his associates just before the United States entered the First World War. The rate of mental health casualties was examined among Americans troops on the Mexican border and among British soldiers in the French trenches. On the basis of this information a plan was presented to and approved by the Surgeon General for the prevention and treatment of mental disorder in a population soon to be at serious risk. The plan itself included a selection process to exclude obvious risks, such as the psychotic and the mentally retarded; assignment of psychiatrists to each of the services; a system of immediate treatment of mental casualties as close to the front as possible, with a continuing plan of treatment at major hospitals abroad, at ports of embarkation and disembarkation, and at hospitals in the United States.

Although this plan was doomed to inadequate implementation because of a serious shortage in manpower, the war marked several advances in community psychiatry. It aroused a great deal of public concern about mental health and rehabilitation and it dispelled some feelings of stigma and stereotype; it counteracted vestiges of the view of exclusively somatic causality, a view which was reflected in the term "shell shock," but which was removed in later terms such as "war neurosis" or "war shock." It forced the use of nonprofessionals in the effective control of mental disease; it encouraged the use of short term therapy, such as hypnosis, to remove hysterical symptoms in one session, and short term psychotherapy by suggestion and persuasion, such as that devised by Ross in England; and it encouraged the early use of group methods. It also stimulated advances in manpower education, particularly that of psychiatric social workers, for whom a school was opened at Smith College in the summer of 1918. After the war the records of the psychiatric experiences were gathered into one volume of the Surgeon General's Report, where they were unfortunately to be completely forgotten until the middle of World War II.

The child guidance movement. After the war, mental hygiene broadened its operations once more, reflecting lay and professional enthusiasm. One of its most hopeful ventures was the child guidance movement which began in the 1920's under a grant from the Commonwealth Fund. It marked a development from the work of William Healy in Chicago and Boston, and from the interest of child study groups. It also reflected the influence among laymen and psychiatrists of the

theories of Freud and his followers, that mental disorder in an adult is a consequence of unsolved psychological problems, faulty personality development, and mismanagement of children.

Philosophy. The child guidance clinic was envisaged as the key to the prevention of mental disorder in a population. It was thought that childhood disorders might be cured far more quickly and effectively than those of an adult; thus it was hoped that prompt care at this stage would stop the flood of adult patients into mental hospitals. The child guidance clinic was also seen as a center which would disseminate proper attitudes and child-rearing techniques among parents and teachers in the community; provide much needed training facilities for young professionals; and furnish a tactical and economical way of using a desperately inadequate number of professional workers for the maximum benefit of the community.

Program. The success of these clinics was mixed. On the one hand, they did provide a setting for the study of the diseases of childhood; of the complex physical, psychological, and sociocultural forces contributing to such diseases; and of areas of diagnosis and treatment. Research was carried out into many factors which modify the healthy and unhealthy environment of the child, such as his relationship with his mother and with other family members. The clinics developed the use of the psychiatrist-psychologist-social worker team, each member of which contributed his own viewpoint to analyzing the problems of the child and his environment, and each of whom further developed professional tools for the new setting: individual and group psychotherapy methods, intelligence and projective personality tests, and social and developmental history interviews and casework techniques. There was also a greater use of psychoanalytic concepts regarding unconscious elements in the child and his relationships with those around him by all three groups of professionals. The clinics provided the hoped for training facilities for young professionals, many of whom then went on to develop in-patient services and preventive community programs.

On the other hand, the clinics ran into serious difficulties and frustrations which made it plain that the original goal of eventually reducing the rate of adult disorder by the treatment of children was far more distant than the founders had anticipated. In practice, the assumption that a child was easier to treat than an adult was not borne out. Even young children required a lengthy expenditure of professional effort by the time they were brought to the clinic, particularly as the enthusiasm for psychoanalytically-oriented treatment and casework techniques demanded an increase in professional time for each case. Second, the promotion of early case finding by referrals or screening in schools meant that far more cases were uncovered and labeled as disturbed than could be treated. Because of this, and because of demands for services from other professional agencies and from the public,

clinics developed long waiting lists and the habit of shuttling "unsuitable" cases from agency to agency, all of which caused friction with the community. The clinics also developed stereotyped functions for each member of the team, and internally oriented standards of achievement such as properly written reports, full batteries of tests, meticulous supervision of junior staffs, orthodox psychoanalytic techniques, etc., all of which served to orient the clinic inward toward its own craft performances, rather than outward to the needs of the community. Instead of the public health focus on the total population, as had been the original dream of the mental hygiene movement, the clinics slipped back into the traditional clinical pattern of dealing exclusively with a relatively small number of individual patients. Other problems included the disillusionment of many child psychiatrists with the preventive value of parent education. This had originally been a key element of the clinics' function but was now seen as inadequate when more emphasis was placed on depth psychology. This served to break another link with the community, so that little attempt was made to contact the public for other than public relations purposes.

Assessment of progress in prewar mental hygiene efforts. During the 1920's and 1930's mental hygiene was frequently attacked for its apparently grandiose and utopian vision. Critics felt that its enthusiasts treated their programs as panaceas for the prevention of mental deficiency, criminality and delinquency, the psychoneuroses, the psychoses, anti-social traits, divorce, prostitution, alcoholism, sexual perversion, epilepsy, war, and all other ills. Some detractors, such as Gregory Zilboorg, questioned the efficacy of the many educational ventures of which the movement was so proud, casting doubt on the value of intellectual understanding in an emotional area. Others, such as Kingsley Davis, saw mental hygiene as a social movement which had adopted as its ideology the Protestant ethic. This ethic was being imposed on a sometimes unsuitable population as advice in the conduct of personal affairs and, furthermore, was the unconscious source for a supposedly scientific analysis of mental concepts. Davis felt that the mental hygienist had become an outmoded moralist in a scientific world.

Changing theoretical orientation. In spite of the sober stand of such men as Adolf Meyer, who advocated careful experimentation and analysis, and then implementation with reference to real conditions, some of this criticism had a valid basis. The mental hygiene movement, like certain other social, political, and religious groups in the 1920's and 1930's, was highly critical of the failings of modern society and felt that a manipulation of the social, economic, and political environment would alleviate most of the ills of humanity. Labor unrest, crime, dependency, etc., were seen to be evidence of bad mental hygiene, which could be cured by approved mental hygiene techniques. This

view was by no means a new one; Edward Bellamy in *Looking Backward*, written in 1887, recorded that in his ideal society of the year 2000, freed from all labor strife, economic exploitation, money, class barriers, charity, dependency, and wars, nearly all insanity had disappeared. Perhaps one of the best known of these formulations was that of Lawrence K. Frank in *The Society As Patient*, in which he suggested that instead of dealing with each mental and social maladjustment as though it were an independent category, a somewhat simpler and more manageable model might be to think of society itself as being sick, and of these individual cases as its symptoms. Therefore, instead of treating thousands of symptoms, it might be more effective to cure the disease at its source.

Relevance for community mental health. Such theories marked an important stage in the growth of community mental health concepts. They showed the willingness of mental hygiene workers to see the boundaries of their effectiveness indefinitely expanded to include all aspects of human life. These boundaries no longer included just individual patients, or even the entire sick population, but were extended to include those who might be quite normal, but whose effectiveness could be increased a little more until they functioned closer to their full potential. Such ideas implied an eagerness to cross professional boundaries, to cooperate with teachers, clergymen, judges, police, politicians, etc., in order to ameliorate every aspect of the environment.

There were, however, two pitfalls in such a course. The first was the tendency to excite too much public enthusiasm and overly optimistic expectations so that professionals were often carried beyond the limits of validated theory and of existing services into areas where risks were high, as when they identified more cases among the school age population than could be treated in the early days of the child guidance movement. The second pitfall was the tendency to turn other professional groups into less qualified psychiatric workers, thus endangering their own professional identity and function and producing an often clumsy amateur therapist. This could perhaps best be illustrated by early attempts to include some kind of mental hygiene instruction in schools, which sometimes turned classes into group therapy sessions with the children being encouraged to reveal their fears, conflicts, and feelings of inadequacy and guilt by a teacher who might not always be able to handle safely so unpedagogical a situation.

This was perhaps a necessary transitional stage in the growth of psychiatry in the community. It showed an inability yet to recognize that the independent professional functions of other disciplines are capable of leading to the fostering of mental health quite independent of current psychiatric thinking, as when a good teacher *qua* teacher promotes mental health unconsciously by the competence with which he handles his class and presents his material, without needing

recourse to instruction in mental hygiene techniques. Under these circumstances, psychiatry was not yet moving out into the community to assess needs and to provide corresponding services. It was instead imposing preconceived ideas on others, setting up its own criteria of good, and drawing other professionals in, not to improve the mental health aspects of *their* work, but to make them the adjuncts in carrying out the psychiatrist's own, self-appointed task.

Obstacles to progress. These pitfalls may provide a clue to the weaknesses of mental hygiene prior to the Second World War. Many of the ideas of its leaders have a surprisingly contemporary ring, like the plan of Adolf Meyer for comprehensive community services which would integrate a central and accessible mental hospital with the services of other care-giving agencies in a joint catchment area. One wonders why such schemes were not carried out 30 or 40 years ago, and why similar projects are still considered revolutionary in the mid-1960's.

One may hazard several guesses on why many of these plans did not progress beyond the speculative phase. First, there was a lack both of psychiatric manpower and of training facilities and funds, although attempts were made to remedy these conditions in the 1920's and 1930's by the improvement of psychiatric instruction in medical schools and by the granting of training fellowships by the Commonwealth Fund and the Rockefeller Foundation in 1923 to be administered by the National Committee for Mental Hygiene. The lack of personnel meant that most practitioners were fully occupied and often overwhelmed by their traditional roles of treatment and of mental hospital administration. Moreover, many of the bright young men of the 1920's and 1930's were engaged in another new and promising venture in American psychiatry, psychoanalysis, which drew them away from community matters into the privacy of their offices.

Second, there was a lack of knowledge of the nature of specific threats to mental health so that plans for prevention were necessarily vague and global, since it was difficult to locate and isolate populations at risk. This vagueness lent a utopian quality to many statements of the mental hygienists. Today, after research has been conducted which indicates a basis for some of their assumptions, it is possible to make specific recommendations for ameliorating particular harmful conditions. For instance, some mental hygienists held that labor unrest was a sign of mentally unhealthy conditions in industry which should be corrected by changes in the policy of employers toward their workers. John R. P. French has recently reviewed studies carried out over the past few years which have shown a high correlation of mental upset, and particularly of psychosomatic conditions, with low status in industrial jobs. He has suggested that specific modification of the social environment and the industrial structure might be practicable which would relieve some of the more onerous characteristics of low status, such as lack of

self-esteem and a sense of powerlessness over the conditions of the job, thus preventing these forms of mental upset.

A third obstacle may have been the lack of development of adequate theories and techniques of community work, and a corresponding paucity of research. This was again due to a lack of personnel and of research funds, and also perhaps a lack of willingness among many psychiatrists to engage in an area so far removed from their professional training. Moreover, there was as yet little collaboration with the experts in community research, the social scientists. Thus, in spite of the admonitions of leaders like Adolf Meyer to plan community services which would correspond to real conditions, this was to prove extremely difficult in the absence of techniques to observe and assess possible obstacles such as political pressure groups, vested interests, the probability of arousing more demands for services than could be satisfied, or the possibility of proliferating services which psychiatrists thought appropriate, but which did not, in fact, satisfy the current public need. There was as yet no real appreciation of the ignorance of psychiatry in community matters, and consequently, flexibility was not maintained in programs to allow evaluation and modification as experience demonstrated their inadequacies. There was instead the rigid digging in and progressive isolation in the face of community pressures of such agencies as child guidance clinics.

The fourth problem may have been a lack of public interest in and motivation toward such community approaches. Laymen, and particularly legislators, who thought of psychiatry in terms of traditional institutional therapeutic services, were unwilling to appropriate funds for these new ventures.

Many of these obstacles would, however, be modified by the upheavals of war, with its demands for dealing with army populations, and with its massive mobilization and concentration of manpower and resources which suspended traditional roles and relationships for a collective, overriding goal.

The Second World War. When World War II broke out, farsighted psychiatrists, such as those in the William Alanson White Foundation, were concerned about forthcoming threats to mental health. They saw their task as maintaining civilian and military morale; implementing an effective screening process during recruitment and training; instituting prompt treatment of psychiatric casualties at the Front and rehabilitation of both returned casualties and those screened out of the army on psychiatric grounds; and maintaining mental hospital standards. However, for the first 2 years of war, efforts were pitifully inadequate. There was still a major shortage of professional manpower, with only about 3,000 psychiatrists in the United States to serve both civilian and military populations; thus each psychiatrist at recruitment stations often saw 200 cases a day. Psychiatric leadership was divided and indecisive, and unlike Salmon and his associates in

World War I, they seldom initiated negotiations with the authorities in order to promote their own participation. This diffidence of psychiatry was matched by the indifference of civilian and military leaders to the possible contribution of mental hygiene. It was not until 1942 that the Army Medical Corps set up a neuropsychiatric branch, first under the leadership of Roy D. Halloran and later under William Menninger, and appointed psychiatric consultants to each of the service commands; it was later still before psychiatrists were assigned to each army division. Mental health programs were further hampered by a lack of knowledge not only of the causes and cures of disorders, but also of methods for dealing with such large populations. As mentioned above, the records of psychiatric experience in World War I, which had been collected into one volume of the Surgeon-General's Report, were completely forgotten by everyone until the middle of World War II, so that much valuable guidance was lost.

The war, however, did mark a number of advances. It gave psychiatry firmer support among civilian and military leaders, and a status closer to that of other medical services. It taught psychiatrists more about neuroses, and particularly about psychosomatic disturbances. It encouraged the use of short term manpower-saving treatments, such as group therapy and narcosynthesis. The Veterans Administration hospitals were reorganized with more modern programs of rehabilitation and research. Such hospitals also reduced their own isolation from the community by the use of volunteers and by organizing out-patient clinics. The war emphasized the importance of morale and leadership in any preventive program, particularly in large organizations such as colleges and industry; and it helped to teach psychiatrists in such institutions not to look only at an individual case, but to recognize overriding group aims and needs.

Postwar developments. After World War II, psychiatrists returning to civilian practice in Britain and the United States attempted further to break down their traditional isolation from the public by adapting the progressive and flexible practices developed in the armed services to the needs of civilian life. Frustrated by the lack of leadership and by the conservative attitudes of the professional establishment, these more activist physicians formed organizations of their own whose members continue to develop and promote the concepts of community psychiatry. The Tavistock Clinic was reopened in London under the leadership of J. R. Rees where emphasis was placed on the amelioration of the work environment by consultation in industry, on the training of school teachers and general practitioners, and on the use of group and family therapy. In the United States, a number of "Young Turks" led by William Menninger formed the Group for the Advancement of Psychiatry (GAP) in protest against the conservatism and inaction of the American Psychiatric Association (APA). GAP has remained a

select organization whose members are divided into working committees, each of which concerns itself with a particular facet of the psychiatrist's role, either within the profession or in his relations with the community. These committees have studied such areas as the relations of psychiatry with government, religion, and law; the needs of adolescents, college students, and the aged; the responsibility of psychiatry in public education, in confronting social issues, and in the field of international relations; the evaluation of developments in therapeutic techniques, in medical education, and in the conditions of mental hospitals; and developments in child psychiatry, preventive psychiatry, and mental retardation.

Some of the early reports of these committees gave quite specific advice and encouragement to fellow professionals on approaching lay groups and addressing them on suitable subjects. Psychiatrists were warned not to use technical jargon and not to attempt to answer provocative or very difficult questions from the floor. Mental hospitals were encouraged to promote community interest in their activities and were urged to hire public relations experts.

GAP reports were circulated not only among psychiatrists, but also among lay groups, thus encouraging development and reform in such areas as industry and university health services, mental hospitals, and local community resources. GAP members and eventually other leading psychiatrists were also willing to speak out uninvited on psychiatric aspects of critical issues of the day such as segregation in schools and loyalty oaths.

It is significant that GAP members decided to retain their individual membership within the American Psychiatric Association as a progressive core, in spite of the fact that they also formed their own group. Since 1946, GAP members have been elected to the leadership positions of the APA, thus helping to alter the complexion of the entire profession. It is interesting that subsequently a group of mental hospital psychiatrists also formed their own organization, since they felt that the general meetings of the APA no longer represented their interest in institutional practice. As a sign of the times the title of their journal, *Mental Hospitals*, has recently been changed to *Mental Hospitals and Community Psychiatry*.

Current Developments in Community Psychiatry

Since World War II, many programs of research and service have been instituted which have extended the theoretical framework and methodology on which community psychiatry is based, thus filling some of the gaps that had weakened the earlier mental hygiene movement. These have included the following.

Advances in mental hospital practice. It has been increasingly realized that much of the traditional clinical picture of back ward chronicity has been due to hospitalism. This has stimulated a search for methods of reorganizing mental hospitals so that they might

function as therapeutic rather than pathogenic environments. Attempts have been made to improve the social structure and atmosphere of the wards, to introduce new methods of treatment, and to establish closer links with the community in order to prevent the isolation of patients from their social network.

The concept of the therapeutic milieu. New approaches to patient care in the United States have been influenced by the pioneer work of Europeans such as T. P. Rees, Maxwell Jones, Walter Bion, and John Rickman in England, and Paul Sivadon in France. They demonstrated the practicability of open wards and free communication between the hospital and its local community and developed the concept of "therapeutic milieu" in which increased communication among patients facilitates their mutual rapport, and in which participation of patients in decision making and control of behavior maintains and improves their ego strength.

These approaches were well received in this country. They meshed with current experiments in ward management then developing in such hospitals as the Boston Psychopathic, where Harry C. Solomon and Milton Greenblatt were already moving "from custodial to therapeutic patient care." The acceptance of these ideas was facilitated by a climate of increased reliance on methods of individual therapy which had developed during the past 3 decades from such techniques as fever therapy, insulin and convulsive treatment, to more recent use of psychotherapy and psychopharmacological agents. Such drugs were of particular importance in mental hospital reorganization, since by controlling behavior disorders and by reducing troublesome symptoms, much staff time previously spent controlling patients could now be freed for therapeutic efforts, and the patients themselves could be more quickly discharged to the community.

Administrative innovations. A major obstacle to developing administrative patterns conducive to a therapeutic milieu has been the large size of many institutions. Several American psychiatrists have been interested in a plan originally suggested by Sivadon, according to which hospitals would be divided into administratively self-contained units, each of which would provide facilities and staff for the total process of treatment and rehabilitation of a manageable number of patients and would allow continuity of care after discharge and in the event of future admissions. This unit system has facilitated the development of the mental hospital catchment area concept, each unit accepting responsibility for patients living in a limited geographic subdistrict. The unit staff is thus able to build and maintain relationships with a manageable number of community agencies and professionals who can collaborate in referral and after-care. This was previously impossible when all the staff dealt with patients indiscriminately drawn from the total area served by the hospital.

Over the past few years, mental hospitals have at-

tempted to reduce their own distance from centers of population and to minimize the alienation of patients from their social networks. Various patterns of transitional institutions have been developed in the community, such as day and night hospitals, halfway houses, therapeutic social clubs, sheltered workshops, etc., which have been designed both to reduce this isolation and to offer individualized patterns of care to suit the needs of patients at different phases of illness and recovery. Other attempts to reach out into the community and to reduce the risk of unnecessary or prolonged hospitalization have marked such programs as the Home Treatment Service of Boston State Hospital. These have been inspired by the work of Querido in Amsterdam, who developed a system of mobile psychiatric teams which visit new patients in their homes in order to decide whether they need hospital care, or whether they can be referred to outpatient clinics or other care-giving agencies.

Rehabilitation programs. Hospitals have also given increased attention to problems of rehabilitation. Many mental institutions have developed hospital industries, in which patients engage in realistic and productive tasks, often under contract to outside firms. Another approach is a series of programs conducted prior to and during the early stages of hospitalization which are designed to prevent the mutual alienation of the patient from his family, work, and social groups, and to inhibit the "closing of ranks" which would obstruct his eventual return. Hospital staff visit the home and work setting in order to interpret the patient's condition and prognosis to his social network, and in order to ensure maximum communication with the patient during his absence. Such programs have, however, encountered difficulties because they demand more community contacts than seem feasible for overworked hospital personnel. In some institutions attempts are being made to solve this problem through contracts between the hospital and a community-based agency such as a Visiting Nurse Association or the nursing division of a city health department. This may represent a pattern for the future in which a comprehensive service covering all phases of mental illness may be based upon collaboration between, and coordination of, mental hospital staff and workers in the community who will regularly visit each other's principal setting in much the way suggested by Adolf Meyer in 1909.

The community mental health center. These centers have become some of the major sites for developing, testing, and implementing community mental health concepts and techniques. Associated on the one hand with university departments of psychiatry, psychology, social work, public health, and social science, they have been the locus for much of the research in community psychiatry over the past 15 to 20 years, and they have acted as a focal point for the emergence of such techniques as mental health consultation, preventive intervention in life crises, and community

organization in relation to mental health. On the other hand, they have developed in close contact with their communities, working sometimes under local voluntary auspices, or, increasingly, functioning within the jurisdiction of state, county, or local departments of mental health, public health, or welfare. Many have grown out of child guidance clinics. Others, such as the Human Relations Service, opened in 1948 by Erich Lindemann in Wellesley, Massachusetts, were originally established with a preventive community orientation similar to the public health goals of the early mental hygiene movement. These have been updated by the addition of a community research dimension and by collaboration with social scientists and specialists in community organization.

By their close relationships with local civic leaders and with other community agencies and professionals, these centers have greatly increased psychiatrists' understanding of the sociocultural structure and functioning of community life. Greater sophistication has also been developed by the increased range of cases which such clinics encountered when they lowered administrative barriers, avoided the traditional waiting lists of child guidance clinics, and reduced stigma by effective public relations and by defining the goals of the center as ameliorating "adjustment problems" rather than as treating psychiatric illness.

Goals. The close link of many community mental health centers with public health, either because they have been established under public health auspices, or because members of their staff have been trained in schools of public health, has led to their adapting, with only minor modification, traditional public health practice concepts and terminology. Thus it has become usual for workers in these centers to see their major goal as prevention in community terms: primary prevention, reducing the rate of new cases of mental disorder in their population by reducing community-wide harmful influences, as well as cognitive and emotional education and the provision of services to help people at times of crisis, in order to promote the capacity of the population to deal with stress; secondary prevention, reducing the prevalence of mental disorder by shortening the duration of illness through early case finding and prompt effective treatment; and tertiary prevention, reducing the rate of residual disability following mental disorder by effective rehabilitation and by ensuring adequate follow-up care for the total population of ex-patients.

Operating principles. Another concept borrowed from public health is that of the catchment area, the geographically or institutionally bounded population to be served. This must be a manageable size so that subpopulations at special risk can be monitored and treated, and so that the pool of community care-givers and agencies is small enough for personal relationships to be developed between most of them and the specialists in the community mental health center.

Much of the work of these centers has been focused

on increasing the efficiency of the working practices of their staff and on developing methods which will produce chain reactions through the intermediation of other professionals, so that the specialists may spread their efforts as widely as possible in the community. To this end they have striven to avoid waiting lists. By seeing people during the acute disequilibrium of a life crisis or an acute exacerbation of a chronic illness, they are able to capitalize on the increased need for help and the heightened susceptibility to influence of the crisis state. Most of these centers have learned to restrict their intervention in the lives of their patients to a short series of psychotherapeutic interviews with the patient and his family during the few weeks of a crisis. This is consolidated by offering consultation to the general practitioner, clergyman, school teacher, recreation worker, or other care-giving professional to whom the patient is then returned for further care.

Mental health consultation is the most characteristic technique of community psychiatry to develop in these centers. It offers assistance to care-givers on the mental health dimension of their own work. In contrast to the methods of the early mental hygienists who tried to turn other professionals into the agents of the psychiatrist, this type of consultation maintains the role identity of the care-giver; and the psychiatrist restricts his communications to matters which increase the other's professional understanding and objectivity. Experience has shown the importance to the community psychiatrist of maintaining an egalitarian relationship with the consultee, since this allows the latter to make maximum use of the expert knowledge of the mental health specialist while retaining his own sense of commitment and responsibility.

The role of psychiatrists in community institutions and services. Because of their increased interest in working within the community, and because of a growing understanding by local leaders and administrators of their potential value, psychiatrists and their mental health colleagues have joined the staffs of many institutions and services. The experiences of the Second World War encouraged their use in government, industry, and colleges. Child guidance led to an interest in school mental health; and a number of school systems have employed their own mental health specialists. Psychiatric clinics have also been established in courts and in correctional institutions.

In most of these settings psychiatrists are unable to control their intake procedures by the traditional device of establishing waiting lists. They have therefore been forced to develop methods of stemming the flow of cases by offering consultation in order to modify the practices of other staff members and the operations of the social system so that problems are either prevented or are dealt with by others "upstream" in the early stages. These experiences are developing increased sophistication in consultation and collaboration and in methods of monitoring the transactions within the social systems of institutions.

The Peace Corps program. Of particular importance has been the development of a mental health program in the Peace Corps. Psychiatrists have been involved in this governmental organization since its inception. They were called in originally to help with the identification of mentally ill or unstable candidates who might break down overseas. They were then asked to participate in the selection of candidates with psychological attributes for particular jobs and to provide training to prepare all volunteers for the psychological and cultural burdens of overseas service. This led to involving the psychiatrists as consultants to the Peace Corps administrative staff and physicians to help them provide psychological support to volunteers in the field, so that they would be better able to handle the inevitable crises of adjusting to overseas conditions and to the "reverse culture shock" of returning home at the end of their 2 years' service. Eventually the Peace Corps leaders came to recognize the significance of the whole system of practices and working conditions of their organization for the adjustment and mental health of the volunteers and have involved their psychiatrists as consultants on general policy problems at all levels.

The special importance of this endeavor for the development of community psychiatry has been two-fold. First, the high prestige and visibility of the Peace Corps has attracted much interest to its novel use of psychiatrists as promoters of positive mental health and good adjustment, particularly as follow-up studies have demonstrated remarkably low rates of psychological breakdown in its stressful overseas operations. Second, its program has been mainly carried out by part time psychiatrists drawn from the faculties of most of the university departments of psychiatry of this country. These key people have had the opportunity of becoming involved in the "community" problems of Peace Corps selection and training camps, and in programs of primary prevention of mental disorder and the promotion of mental health in populations of healthy and attractive young people. This has exposed many of these well trained clinical psychiatrists for the first time to the problems and methods of community psychiatry and has aroused their interest in developing new knowledge and skills and in incorporating these in the educational programs for medical students and psychiatric residents in their medical schools.

Epidemiological studies. These are discussed in detail elsewhere in this chapter. Here we wish only to emphasize that during the past 20 years many studies of incidence and prevalence of mental disorders in a variety of communities have been carried out by multidisciplinary teams of psychiatrists, social scientists, and public health specialists. They have demonstrated ways of delimiting populations at special risk so that preventive or remedial action can be taken at the community level, and they have indicated ways of evaluating community programs by means of repeated surveys of experimental and control populations.

Interdisciplinary collaboration. Over the past 30

years, social scientists have shown increasing interest in research of direct relevance to community psychiatry, thus promoting closer collaboration between them and the traditional mental health professions. Studies have been conducted on small group interaction, social structure in mental hospitals, family relationships, attitudes to mental disorder, interrelations of the network of community agencies in the health and welfare field, leadership and morale, and many other subjects. These researches have provided a growing body of specialized theory to support the formulations of the community psychiatrist and to guide his appraisal of the salient factors which influence the mental health of his population and the development of his own program.

This research grew out of the collaboration between psychiatrists and social scientists which developed from the 1920's on, and which was most noteworthy in the career of Harry Stack Sullivan. Sullivan, with his theory of interpersonal relations as a primary factor influencing the genesis and therapy of schizophrenia and his work with small groups of patients in a controlled milieu, aroused much interest among social scientists. His first major contact with the latter probably took place in 1928 when he served as secretary of the First Colloquium on Personality Investigation, held under the auspices of the American Psychiatric Association, which was attended by such men as Edward Sapir, W. I. Thomas, Gordon W. Allport, Harold Lasswell, Sheldon Glueck, and L. K. Frank. Physicians present included William Alanson White, Arnold Gesell, and David Levy. At the Second Colloquium in 1929, W. I. Thomas, president of the American Sociological Association, suggested the need for a common meeting ground between psychiatry and social science such as a hospital residency for sociology graduates in Sullivan's program, similar to residencies developed for psychiatrists. The idea appealed to Sullivan, although it took several years to implement. In 1939, he founded the journal *Psychiatry* to serve as a forum for all branches of behavioral sciences. Sapir, Sullivan, and Lasswell also planned an institute which would fuse training and research in psychiatry and social science. This was embodied in the Washington School of Psychiatry in Washington, D. C., and in the William Alanson White Foundation of New York, named for Sullivan's great friend and the chairman of the First Colloquium. In the early 1950's, 20 years after Thomas' initial suggestion, a collaborative project was sponsored by the Washington School of Psychiatry. Morris S. Schwartz, a graduate of the University of Chicago Sociology Department, went to Chestnut Lodge Hospital in Maryland to work with one of Sullivan's students, Alfred H. Stanton, on a sociopsychiatric study of interpersonal relations on a hospital ward. Their findings were described in *The Mental Hospital*, a book which was the forerunner of many collaborative reports by social scientists and psychiatrists.

Family therapy. This method of psychotherapy has emerged mainly from the field of child guidance, with

its recognition of the diagnostic and therapeutic significance of the child's relationship with his mother and with other members of the family network. Interest was broadened to diagnosing and treating the family as a unit, since the difficulties of the referred child were seen as one sign of a general disturbance. Techniques derived from child guidance and from analytic group psychotherapy have been developed which represent one paradigm for the treatment of a social unit, in which the focus is on role relations in a social system and on patterns of communication and control, rather than on the individual treatment of one or all of its separated members. This has contributed to the development of new social system models to supplement our individual psychodynamic theories as a guide to therapeutic efforts.

Crisis and disaster research. A number of research programs have been focused on reactions of individuals, families, and communities to temporarily insurmountable stress experiences. These have ranged from individual transitions, such as the biopsychosocial developmental crises of puberty, pregnancy, birth, and climacterium; to accidental crises in individuals and families such as the onset of tuberculosis, birth of a premature baby, surgical operation, or death of a family member; to community stresses and disasters such as floods, tornadoes, and urban relocation. A body of theory is emerging from such studies which may be of great importance in preventing mental disorder, since it appears that the period of upset during crisis is a potential turning point when the individual's vulnerability to immediate or eventual disorder may change significantly. It appears that this depends upon his pattern of crisis adjustment, how he deals with the physical, psychological, and social tasks which are inherent in the situation. His way of grappling with the crisis is especially susceptible to influence by key persons in his social network, thus providing a model for crisis intervention by care-givers who can use the leverage of this common natural phenomenon for maximum preventive efforts in the population.

Increased community demand for psychiatric services. In the last 20 years, the increased role of psychiatry in the community has been encouraged by a greater public interest in mental health and more vocal demands for service. This was stimulated by books and films such as "The Snake Pit," and newspaper series revealing the inadequate and archaic conditions of many mental hospitals, such as *The Shame of the States* by Albert Deutsch. Public concern was, however, particularly aroused by the Second World War, when about 1,767,000 out of 4,800,000 men had been rejected for emotional or educational disorders and deficiencies. Forty per cent of medical discharges had been for psychiatric reasons; and in 1946, 60 per cent of cases hospitalized under the care of the Veterans Administration were psychiatric and cost the government about \$40,000 a case. In addition to such powerful reminders of the toll of mental illness, the

public after World War II was in an optimistic mood; so many advances had been made by science in the creation of comforts and in the conquest of disease that it was within the realm of possibility that insanity could be likewise overcome.

Citizen mental health efforts. Some of this public concern took a highly constructive form. Lay groups were created to alleviate certain mental disorders or to promote interest in their research, diagnosis, and cure. Among these have been Alcoholics Anonymous, Synanon, and various agencies to prevent suicide. Other groups included Golden Age Clubs and local citizens' mental health and mental hygiene associations concerned with the promotion and funding of research and services. Moreover, many community agencies, such as schools, churches, YMCAs, clubs, and other groups, have become more conscious of the mental health aspects of their own work. These have reached out for closer cooperation with and understanding of local psychiatric services.

One citizens' group, the Association of Parents of Retarded Children, can be singled out for special mention because of the importance of its impact on public opinion and its leverage on governmental action. Until 10 to 15 years ago there was a widespread attitude of shame and reticence among the families of retarded children, because it was believed that mental retardation was hereditary so that a defective child meant that the rest of the family was probably tainted. Then a number of studies began to be publicized which demonstrated that illnesses of the expectant mother such as German measles, or toxic conditions that interfered with the oxygen supply of the fetus, or birth trauma might damage the brain of the newborn baby and cause severe mental retardation. Parents of the severely retarded began to look on their problem as resulting from an unfortunate accident rather than a hereditary taint, and began in increasing numbers to band together and openly demand better services for their children. Since many of the exogenous causative factors of retardation are no respecters of social class, it turned out that many of these parents happened to be politically active and influential people, including even the family of the President of the United States. These people began to speak out publicly and to campaign actively for improved programs to prevent and remedy the ill effects of mental retardation, and these efforts helped swell the mounting public demand that local, state, and federal governments should assume responsibility for the organization of community services for the whole range of mental disabilities.

The success of such special interest groups has been facilitated by an increased public sophistication in health matters, particularly in regard to mental health. The latter is related to the widespread interest in psychoanalytic theories of behavior and interpersonal relationships among American intellectuals, especially writers, in the postwar period. The dissemination of their ideas to the general public has been helped by

the greatly increased communication power of the mass media, especially television, over the last 20 years.

Government support for community mental health. Lay concern has been reflected in legislative action on both state and federal levels, action which marked a logical continuation of New Deal and war-time assumptions of responsibility for public welfare. During the war, the federal government had encouraged and financed scientific and medical advances; after the end of hostilities, it seemed logical and necessary to many that the nation continue such patronage, particularly in areas such as mental disease which seemed remote from the great advances in other branches of medicine and which accounted for an enormous wastage of men and money. A federal government agency has existed for dealing with mental health matters ever since the Narcotic Division had been turned into the Division of Mental Hygiene in 1930.

The National Mental Health Act. In 1945, Robert Felix, the Director of this body, encouraged the introduction of a bill to Congress which became known as the National Mental Health Act. Passed in 1946, it provided for fostering and aiding research relating to causes, diagnosis, and treatment of neuropsychiatric disorders; it provided funds for the training of professional personnel; and it granted aid to states to establish clinic and treatment facilities and demonstration projects for the prevention, diagnosis, and treatment of mental disorder. In 1949, the Division of Mental Hygiene was abolished and was replaced by the National Institute of Mental Health. This 1946 bill was to have an enormous influence on the promotion of work in the mental health field. In 1946 \$2,500,000 was being spent throughout the country on research in psychiatry and allied fields. In fiscal 1965, the National Institute of Mental Health awarded \$86,331,000 for such research. The figures for training grants are equally impressive, \$4,250,000 in 1948 and \$81,643,000 in fiscal 1965. Associated with this has been a major increase in the numbers of mental health professionals, from about 4,000 psychiatrists in 1945, for example, to about 19,000 in 1965.

The Mental Health Study Act. Various "community mental health services" bills were passed in such states as New York, California, Minnesota, New Jersey, and Vermont to provide local programs for prevention, treatment, rehabilitation, and educational service facilities. In 1955, the Mental Health Study Act was passed whereby Congress directed the establishment of a Joint Commission on Mental Illness and Health in order to carry out a

... nationwide analysis and reevaluation of the human and economic problems of mental illness and of the resources, methods, and practices currently utilized in diagnosing, treating, caring for, and rehabilitating the mentally ill... [which] may lead to the development of comprehensive and realistic recommendations... and give promise of resulting in a marked reduction in the incidence or duration of mental illness, and in consequence, a lessening of the appalling emotional and financial

drain on the families of those afflicted or on the economic resources of the states and on the nation.

Report of the Joint Commission. A final report of this joint commission of leaders in psychiatry, psychology, social work, education, and the social sciences appeared in 1961. It followed studies carried out by the staff assembled by its director, Jack R. Ewalt, on theories of positive mental health and methodological problems of epidemiological research, the economics of mental illness, mental health manpower trends, community and research resources in mental health, the role of schools and churches, and current developments in the in-patient and out-patient care of the mentally ill. In contrast to the comprehensive programs outlined in state and federal legislation, the recommendations of these mental health professionals were largely restricted to the adult mentally ill. They also focused mainly on plans for improving the mental hospitals of the country through reducing their size, improving their resources, and extending their services into the community, in an effort to deal more effectively with acute and chronic psychotic patients, whose care was shown to be currently neglected. Their attitude toward prevention was that while they supported efforts in this field, they felt that the mental hygiene movement had diverted attention from the core issue of major mental disturbance. While they approved of the programs of public mental health education and of child and adult guidance clinics, they felt it necessary to redress the balance and to direct more effort toward secondary prevention, the early, and effective treatment of the mentally ill.

Legislative impact. The public and its government, however, still preferred to reaffirm the importance of comprehensive community programs. President Kennedy, in his message following the Joint Commission Report, wrote:

Central to a new mental health program is comprehensive community care. Merely pouring federal funds into a continuation of the outmoded type of institutional care which now prevails would make little difference. We need a new type of health facility, one which will return mental health care to the mainstream of American medicine, and at the same time upgrade mental health services.

In the part of his message devoted to mental retardation, he said: "Prevention should be given the highest priority in this effort." He advocated developments in the general health, education, welfare, and urban renewal fields which made it clear that he was focusing on primary prevention.

The Community Mental Health Centers Act. In 1963, Congress passed the Community Mental Health Centers Act which authorized the appropriation of \$150,000,000 to finance up to two thirds of the cost of constructing comprehensive community centers throughout the country, and an additional \$126,000,000 for research and treatment facilities for the mentally retarded.

During the period 1963-1965, \$8,400,000 of federal

funds were allocated to the states to finance the planning for the future community mental health centers. The guidelines allowed each state to develop a plan in line with its own special needs and resources but required the mobilization of state, local, private, and voluntary resources in the planning process; they called for a statewide inventory of existing facilities and a survey of local needs so that priorities could be established to govern the choice of sites for the new centers.

The regulations covering the 1963 act defined the centers in terms of programs rather than buildings, and it listed their essential elements. Each program, in order to qualify for federal funds, must accept responsibility for serving the needs for prevention, treatment, and rehabilitation of the total community, irrespective of age, sex, or class, residing within easy access of the center in a geographic area with a population between 75,000 and 200,000.

Implications for community mental health. This act and its regulations, as well as the federal stimulus to state planning, are likely to have a major effect on the evolving patterns of mental health service, research, and training programs throughout the country for years to come. What is still not clear is how the mental hospitals will be articulated with the community-based services. Certainly, continued care facilities must be available to local programs in order to satisfy the needs of a significant proportion of psychotic patients. In 1963, Congress appropriated 10 million dollars for intensive demonstration and pilot projects in mental hospitals to improve their quality of care and to provide in-service training for their personnel. The intent of this grant was to improve the mental hospitals so that eventually they could be integrated into the overall statewide plan. In Massachusetts the attempt is being made to use the state mental hospital as the community mental health center for its local district and also to use it as the continued care facility for several adjoining districts, each of which will have its own center which will provide short term care and general preventive and rehabilitative services.

One point emerges clearly from these recent developments, namely that the leaders of the country are committed to the new approach, advocated by President Kennedy, to foster the organization of comprehensive services for total populations and to coordinate them so that they serve the diverse needs of every resident. This is in contrast to the past pattern of providing institutions and services to which some of those people may secure admission who qualify because their identity or the nature of their disorder fits the appropriate admission category. This change of policy in the mental health field is in line with similar changes that are taking place in the fields of education, general health, and welfare. In this country, as in many of the democratic countries of Europe, federal and state governments are recognizing their responsibility to guarantee the fundamental right of every citizen to receive ade-

quate education, health, mental health, and welfare services. This implies a move from an institution or profession focus to a population focus, and this means a commitment of government to a community psychiatry point of view.

Historical roots. This development is related to a number of historical trends. Accelerating technological advances are reducing the need for manpower in the fields of agricultural and industrial production and thus freeing an increasing number of man-hours. The result is either unemployment due to redundancy or a shorter work life and increased leisure for the stably employed. The alternative is a major movement of workers from production of goods and food supplies to the provision of human services. The need to increase the proportion of workers providing educational and welfare services to others is complemented by the necessity and feasibility in our affluent society to expend federal funds at the local level in order to maintain the national economy. This has been facilitated during the past 10 to 15 years by an increasing relaxation of traditional tensions between federal and state governments, so that there is less fear that the federal government will infringe unduly upon states' rights if it enlarges its financial support of their programs in health, education, and welfare. During the same period there has been an acceleration in the growth and political power of the cities, which has opened up direct channels for the flow of federal funds to local service programs through newly created governmental departments such as the Office of Economic Opportunity and Housing and Urban Development. The net result of these changes has been a vast increase in federal spending for local programs in urban renewal, manpower development such as vocational training and rehabilitation, education, welfare, public health including medical care, and also mental health and mental retardation.

Current status of community mental health services. In all these fields the increasing funds and demands for program expansion have upset the preexisting patterns of organization of services and have overstrained the resources of professional manpower. Increasing dissatisfaction is being expressed with professional and agency boundaries and traditional practices. For instance, at the 1965 White House Conference on Health, the most frequently voiced criticism of the current situation was that increasing specialization and compartmentalization of health services have resulted in large segments of the population, especially the urban poor, being cut off from adequate medical care. The demand was made for attention to the provision of services to a total population, irrespective of race, color, creed, and class, rather than merely focusing on developing high level institutions or methods without regard to their availability to the public. Since the supply of health professionals was obviously not sufficient to satisfy the needs of the whole population, this led to the demand for recruitment and training of

large numbers of nonprofessional and subprofessional health workers, who would act as bridge agents between the specialists and the people.

Similar issues in allied fields are illustrated by the growing clamor for attention to school dropouts rather than catering only to students who fit into the demands of our school systems; the demand both in the Catholic and Episcopal church that clergymen go outside the walls of their churches and carry the word of God to the people in the cities; and the efforts of the legal profession to extend their services beyond the upper and middle classes to the poverty levels of the population. The welfare provisions of the "Great Society" are to be seen not only within the context of the interests of a particular president and party, but also as a manifestation of the evolving spirit of the times. The drive toward a community approach in psychiatry is merely one sign of this larger economic, social, and political movement. Other signs include civil rights and anti-poverty legislation, which have in part been a response to the militant agitation of social action groups composed of the racially and economically disadvantaged. It is becoming more common for civic leaders and planners to talk about the political and moral power of the poor and be less influenced by the vested interest groups of the professionals and the care-giving agencies—as evidenced by the recent passage of Medicare in spite of the staunch opposition of the medical lobbyists.

The future will show how these fundamental changes associated with both the demands of the people and the response of their elected leaders will be met by the professions which have developed their attitudes and theories and skills, and which have recruited and selected and trained their members, in line with the traditional categorical service approach.

The Characteristics of Community Psychiatry

Current thinking about community psychiatry emphasizes the following characteristics as its most significant features.

The concept of responsibility. Community psychiatry includes responsibility for prevention, treatment, and rehabilitation of mental disorders in a population which is defined either by membership in an institution or association, or by living in a locality:

1. The responsibility may be delegated by government, assigned by voluntary citizen or agency consensus, or assumed by the professional and his group.
2. The responsibility must extend beyond the known cases of mental disorder to the unrecognized cases of current or future disorder in the population. It must cover the entire population irrespective of age, class, or diagnostic category. It is circumscribed only by the arbitrary boundaries of what is defined as mental disorder or a mental health issue in that community.
3. The community psychiatrist operates with a continual awareness that he is one member of a group of community agents in fulfilling his responsibilities. (It

should be noted in this connection that in this section the terms "community psychiatrist" and "community mental health specialist," who may have a background in a variety of clinical, social science, or public health disciplines, are used interchangeably, as are the terms "community psychiatry" and "community mental health.") The group of community agents also includes members of the traditional mental health professions (psychologists, social workers, psychiatric and mental health nurses, occupational therapists, etc.), *plus* a new group of community-oriented professionals who have specialized contributions to make in this field, such as sociologists, anthropologists, political scientists, health educators, community organization specialists, lawyers, economists, epidemiologists, biostatisticians, *plus* the community care-giving agents such as doctors, lawyers, teachers, clergymen, policemen, public health nurses, *plus* the civic leaders and administrators, *plus* non-professionals, volunteers, and informal care-givers.

The community psychiatrist or other mental health specialist has a dual focus: on goals he achieves by direct action and on goals he achieves indirectly by the mediation of these other workers. Consultation, collaboration, coordination, and community organization are therefore central to community psychiatry.

Goals of community psychiatry. A major goal of community psychiatry consists of regularly monitoring the population in order to discover those people who are vulnerable to or suffering from mental disorder, and those situations and forces which are influential in this regard. An allied goal is that of discovering the wants of the population in regard to salient ills to be combated, and the translation of these feelings of need into practicable preventive and remedial programs.

Planning and administrative procedures. The community psychiatrist must be preoccupied with the planning process, which must define and set priorities on goals related to the felt needs of the population; which must work out ways of optimally achieving these in the most economic way possible within the limits of allotted resources of money, manpower, and knowledge; and which must evaluate results and give an account of these to those who assigned his responsibilities.

Since community psychiatry entails comprehensive programming which deals with complex biological, psychosocial, and sociocultural factors in people of all ages and classes, it usually involves mental health operations conducted by a number of different agencies and specialists which are likely to be administered under governmental, voluntary, and private auspices; and it invariably involves the collaboration of these with the whole network of community operations in such fields as health, welfare, education, religion, law, corrections, and the like. Political, community organization, and administrative knowledge and skills are, therefore, an integral aspect of the armamentarium of the community psychiatrist.

Research activities. Community psychiatry involves

not only practice skills covering all these activities. It also involves major research fields: (1) studies of population-wide forces which promote or inhibit increases in incidence and prevalence of mental disorders; (2) studies to develop methods and techniques of direct and indirect action to reduce community rates of disorder; (3) studies to identify and monitor changes in community rates of disorder; (4) studies to describe and specify program elements which are of preventive and remedial significance; (5) studies to evaluate the efficacy of programs, methods, and techniques; and (6) development of conceptual models and theories to form a set of guidelines for practice and for research, which in turn will modify them and foster progress in dealing with field problems and in professional education.

Similarities and Differences between Community Psychiatry and Clinical Psychiatry

Community psychiatry encompasses the diagnosis, treatment and rehabilitation of patients, and so it encompasses clinical psychiatry. A community psychiatrist must therefore be a competent clinician. His clinical interest in ameliorating the sufferings of individuals will help keep him aware of this fundamental target as the integrating thread of his manifold and complex community operations.

His clinical skills and posture provide an excellent platform upon which to base the acquisition of community skills such as mental health consultation, community organization, and administration.

The major differences derive from the contrast between his responsibility as a clinician for the welfare of his own patients with whom he has a contract for direct remedial action, and his responsibility as a community psychiatrist for the welfare of a population with most of whom he will have no personal contact.

Community psychiatry demands additional models and methods to supplement those of the clinician. It demands the ability to move easily from the clinical focus on a patient or family who are seen as unique individuals, to the community focus which sees the individual as representative of segments of a population and seeks to grasp the nature of the community-wide forces which impinge upon them.

Definition of Concepts and Terminology

During the period under review many terms have been used to denote all or part of the fields of practice and research associated with community aspects of the prevention, treatment, and rehabilitation of mental disorders. These have included community psychiatry, community mental health, public health psychiatry, public mental health, social psychiatry, preventive psychiatry, comprehensive community psychiatry, and mental hygiene.

Up to the present no common usage has emerged. Leaders in the field have used some of these terms interchangeably and have used others to delimit par-

ticular aspects of theory, practice, and research. Confusion has arisen because writers have used different terms for the same area and have used the same terms to denote areas with different boundaries. Because of this overlap in the meanings of terms in the field, it is necessary to define each term as it is used in a particular discussion in order to enhance meaningful communication. This complicated field can be delimited along various parameters. There are many possible ways of dividing it validly for descriptive and analytic purposes.

The following are its main parameters:

1. Is the focus primarily on individual patients (alone or with their families), or is it on populations (which include both sick and well)?
2. Which factors are regarded as most significant in the causation of mental disorder, and consequently receive major attention—social, psychological, or physical, or some combination of these?
3. Which factors are regarded as most important for prevention, treatment, or rehabilitation—social, psychological, or physical, or some combination of these?
4. Is the primary focus on correcting pathology, on preventing illness, or on promoting and maintaining health, or some combination of these?
5. If prevention is included, is the main focus on primary, secondary, or tertiary prevention, or all three?
6. Is the focus on service or on research, or both?
7. Is the location of the program inside institutions, such as mental hospitals or psychiatric clinics, or is it extramural, or both?
8. Are the auspices of the program governmental, voluntary community agency, private, or some combination of these?
9. What is the professional identity of the director and the workers of the program—i.e., are they psychiatrists, other clinicians, social scientists, other caregivers and administrators, civic leaders, etc., or some combination of these?

If each worker defines the program or conceptual field which is his focus along each of these parameters, the name he arbitrarily uses to denote his field will be readily understood by others, and eventually some agreement may be reached on a common terminology.

The usage at the Laboratory of Community Psychiatry of the Department of Psychiatry, Harvard Medical School, may be cited as one common way of categorizing and naming significant aspects of the field.

The term "*community psychiatry*" is used synonymously with "*comprehensive community psychiatry*" and "*community mental health*" to denote a focus on (1) populations; (2) all etiological factors, social, psychological, and physical; (3) all preventive, treatment, and rehabilitation factors, social, psychological, and physical; (4) correcting pathology, preventing illness, and promoting and maintaining positive mental

health; (5) all types of prevention; (6) both service and research; (7) both intramural and extramural; (8) auspices which include governmental, voluntary community agencies, and private jurisdictions; and (9) programs in which administrators and workers may be drawn from the ranks of social science, psychiatry, other clinical professions, and administration.

The term "*community psychiatry*" is used to denote the knowledge and skills needed by psychiatrists to encompass the above topics. The term "*community mental health*" is used to denote the knowledge and skills needed by a multidisciplinary group including psychiatrists, psychologists, social workers, nurses, social scientists, and the like, to encompass the same topics.

The term "*preventive psychiatry*" covers the same parameters, but with an orientation which emphasizes the public health approach of primary prevention (reducing the incidence of mental disorders and promoting positive mental health), secondary prevention (reducing the prevalence of mental disorders), and tertiary prevention (reducing the community rate of residual defect due to mental disorders). Since the three types of prevention cover the whole field of the organized community aspects of preventing, treating, and rehabilitating mental disorders in a population, "*preventive psychiatry*" is used interchangeably with "*community psychiatry*" and "*community mental health*." Each refers to the total field, the differences being those of emphasis or of audience. Thus, the title of the unit in Harvard Medical School is the Laboratory of Community Psychiatry to denote that its primary focus is to extend the knowledge and skills of psychiatrists as part of the Department of Psychiatry. The Laboratory's program of education for specialists who will exercise leadership in community services for the prevention and control of mental disorders and who will conduct research and educational programs in this field, is called the *Community Mental Health Training Program*. This signifies that both the faculty and the student body are composed of people from many disciplines, which include psychiatry, psychology, social work, nursing, social science, law, statistics, administration, and the public health professions.

The Laboratory does not follow the terminological usage of the various state legislative acts which restrict the term "*community mental health*" services to local programs such as out-patient clinics, psychiatric departments in general hospitals, rehabilitation services, and mental health education and consultation services, and which exclude the services provided in mental hospitals.

In this laboratory the term "*social psychiatry*" is used, although only occasionally, to denote the study of the social factors in the natural history of mental disorders as well as the sociocultural dimension (as contrasted with physical and psychological aspects) of preventive and remedial programs, such as the organization of therapeutic communities, milieu therapy,

community development, and social action programs, etc.

The term "*mental hygiene*" is no longer used because its meaning has nowadays become so imprecise. The term "*public health psychiatry*" or "*public health mental health*" is occasionally used to denote a program of service and research which is carried out under the auspices and within the administrative framework of an official public health agency, as contrasted with a community mental health program the auspices of which encompass not only governmental, but also voluntary or private jurisdictions.

The Roles of the Community Psychiatrist

Within the general framework of community psychiatry a variety of different full time positions are open to psychiatrists operating at federal, state, regional, county, and local levels in organized programs for the prevention and control of mental disorders in circumscribed populations, as well as in research and training. Part time positions in community psychiatry are also open to psychiatrists who may spend the remainder of their professional time on research or teaching in universities, in clinical practice in institutions, or in private practice.

Population focus. The psychiatrist who accepts a position in a program of community psychiatry must be prepared for a wide range of activities and responsibilities, which will involve his accepting a number of different roles. The population to which he ministers may be circumscribed geographically, that is, by residence, within certain boundaries, e.g., state, county, city, or neighborhood; or else functionally, that is, by membership in an organization, such as a college, a trade union, the Peace Corps, or an army unit; or in a particular group, such as low income families, unemployed workers, unmarried mothers, or the aged. However the boundaries of the population may be defined, the psychiatrist will be asked to accept some measure of responsibility for supervising the mental health of its total membership. This may include discovering and arranging clinical treatment for as many as possible of those who are judged mentally disordered; participating with other professional and nonprofessional community workers in helping those who deviate from social norms of behavior, such as delinquents, drug addicts, alcoholics, prostitutes, maladjusted or nonfunctional workers; collaborating with other workers in helping people cope with the crises of everyday life and thus aiding healthy personality development and preventing mentally unhealthy outcomes; and participating in community services for optimizing the level of adjustment and satisfaction of psychological needs of the population.

Professional responsibility: Level and nature. The level and nature of the psychiatrist's professional responsibility and accountability will vary according to which of these subpopulations he is dealing with. He will have the traditional medical responsibility for

his own patients, and in this area he will be given full control of the field, assisted by auxiliary personnel working under his direction. In other areas of the field such as handling deviants, he will be collaborating as an equal with other professionals such as lawyers, teachers, policemen, nurses, and general practitioners. In yet other areas, such as optimizing general levels of adjustment and need satisfaction, perhaps by improving living conditions through city planning or modifying the occupational or educational systems, he may be consulted by others to whom the main responsibility has been allocated, such as legislators, city planners, educators, and government officials; in those cases he plays a subsidiary role, which means that his contributions may or may not be used by the others in accordance with the trust and respect which he has earned for himself and with the perceived relevance of his suggestions for their plans.

The shifts from full responsibility and control to partial responsibility and equal status, and then on to a subordinate status as an advisor to others who carry the responsibility and the power, involve an emotional as well as an intellectual burden to a psychiatrist who has been trained for a circumscribed and homogeneous role pattern. Not all psychiatrists will be willing to learn how to make these role shifts, and some will wish to restrict their activities, as in the past, to traditional clinical practice, which will always be a necessary ingredient in any community plan for the control of mental disorders. More and more, however, community leaders are calling on psychiatrists, as well as on other professionals, such as lawyers, educators, and clergymen, to widen their area of professional operations in order to play a part in concerted solutions for community-wide problems.

Many psychiatrists will rise to this challenge and will add to their traditional skills of diagnosis, prognosis, disposition, therapy, management, and rehabilitation of patients, a range of community-oriented skills such as community organization, planning, collaboration, mental health consultation, mental health education, and community development. The goals of the psychiatrist in this community work are to play an active partnership role in collaborating with certain members of other professions in jointly planned and organized projects and also to place his specialized knowledge and understanding of mental health matters at the disposal of other professionals and administrators, so that they may improve their handling of the mental health dimension of their own tasks.

Suggested Cross References

For further information regarding the history of psychiatry and of child psychiatry see Chapter 1 and Section 38.1, respectively. The subjects of primary, secondary, and tertiary prevention in psychiatry are further discussed in detail in Sections 46.1, 46.2, and 46.3 in this area. For information regarding the results of some of the collaborative efforts between be-

havioral scientists and psychiatrists see Section 4.2, on sociology and psychiatry; Section 4.1 on anthropology and psychiatry; and Section 4.3, on the family and psychiatry. Section 28.1 contains information regarding the prevention of pathological reactions to stress.

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personnel involved. Typically, the professional activities of the public health psychiatrist include extensive interaction with a wide variety of governmental structures and agencies at federal, state, and local levels; liaison with diverse lay and professional organizations; and, to a limited degree, contact with the mass media. These activities may be political, administrative, and financial in nature.

In this section, the community problems which mold the definition of mental health will be discussed from this perspective. A selected set of activities will then be described to illustrate the current approach to these problems in the field of mental health and related planning.

Definition of Mental Health: General Considerations

The difficulties inherent in defining mental health are too well known to require documentation. By its very ambiguity this "definition dilemma" serves as a platform for those propounding a human ecology which encompasses at least the earth, if not the universe, to those in search of the elusive, subatomic cause of psychological ills.

The clinician often defines mental health as resistance to, or absence of, mental illness. Thus, Ewalt and Farnsworth approached the definition problem as follows: "As we see it, the individuals who have basic confidence in themselves and others, a sense of competence, and a feeling that the whole human situation is meaningful and worthwhile, have a great deal more resistance to emotional decompensation than do those who have attitudes and feelings causing insecurity."

Levinson et al. adopted a more ecologically oriented approach in their investigation of the many social and environmental factors which promoted or inhibited mental health in a group of employees of a large utility company. Mental health was considered to depend primarily on the way the individual felt about himself, other people, and the world, particularly in reference to his own place in it. Within this context, special significance was attached to his feelings about earning a living and his responsibilities toward those who depend on him.

One of the best known definitions of mental health even includes the element of happiness. As stated by Karl Menninger in 1947, "Let us define mental health as the adjustment of human beings to the world and to each other with a maximum of effectiveness and happiness. Not just efficiency, or just contentment—or the grace of obeying the rules of the game cheerfully. It is all of these together, socially considerate behavior, and a happy disposition. This, I think, is a healthy mind."

Ginsburg's definition of mental health, in terms of its relationship to environmental mastery, as manifested in three crucial areas of living—love, work,

45.2 DEFINITION OF MENTAL HEALTH AND DISEASE

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Public health psychiatry has been variously labeled community, social, or administrative psychiatry. This author, in a less serious vein, has used the term "political psychiatry" on occasion, simply to highlight an oft neglected aspect of this work. Similar variations in theoretical orientation are apparent in definitions and discussions of these newly emerging chameleon concepts. Until these issues are resolved, perhaps clarification and classification in this field of psychiatry had best follow, in some measure, actual description of the variety of problems, concerns, and issues which engage the energies and intellects of the professional

and play—is particularly useful: “My co-workers and I have settled for some simple criteria as these: the ability to hold a job, have a family, keep out of trouble with the law, and enjoy the usual opportunities for pleasure.”

As Jahoda pointed out, the polarity of mental health versus mental illness has been used frequently and persistently as the basis for simple definitions of mental health. Clearly, however, a full description of the meaning of the term “mental health” cannot be provided within this framework. In fact, the situation is exceedingly complex even from the limited purview of this polarity. Are we concerned with the sick and/or the well? Can we identify the “pre-sick” among the well? Is the oft stated concept that as psychiatrists—and physicians—our first responsibility is to “major mental illness,” rather than preventive work, a valid one? Do we, in fact, know enough about prevention to focus on this area?

These questions are not unique to public health psychiatry, nor are they encountered more frequently there. However, in other areas of specialization, they take the form of clinical dilemmas, for the most part, which center around an individual patient. In contrast, in public health psychiatry, they emerge as administrative and political issues which are often colored by conflict over control and supervision of finances for program purposes, rather than theoretical and therapeutic considerations. This is best illustrated by a group of problems which, it is generally agreed, are closely related to mental health (although the closeness of this relationship remains controversial). These “pressure,” or problem areas include alcoholism and drug abuse, mental retardation, crime and delinquency, and aging. Are they blood brothers, or distant cousins? The feuds, some fertile and others futile, which characterize the relationships between these so-called pressure areas and community mental health efforts clearly reflect the administrative adolescence of public health psychiatry. More specifically, they point up the crucial need for establishment of a social and organizational identity.

Mental Illness versus Mental Health

The brief discussion of these problem areas presented below is designed to highlight key issues and controversies. Hopefully, it will also serve to clarify the nature of the substantive problem areas and, in so doing, clarify the problem inherent in the definition of mental health.

Alcoholism. Alcoholism is a multifaceted problem which has evoked the interest of diverse disciplines, ranging from anthropology to zoology. The relationship of alcoholism to mental health is equally diverse. Clinically, it is seen as an effect and/or cause of mental disorder or emotional problems. Administratively, at the state level, alcoholism programs may be either independent of or under the aegis of a mental health agency. Programmatically, alcoholics may be

specifically forbidden or actively encouraged to utilize a variety of mental health services, such as general hospitals, in-patient psychiatric services, and out-patient psychiatric clinics. Legally, the alcoholic may be considered mentally disabled and, like the psychotic and mentally retarded, not responsible for his criminal behavior. Or, on the other hand, he may be subject to special laws, governing such matters as commitment and treatment.

Some social forces, manifested in part through national voluntary organizations, actively discourage direct identification of alcoholism with mental health sponsorship or leadership. The reasons given by these organizations for their aversion to such an affiliation range from the desire for autonomy and visibility for purposes of program growth and fund raising, to the conviction that alcoholism is *not* a mental health problem. Rather, the alcoholic's problem is simply that he “drinks,” that he lacks will power or religious conviction, and so forth.

Mental retardation. President Kennedy's historic message to Congress on “Mental Illness and Mental Retardation” begins with a brief introductory section which addresses itself to the common concerns of mental illness and mental retardation, followed by two distinct sections: “I. A National Program for Mental Health,” and “II. A National Program to Combat Mental Retardation.” Clearly, this orientation provided impetus for the formal expression of the separatist view of mental illness and mental retardation. In fact, however, the historic roots of this schism run deep, reflecting long decades of neglect of mental retardation by psychiatry. This neglect becomes particularly apparent when it is contrasted with the recent success in effective program development in mental retardation due primarily to the active efforts of lay organizations. In any event, the complexity of the current relationship between mental health and mental retardation is evident at many levels.

At the federal level, administrative responsibility for various aspects of mental retardation resides in several of the constituent agencies of the Department of Health, Education, and Welfare. In contrast, mental health responsibility is, for the most part, centralized in the National Institute of Mental Health.

There is considerable variation in the administration of mental retardation programs at the state level. In some instances, departments of mental health bear the major responsibility for mental retardation programs. Other states maintain separate mental health and mental retardation departments. Again, there are variations in local programs which may discriminate for or against services to the mentally retarded. In general, however, even in programs designed specifically for the retarded, such as child-centered diagnostic clinics, a significant proportion of the patient population is not retarded but manifests emotional or psychological problems.

At the clinical and conceptual level, the question of whether mental retardation can ever exist without concomitant emotional problems is a continued source of controversy. There is no question, however, that mental retardation represents a significant mental health problem for the family.

Finally, perhaps the overlap between these areas is demonstrated most clearly by the fact that the same personnel—psychiatrists, psychologists, social workers, and educators—are involved in the diagnosis and management of both problems.

The underlying issues inherent in the definition of mental health vis-à-vis mental retardation are similar to those discussed above with regard to alcoholism. In brief, professional and lay groups which have organized independent mental retardation programs object to mental health sponsorship on the grounds that the problems of mental illness (health) are different in certain essential respects from those associated with mental retardation, and/or because of their desire to preserve the critical aspects of visibility, autonomy, and the growth potential of their own programs.

Other pressure areas. An analogous situation pertains in the field of crime. That is, the conviction held by many law enforcement officers, laymen, and even some psychiatrists that most criminals are not mentally ill, and that crime is not a mental health problem clearly precludes a close relationship between this pressure area and mental health.

With the passage of "Medicare" (Public Law 89-97) and the Older Americans Act of 1965 (Public Law 89-73), the proper function of mental health in the field of aging has been subjected to intensive examination. Are psychiatrists more appropriately concerned with the aged mentally ill, or the mental health aspects of aging? The obvious answer is that their concern encompasses both facets of this problem. But in this field, as in the others described previously, whenever the mental health specialist leaves the shelter of the treatment setting and indicates a desire to step out of his traditional role as healer of the mentally ill (i.e., in cases where the presence of mental illness is clearly established), he emerges into an arena of conflicting and competing interest groups.

Briefly summarized, the battle between mental illness and mental health subsumes two major campaigns. One might be likened to an air battle; it involves a conceptual struggle over differences in approach to social problems. The other is more like traditional ground warfare; the mental health agency represents only one of many interest groups involved in the struggle for power and authority. Inasmuch as they all have ethical goals for the use of this power—to benefit the aging, alcoholic, addict, delinquent, or retarded—at times various groups may well find ways to cooperate in order to help the population, which is the target of their common concern. But

even under such optimal conditions, autonomy will remain a source of disagreement. Furthermore, inasmuch as these various groups are concerned primarily with hierarchical position and jurisdictional power, these battles are surprisingly intense and chronic. Accordingly, they must be taken into account by those concerned with the development of comprehensive mental health programs. In addition, issues of administrative leadership and control play a significant role in molding the work environment of practicing clinicians.

Mental Health and Related Planning

It has been said that we have moved from the age of anxiety to the age of planning. Today, mental health planning is big business. It is, moreover, a rapidly changing, highly complex business.

In 1963 and 1964 Congress appropriated a total of \$8.4 million to support state-wide interagency comprehensive mental health planning. This planning effort has involved all the states, and almost every community in the nation, and required the active participation of more than 25,000 citizens, both lay and professional. The final reports of this planning effort became available in the fall of 1965. There is no question, however, that these reports will continue to have a major impact on the shape of psychiatric practice for the years to come, and will continue to be the subject of a great deal of study and controversy. It is significant, too, that the end of federal support for comprehensive planning in 1965 did not mark the end of formal mental health planning efforts in the majority of states. Many are continuing to maintain some form of mental health planning unit in the state mental health agency. Thus, at the very least, this total effort has spawned a new specialist in the field—the mental health planner.

The impact of mental health planning on planning in related areas. A question arises as to the relationship of this national mental health planning effort to planning in the fields of alcoholism, mental retardation, crime and delinquency, and aging. The answer represents a veritable kaleidoscope and is not easily summarized. At the state level, the principal mental health planning bodies included newly created governors' commissions and advisory groups, agencies which were given the responsibility for the new mental health planning, and private planning entities contracted for by state agencies. These various government and quasi-government groups varied greatly, not only in their formal responsibility for alcoholism, corrections, and mental retardation, but also in the manner in which they handled this responsibility.

All the planning efforts made some provision for special studies in problem areas. An analysis of the anatomy and taxonomy of this effort, based on a study of the composition of the task forces set up, reveals the underlying dynamics inherent in such a

process. For example, in many states, task forces addressed themselves to the general problems of aging or adolescence. In others, the task force limited itself specifically to the elderly mentally ill or the emotionally disturbed child. Similarly, in some states, task forces were directly concerned with all aspects of mental retardation; others were interested only in the mental health aspects of mental retardation.

The related planning efforts specifically addressed to the other fields further complicated this phenomenon of the widely fluctuating boundaries of the formal mental health planning effort. For example, under Public Law 88-156, "Maternal and Child Health and Mental Retardation Planning Amendments of 1963," comprehensive state-wide mental retardation planning was supported under a separate program.

Efforts in comprehensive mental health and mental retardation planning provided the backdrop for specific state construction plans, required by Public Law 88-164, "Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963." In fact, this legislation institutionalized the dichotomy; it consists of two separate parts, dealing with mental retardation facilities and community mental health centers, respectively.

To return to mental health planning per se, in relationship to community mental health centers, the broad range of planning envisioned is best indicated in the regulations for Title II of Public Law 88-164:

Section 54.203 State plan; elements of adequate services; facilities; relationship to other planning.

...
(d) Planning. The State plan shall show that:

- (1) It is consistent with the comprehensive mental health planning of the State;
- (2) Cognizance has been taken of other health planning efforts and planning in such areas as urban development, welfare services and related facilities;
- (3) In the case of interstate metropolitan areas, there has been consultation with the other State or States concerned; and
- (4) To the maximum extent practicable, there has been coordination with city, metropolitan area and interstate planning agencies to achieve consistency between the State plan for, and the delineation of areas to be served by, community mental health facilities and other health, welfare, and physical development plans and activities.

To further complicate matters, under the recently enacted amendments to Public Law 88-164 (P.L. 89-105), which provide federal support for the staffing of mental health centers, each state must also submit a new plan as an amendment to the state plan for mental health services under Title III of the Public Health Service Act.

Further delineation of these various plans and their requirements can serve no useful purpose. Clearly, we are dealing with a matter of some complexity. And hidden underneath this complexity, with its plethora of administrative and legislative issues, we find the difficulties inherent in the formulation of a proper definition of mental health. But when we view

the definition of mental health from the perspective of planning, the image assumes a more composite shape. In both instances, the pressures leading to the diverse picture include the political and administrative realities of disbursing and controlling large sums of money. They may also be attributed to intellectual and conceptual differences in regard to the proper domain of mental health.

In conclusion, the definition and boundaries of mental health await precise delineation. The rapid evolution of the field of community mental health has the quality of a social movement which is characterized by continuously expanding concerns. This is clearly apparent in the difficulty in understanding the relationship of mental health to mental illness, and of mental health to related fields, such as alcoholism and mental retardation. However, what is not evident to many practitioners is the fact that the events which shape the boundaries of legitimate professional concern are forged as clearly in the legislative, financial, and administrative arena as they are in the academic setting and the scientific laboratory.

These are the personal opinions of the author and do not represent formal policy of the National Institute of Mental Health.

Suggested Cross References

For more information regarding alcoholism, juvenile delinquency, mental retardation, and geriatric psychiatry see Sections 27.3 and 41.5 and Chapters 22 and 47.

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45.3 MENTAL HEALTH AND SOCIAL FACTORS

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Population studies and investigations of the socio-cultural variables influencing mental health are a development of the 20th century, more particularly of the period since World War I. Additional impetus developed during and after World War II from the high rejection rates of selectees for psychiatric reasons and from the number of medical discharges after induction due to development of nervous and emotional disorders. Psychiatrists and others became concerned to learn more about the proportion of unrecognized psychiatric disturbance in the supposedly normal and healthy population.

As understanding of the dynamics of psychiatric disorder has increased, there has been a marked growth of interest in determining what sectors of a population show the most disorder, which members of the sector are chiefly affected, and what correlates can be seen with characteristic sociocultural features. The earlier limitation of concern to those individuals who have obvious and impairing disorder has been replaced by an interest in discovering the total prevalence of psychiatric disorder of all degrees, from the very mild to the full blown. This parallels the kind of epidemiological development seen in studies of infectious diseases such as polio and tuberculosis. At first, only advanced stages were recognized, but eventually, in the case of tuberculosis, slight x-ray evidence or a mildly positive tuberculin skin test came to be taken as possible indication of involvement.

Population Studies

This type of epidemiological investigation had its beginnings in various studies of hospitalized patients who were examined for their geographic and social origins, seeking clues to significant relationships. A trail-blazing example is the work of Faris and Dunham, who determined the residential location of schizophrenic patients within Chicago and found a

concentration in the low class, central rooming house section of the city. More recently, Clausen and Kohn have examined the sociological characteristics of schizophrenic patients from a small city—Hagerstown, Maryland—where no such relationship could be demonstrated. They suggest that the lack of relationship may be a function of the size of the city, and they point out that similar studies by other people in cities smaller than Chicago but larger than Hagerstown show intermediate levels of correlation.

Another general scheme has been to take a geographic area, determine how many people show recognizable psychiatric disorder by the criterion of treatment or the opinions of key informants, and then relate type of illness to age, sex, socioeconomic status, ethnic origin, and so on. Well known studies of this type have been made by Luton and Roth in Tennessee, Hollingshead and Redlich in New Haven, Lemkau et al. in Baltimore, Jaco in Texas, and Eaton and Weil among the Hutterites. There have also been a number of such investigations carried out in northern Europe: Strömgren and Fremming on Bornholm Island, Brugger in Germany, Bremer in Norway, Kaila in Finland, Primrose in England, Sjögren in Sweden, and Helgason in Iceland. All these studies have increased knowledge of the relation between the occurrence of clinical psychiatric disorder and various conditions of life, as have others from other parts of the world, such as Lin in Formosa, Tsugawa et al. and Uchimara et al. in Japan.

Still another approach has been to estimate by some means the number of people in a defined group—a community, a county, a section of a metropolis—who show any degree of psychiatric disorder, regardless of whether they are being treated or have been previously diagnosed. This approach necessitates some kind of direct contact with at least a sample of the group under investigation; it has been carried out in two principal ways: assessment by psychiatric interview (Essen-Möller and Hagnell in Sweden) and collection of questionnaire data that were then assessed by psychiatrists (Rennie, Leighton, Gillis). When a questionnaire is used, data on many aspects of the subjects' life patterns are gathered, along with information regarding mental health status. Psychiatric questions in the survey are derived in part from screening instruments used by the armed forces before and during World War II.

Findings regarding the psychiatric status from these various types of study are expressed in a number of forms, such as rate (number of cases per unit of population); percentage of given diagnostic entities within the group examined; expected percentage of a condition within a particular sex, age, or social group; risk. Most studies have reported the *prevalence* of psychiatric disorder at a point in time or during a short period; a few have calculated the *incidence* of new cases per year or per 10 years, e.g., from data gathered at two different times.

Problems in evaluation. There are a number of problems connected with drawing conclusions from all these studies, especially in regard to determining prevalence and relationships with various sociocultural features between different population groups. Nearly every study has used a somewhat different method from every other one—working from records, informant data, or direct contact with subjects; investigators who are psychiatrists without much social science training, contrasted to investigators who are social scientists but not trained to judge the psychiatric data; variable definitions of what shall be counted as psychiatric disorder; use of local systems of diagnostic classification; different standards for social and other kinds of stratification. The list of problems is long and has been subjected to critical scrutiny by Dohrenwend and others.

If one regards most of the earlier investigations as pilot ventures that serve a useful purpose in delineating the problems and the later investigations as making many improvements but still not providing the final word, one can gain from this material some insight regarding avenues for future research. Even with imperfect methods and concepts, each new study of the interrelationships between social and psychiatric features suggests new meanings in the interactions. Recent efforts to follow a group of subjects over time, either by repeated surveys at intervals (New Haven, Sweden, and Stirling County) or by keeping in continuous contact (Washington Heights), promise to tell much about the natural history of psychiatric disorder that at present is only conjectural.

As illustration of both the problems and the potentials of population studies, there follows a brief description and comparison of three rather different yet philosophically similar studies: that of Essen-Möller in Sweden; of Srole et al. in Manhattan; and of Leighton et al. in Stirling County.

The Swedish study. This study, carried out from the University of Lund, represents the most nearly clinical method of the three investigations to be described. Essen-Möller and three fellow psychiatrists, all with very similar training, personally interviewed at home all the inhabitants of two rural Swedish parishes. They conceived their work as a medical census that would serve as a "background against which to judge the composition of a clientele of patients." They were especially interested in collecting evidence regarding the theories of natural and pathological variations in personality advanced by their teacher, Sjöbring, and the relationship of such variations to psychiatric disorder. They also wished to determine the demographic distribution of both the personality traits and the psychiatric disorder.

Before starting the interviewing, the four participants agreed on the topics to be covered and the means of doing so. Comparison of experiences after a week's work brought about some modifications and standardizations. In the end, there persisted certain

differences in emphasis between investigators, but "the descriptions and diagnoses turned out encouragingly homogeneous."

Free history taking was preferred in order to get a gestalt view of the individual. No tests or physical examinations were used. At the start simple questions as to health, sleep, and capacity for work were asked, followed by general inquiry into previous illnesses, doctors' calls, admissions to hospital, operations, periods of weakness, and nervous symptoms. Next came a discussion of health at different periods of life. Finally, schooling, training, jobs, and use of leisure time were discussed. Notes were made throughout on prepared sheets. Following this part of the interview came 30 specific health questions that were asked unless the information had already been obtained.

When the interviewing was completed, the information provided by the respondents was checked against hospital and doctors' records. The name lists were compared to the records of four mental hospitals; and parish records, alcoholic registers, economic official data, and school marks were systematically searched. In addition, a number of informants knowledgeable about the community scanned the name lists and provided comments on persons they knew. All these data were collated and codified and eventually put on punch cards.

The sample of 2,550 men, women, and children, from an area of 45 square kilometers, showed an age, sex, and marital status distribution very similar to what had been found by a recent census for the whole rural province.

During analysis, much attention was paid to the Sjöbring personality variants—capacity, stability, solidity, and validity—but these will not be discussed here, since such variables were not used in the other two studies with the exception of capacity, which includes mental deficiency. Each variant was scored for each subject according to judgments made at the time of the interview.

Material from the interviews was first classified as (1) subjective complaints (sleep disturbance, swooning, vertigo and dizziness, headaches, stuttering, tics and enuresis), (2) autonomic instability (migraine, vasomotor lability and acute psychosomatic reactions, spells and fits, climacteric complaints, sensations other than climacteric), or (3) mental complaints (fatigue, weariness, downheartedness, nervousness, sensitiveness, huntedness, susceptibility to hurry or to adversity).

The next step in analysis was to prepare some sort of integrative clinical diagnosis for each individual, using information from all sources, in the same way as a psychiatrist would do for a patient, and expressing findings in current European psychiatric diagnostic terminology.

The first diagnostic category was asthenic states, characterized mainly by fatigue and nervousness.

Cases of this type were divided further into subcategories of severity, depending on intensity of complaints and signs visible at interview, and also into subcategories of earliness according to whether the condition began before or after the age of 20.

The second diagnostic category comprised personal deviations, which were counted as minor if they would be recognized only by experts or as major if noticeable to lay persons. Subgroups in this category were typed as (1) aggressive, irritable; (2) restless; (3) indolent; or (4) cranks. Two other varieties were also differentiated: schizoid personality and ixoid personality. The first of these was loosely defined much as it is in North American psychiatry; the second was noted as being "sticky," "adhesive," and "accumulating." These last two types and the preceding four were not mutually exclusive—that is, a person could be noted both as schizoid and as aggressive-irritable.

Mental disease was limited to the third and fourth diagnostic categories, neurosis and psychosis, which were distinguished roughly according to intensity, so that neurosis was chiefly a mild disease and psychosis a more severe one. Neurosis had three subclassifications: (1) emotional lability, (2) anxiety states, and

(3) mild depressions. Psychosis subsumed (1) depressive psychosis, (2) manic, dysphoric, and confusional psychoses, and (3) schizophrenia.

A fifth category was intellectual deterioration, associated in most cases with some organic cause, such as senility, trauma, or chronic alcoholism. Remaining diagnostic categories were oligophrenia (severe mental deficiency) and alcoholism and asociality.

In addition to completing the interview, each psychiatrist noted at the end whether he considered the person, from a psychiatric point of view, as a pathological or abnormal variant.

Four classes were used, *evident* meaning that the individual's mental state would have been considered by most psychiatrists except perhaps analysts as due to pathologic interference; *probable* meaning that the condition was judged likely to be pathologic in the somewhat wider sense of Sjöbring psychiatry; *conceivable* meaning that even to this school, a diagnosis of abnormality was not likely but could perhaps not be discarded; and *no* pathology standing for individuals without any suggestion hereof.

In summary, the Swedish study was a clinical psychiatric investigation of a "normal" population. The method for data collection was a moderately standardized form of the usual clinical interview plus collateral material from medical and lay informants and from hospital and other records. Classification by diagnostic entities and by Sjöbring's personality variants, with correlations between these two, was the principal analytic procedure. Considerable social and physical data were gathered, and although distributions of the population by these factors were given, little was made of their correlations with psychiatric findings. Such relationships were an interest but not a main concern. All findings were given by sex and by age, the limits of the latter extending from birth to 92 years. Tables I and II show selected over-all findings but do not do justice to the painstaking statistical work of the monograph.

The Midtown Manhattan study. This study (Srole et al.) of a sample of 1,660 adults drawn from a section of New York City of approximately 175,000 population—110,000 adults aged 20 to 59—represents the greatest departure from usual clinical procedure of the three studies, as the Swedish study represents the least. It was directed by the late Thomas A. C. Rennie, a psychiatrist who made extensive use of the advice and assistance of social scientists of a variety of disciplines in the planning and execution of the research.

One of the participating psychiatrists, Michael, wrote:

In broadest outline the goals of this study were the estimate of the mental health of a community population, most of whom had never been psychiatric patients, and the study of the relatedness of mental health to a variety of demographic indices and to personal and social experience. Since mental health was the central theme, considerable effort was expended to achieve reasonable reliability and objectivity in the estimate of the mental health of each respondent. Information for the Mental

TABLE I
Psychiatric Ratings in Swedish Study^a

Psychiatric Abnormality	Male	Female
	%	%
Evident.....	9	8
Probable.....	13	24
Conceivable.....	28	26
Absent.....	50	42

^a From Essen-Möller, E. Individual traits and morbidity in a Swedish rural population. *Acta Psychiat. Scand.*, Suppl. 100, 1956.

TABLE II
Main Diagnostic Categories in Swedish Study^a

Category ^b	Male	Female
	%	%
Asthenic states (present only).....	13	38
Personality deviations (major and minor).....	29	19
Mental disease		
Neurosis (present and past)...	4	7
Psychosis (present and past)...	2	2
Intellectual deterioration.....	4	2
Mental deficiency (oligophrenia and pathological dullness).....	2	2
Asociality, alcohol abuse.....	14	2

^a From Essen-Möller, E. Individual traits and morbidity in a Swedish rural population. *Acta Psychiat. Scand.*, Suppl. 100, 1956.

^b The categories are not mutually exclusive.

Health Rating was obtained through a questionnaire guided interview [conducted by a large number of nonpsychiatrist interviewers]. . . . A series of items derived from previously developed questionnaires designed for preliminary screening of mental disorder, such as the Cornell Medical Index, the Army Neuropsychiatric Screening Adjunct, and the Minnesota Multiphasic Personality Inventory were selected as the 'symptom core' of our questionnaire. Questions and probes used by psychiatrists in psychiatric examinations of clinical patients were also incorporated. Thus a broad cross-section of information was assembled from which conclusions might be reached on the presence or absence of psychiatrically significant symptoms.

A number of questions dealt with facts, such as age, sex, marital status, education, employment, income, religion, hospitalizations for somatic or mental illnesses, contacts with social agencies and activities related to recreation and pleasure. Other items probed for perceptions and attitudes of the respondents. . . . The rating psychiatrists had to be ever aware of possible misrepresentations introduced by the mental mechanisms of the respondents, and, when indicated, consider them in the evaluation of the Mental Health Rating.

The psychiatrists made essentially four psychiatric judgments on each respondent. Two of these described an overall rating of mental health on a graded continuum from health to illness. A third classified the respondent's personality and his symptoms with a clinical framework of modified diagnostic concepts, and a fourth estimated some of the respondent's symptoms.

The data used for these ratings were extracts from the full questionnaire. Part I of the extracts contained only symptomatic material and was the basis for the first mental health rating. Part II contained information pertaining to the subject's social functioning and, combined with Part I, formed the basis for the second mental health rating. Part II also contained, in some cases, information obtained from the social service files, such as records of hospitalization, court appearance, social service assistance, and application to welfare agencies.

The two mental health ratings—in fact, all the psychiatrists' judgments—were made independently and later compared and combined according to a regular procedure. The four final levels were as follows:

1. Well: no evidence of symptom formation
2. Mild: mild symptom formation but functioning adequately
3. Moderate: moderate symptom formation with no apparent interference with life adjustment
4. Impaired:
 - a. Marked: moderate symptom formation with some interference in life adjustment
 - b. Severe: serious symptom formation, yet functioning with some difficulty
 - c. Incapacitated: serious symptom formation, functioning with great difficulty, or unable to function.

These mental health ratings form the principal psychiatric referent for correlation with sociocultural factors in *Mental Health in the Metropolis*.

Diagnostic and symptomatic ratings, the third and fourth judgments required of the psychiatrists, were not nearly so central a concern of the research as was the mental health rating. The psychiatrists felt at a serious disadvantage here because they never saw the respondents and so could not subject them to the

familiar clinical examinations on which diagnosis rests. However, they were supplied with lists of a limited number of diagnostic groupings on which they checked an estimate of the prevailing personality structure and the character of the symptoms for each respondent, prefixing the diagnostic term with "probable" and suffixing it with "type" to indicate the tentative and limited nature of the judgment. The gross diagnostic types used were: (1) probable organic type, (2) probable psychotic type, (3) probable neurotic type, (4) probable psychosomatic type, (5) probable personality trait type.

The symptoms and symptom complexes listed for checking were: (1) epileptic, (2) intellectually retarded, (3) structural brain disease and/or senility, (4) alcoholic/probable alcoholic, (5) sexual deviant, (6) behavioral problem, dyssocial, (7) mixed anxiety, (8) anxiety, free floating, (9) anxiety, phobias, (10) obsessive-compulsive trends, (11) somatic preoccupied, hypochondriasis, (12) neurasthenia, (13) passive-dependent personality, (14) depression, (15) rigid personality, (16) schizoid personality, withdrawn, (17) aggressive personality, (18) suspicious, hostile personality, (19) schizophrenic, (20) cycloid-affective psychosis.

The combined mental health ratings were studied for their relationship to age, sex, marital status, own socioeconomic status (SES), rural-urban background, own religion, parental SES, generation in United States, religious origin, and ethnic origin. Most striking relationships were with age and aspects of SES. There was an increase in poor mental health with age by decades, the 50- to 59-year group showing 15 per cent well and 31 per cent impaired, as compared with 24 per cent well and 15 per cent impaired in the 20 to 29 group. Age limits were from 20 to 59 years.

SES was calculated from occupation, education, income, and rent. The highest stratum showed about six times as many members in the well group and less than a quarter as many in the impaired group as did the lowest stratum. When the other sociocultural factors were controlled for age and for SES, none of them showed significant correlations with mental health ratings (Tables III and IV).

The Stirling County study. This study is in several respects intermediate between the Swedish and the Midtown studies; it is less clinical than the Swedish study but more clinical than the Midtown study; a questionnaire interview was the basis of psychiatric assessment, as in the Midtown study; additional information from local sources was gathered, as in Sweden; much attention was paid to discrimination and classification of psychiatric reactions, as in Sweden; much attention was given to sociocultural considerations, as in Midtown; and the research was planned and carried out by a multidisciplinary team.

The principal idea behind the Stirling County

TABLE III
Mental Health Ratings in Midtown Study^a

Rating	Percentage
Well.....	19
Mild symptom formation.....	36
Moderate symptom formation.....	22
Impaired functioning.....	23
Marked.....	13
Severe.....	7
Incapacitated.....	3

^a From Srole et al. *Mental Health in the Metropolis*. McGraw-Hill, New York, 1962.

TABLE IV
Gross Typology in Midtown Study^a

Category ^b	Percentage
Probable organic type.....	2
Probable psychotic type.....	8
Probable neurotic type.....	34
Probable psychosomatic type.....	6
Probable personality trait type.....	10
Probable neurotic-psychosomatic type.....	6
Probable neurotic trait type.....	16
No symptoms.....	18

^a From Langner, T. S., and Michael, S. T. *Life Stress and Mental Health*. Free Press of Glencoe (Macmillan), New York, 1963.

^b The categories are mutually exclusive.

study was that, although individuals are limited by constitutional and biological factors, the way in which their capacities are developed or frustrated is to a large extent determined by the social environment in which they live. It follows from this that psychiatric disorder, like other behavior, is a reaction or adaptation to the environment, limited by constitutional and biological determinants. Thus, from its inception, the study was as much concerned with environment, especially social environment, as with psychiatric disorder. The aim was to try to determine which aspects of the environment were importantly associated with increasing psychiatric disorder. A leading hypothesis bearing on this was that a social environment that adequately fulfilled its incumbents' needs (integrated) would be associated with less psychiatric disorder than an environment that did not (disintegrated).

Stirling County provided a suitable area to investigate these relationships. Like the Swedish parishes, it is a rural area, but, since the researchers took the whole of a county, the extent and variety was considerably increased as compared with the Swedish study. The population of approximately 20,000, half French-speaking and half English-speaking, is scattered in small villages of a few hundred for the most part, with one town of 3,000 and a good many iso-

lated farms. The villages offered contrast not only in ethnic composition but also in sociocultural integration and disintegration, yet each village was small enough to make it possible for investigators to comprehend personal interactions, both intrafamilial and extrafamilial. The town of 3,000, in spite of its small size, presented a number of urban features, at least as compared with the smaller villages.

One of the first research moves was to make a selection of extreme examples of socioculturally integrated and disintegrated communities by consulting local key informants. Then social scientists lived in each of the five selected focus communities to study at close range the various features mentioned above. As the other major source of data, a sample of 1,010 adults was drawn from the county, with heavier sampling in the focus communities. This sample was interviewed with a questionnaire designed to elicit information that would make it possible to place each individual with respect to a number of sociocultural factors, with particular emphasis on the indicators of integration and disintegration, and with respect to the presence or absence of psychiatric disorder. For the latter purpose, a section contained an inquiry about health history and a series of neuropsychiatric screening questions rather like those used in the Midtown study, and from similar sources. The screening questions had been tested in advance on a population very similar to that of Stirling County.

As in Midtown, the questionnaires were administered by nonpsychiatrist interviewers. Many additional data were gathered, however, both for psychiatric and for sociocultural purposes. For example, all the local physicians were interviewed by the project psychiatrists for comments on any respondents they knew, and a search of hospital records was conducted in the local hospitals and in the mental and general hospitals at the nearest metropolitan center. The social science team interviewed key informants extensively throughout the county and learned much from participant observation in the selected communities. Further, in order to achieve greater depth of understanding of the psychiatric manifestations of the county, an out-patient psychiatric clinic was established in the principal town.

As soon as the collection of psychiatric data was completed, the psychiatrists turned their attention to developing a standard method of evaluating the mental health status of the individuals interviewed. For symptomatic terminology, the 1952 *Diagnostic and Statistical Manual of the American Psychiatric Association* (A.P.A.) was chosen because it was a recent attempt at an improved system of classification of mental disorders, it was familiar, and it furnished a series of definitions of the diagnostic terms. With some modification necessitated by using it on nonpatients in the survey, it proved workable. No attempt was made to decide on a single diagnosis for any respondent; rather, the A.P.A. *Manual* terms

were used to describe symptoms and symptom patterns that were evident in the material being evaluated, and as many as were appropriate were listed for each person.

In addition to assignment of these descriptive terms, two other judgments were made for each individual. One was a rating on a four-point scale that is strongly reminiscent of the scales used in both the Swedish and the Midtown studies. In the Stirling scale, the points expressed the degree of certainty felt by the evaluators that the person did or did not show psychiatric disorder. "A" meant almost certain psychiatric disorder, qualitatively. "B" meant probable psychiatric disorder. "C" meant doubtful—one could not tell for sure if there was psychiatric disorder or if the person was free of it. "D" was the opposite of "A"—the person showed no evidence of disorder and, moreover, showed evidence of good functioning.

Although this scale resembles the Swedish scale, it was used on the questionnaire and other data rather than on impressions gathered in a direct clinical interview. It is a much less mixed scale than that of the Midtown study, the points of which were determined by a combination of symptoms and degree of impairment.

The final judgment in the Stirling method was an estimate of the amount of impairment in functioning due to the psychiatric disorder. This judgment was made for each symptom pattern listed and also for the person as a whole. Levels prescribed in the A.P.A. *Manual* were used, but the measure of impairment was *inadequacy in life situation by reason of the psychiatric symptoms* rather than intensity of psychiatric symptomatology.

Correlations were made between the various psychiatric findings and age, sex, occupational rank, education, religion, ethnicity, marital status, and level of integration of the community of residence. Like the other two studies, the Stirling County study showed an increase in psychiatric disorder with age (the range was 20 to 80+ years), though there was a decrease after age 70. (Recall that the Midtown age range was 20 to 59 years.) There was considerably more psychiatric disorder in women than in men but little difference in impairment. There was a linear relationship between psychiatric disorder and occupational rank (like SES in Midtown), but a curvilinear relationship between psychiatric disorder and education (which formed part of the SES rating in Midtown). In keeping with hypothetical expectations, the findings also showed a significant difference in prevalence of psychiatric disorder between socio-culturally integrated and disintegrated communities. The over-all findings, corresponding roughly to what have been listed for the other studies, are shown in Tables V and VI.

Evaluation. Here, then, are three studies of the prevalence of psychiatric disorder. The most striking

conclusion from examination of the tables of findings is that they cannot be directly compared, due to differences in method and terminology. To overcome this difficulty, a calibration is now being made between the Swedish and Stirling studies in which 200 randomly selected adult records from Sweden are being evaluated by the Stirling method. If this proves useful, it is hoped that the same kind of calibration can be done between Stirling and Midtown.

Perhaps the next most striking thing is the high prevalence of whatever it is that is variously described as indicating psychiatric disorder. Between one third and two thirds of the populations studied showed symptoms of disorder recognizable by psychiatrists either from direct clinical contacts or from evidence in written records. Thus, the general impression is that the findings of these large scale investigations present a profound challenge to public health concepts regarding the nature and extent of psychiatric disorder. Or, put in another way, granted that one third to two thirds of the population are in some sense psychiatrically sick, are they sick enough so that there is a public responsibility to try to provide treatment for them?

Determining illness. To get some grip on this question of service requirements, one must make a very careful investigation as to whether those people who are sick in the sense of having symptoms of

TABLE V
Mental Health in Stirling County Study^a

Degree of Certainty of Impairment, Using Stirling County Study's ABCD Ratings	Men	Women
	%	%
A	21	40
B	26	25
C	33	20
D	20	15
Significant impairment ^b	31	33

^a Part of this table is from Leighton et al. *The Character of Danger*. Basic Books, New York, 1963.

^b From unpublished research report.

TABLE VI
Major Symptom Categories in Stirling County Study^a

Symptom Category	Men	Women
	%	%
Psychophysiological.....	66	71
Psychoneurotic.....	44	64
Sociopathic.....	11	5
Mental deficiency.....	7	7
Personality disorder.....	7	6
Brain syndrome.....	4	2
Psychosis.....	1	2

^a From Leighton, et al. *The Character of Danger*. Basic Books, New York, 1963.

TABLE VII
Typology of Need for Psychiatric Attention in Stirling County^a

Rating			Per-centage
A or B	Type I	Most abnormal	3
	Type II	Psychiatric disorder with significant impairment	17
	Type III	Probable psychiatric disorder	37
C	Type IV	Doubtful	26
D	Type V	Probably well	17

^a From Leighton, et al. *The Character of Danger*. Basic Books, New York, 1963.

various kinds and amounts are really sick in the clinical sense. This is the problem of the validity of concepts of psychiatric disorder used in the studies discussed, and finding a solution to the problem must be one of the major aims of future research programs. Do the symptom patterns or mental health ratings of various kinds really constitute dependable entities? To what extent would they be recognized by competent clinical psychiatrists as identical with diagnostic entities? Do they have a predictable life history? Are they influenced in a regular way by improvement or deterioration in the sociocultural climate? What level of impairment can be used to discriminate those who require treatment? How do persons rated at various points on the scales appear to a clinician? An attempt to divide up the A and B Stirling County ratings with such considerations in mind can be seen in Table VII.

Environmental factors. Related questions having to do with the environment arise from differences reported from the three studies as to what segments of the population show more and less psychiatric disorder. The two rural researches, for example, found a sex difference, whereas the urban group mental health ratings did not. Both Stirling and Midtown reported a linear relationship between mental health and economic position, yet different items are included in the estimation of the economic position, and one of them (education), taken separately, shows a different relationship in Stirling. In Midtown, SES appears to be the strongest single variable, whereas in Stirling SES is not so strong a factor as sociocultural integration. A number of other questions need to be investigated: (1) Is there an inherent difference between rural and urban populations in the importance of such things as SES, or are the differences methodological? (2) What features of SES and of sociocultural integration are crucial in their relationship to mental health? (3) How can integration be indexed in a city, and to what sort of units of population does it apply? (4) Once indexed, does it have the same mental health relationships in a city as it does in a rural community? (5) Exactly how do these group correlations operate in individuals?

There are many other unanswered questions, but those given sketch the sort of information needed to understand the implications of research already done on mental health and social environment. A review of this work, prepared by Tsung-yi Lin and C. C. Standley, has been published by the World Health Organization.

Biosocial Variables Influencing Mental Health

Man has long speculated about the cause of mental disorder. Everywhere at times, and in many cultures even today, it has been supposed that severe mental disorder, such as psychosis, was due to possession by a spirit. It has also been quite generally recognized that a person may be out of his mind temporarily with certain fevers, after trauma to the head, in the last stages of old age, or after ingestion of certain drugs. Most peoples have also taken note of various degrees of what we now call mental deficiency or mental retardation. Where survival is marginal, children suspected of retardation have sometimes been destroyed; under other circumstances, they have sometimes received preferential treatment. There is great variation in ascription of cause, classification, level of social tolerance, and treatment of mental disorder in various societies. Recognition, study, and treatment of other types of disturbance—such as personality disorders, neurotic manifestations, and sociopathic behavior—have been mostly limited to Western or Western influenced cultures.

To the general Western public, as to most of the world, psychosis is the type-specimen of mental illness, a concept that makes people unwilling to think that they or their friends can be classified as mentally ill, though it is fairly acceptable to learn that they have emotional or nervous problems and to submit to treatment for them. Since the greatly increased use of psychiatry by the armed forces during World War II, there has been a tremendous growth in the perception and acknowledgment of nonpsychotic disorders by the public, especially the middle and upper classes, and a growing realization of the relationship between such manifestations and the sufferers' way of life. There has been a widespread movement to improve the lot of the mentally retarded by special classes and training schools, and attention has been given to ways in which the increasing disabilities of old age can be ameliorated.

Psychiatry as a discipline has had to exert itself to keep up with new evidence regarding the probable importance of various social roles, occupational roles, etc., in the genesis of psychiatric disorder and regarding new means of intervention to relieve stresses and to make psychiatric assistance readily available to those who need it. It is difficult for those acquainted with Western psychiatry for only 10 or 15 years to realize the revolution in psychiatric thinking and practice that has taken place since World War

II, particularly with regard to the importance of causal factors external to the patient.

Ideas of the variables that affect mental health are derived from many sources: psychiatric, psychological, sociological, and anthropological. In each, they have different bases—theoretical, empirical, clinical, and impressionistic. Systematic discussion is difficult because of different levels of abstraction, different technical language, and differing orientations. A. Leighton has attempted to organize the variables into one comprehensive statement that not only lists and describes them but shows their interconnections. This constitutes Volume I of the Stirling County series and includes a systematic statement of a set of propositions that have a logical relationship to each other and so offer a basis for hypothesis testing and theory building. The Stirling study itself is a partial effort to do just this, and the revisions of the propositions and reemphasis suggested by the experience are treated in the last chapter of Volume III of the series. The pages that follow do not attempt to summarize the more systematic treatment but rather offer a series of general comments.

Culture. Speaking in the broadest terms, one could say that most, if not all, of the external factors mentioned above are cultural. In this sense "culture" means the total way of life of a given group of people—Western/non-Western, hunting, agricultural, industrial, etc. Obviously, however, a large part of the total way of life of a population living in a given geographic environment will closely resemble that of any other group living under similar circumstances. Eskimos are a ready example of a people whose subsistence patterns are largely dictated by arctic conditions, yet various subgroups of Eskimos have developed rather different nonsubsistence patterns, and Eskimo culture as a whole differs in many respects from that of Athabaskan Indians or Lapps, for example, who also live in northern latitudes. Therefore, "culture" is here limited to those aspects of the way of life of a given population that *sets them apart as different from other groups*. Later, various aspects of total culture are discussed separately.

A number of descriptions of dramatically abnormal behavior have appeared in the writings of anthropologists and travelers from time to time, sometimes similar behavior with different names in very different places, such as *latah* from Malay, *imu* from Japan, and arctic hysteria from Siberia and Eskimo country. These terms apply to behavior that is frequently characterized by involuntary imitating, automatic obedience, shuddering, and fright. Women suffer from such a disorder more often than men, and in some groups the victims are teased by others, who cause them to perform culturally proscribed acts by manipulating the disorder. Another example is the windigo psychosis described by Halliwell and others among the Ojibwa Indians, in which the individual feels impelled to imitate the mythical

activities of a cannibal deity. There are also historical accounts of the "dancing madness" in Japan and in Europe in the Middle Ages; many others could be cited.

Explanations advanced for such behaviors have dwelt on their uniqueness and their limitation to a given cultural group. As knowledge has increased, however, and as investigators with psychiatric sophistication have actually observed individuals with the conditions described, doubt has arisen that there is very much uniqueness beyond a cultural flavor and coloring, such as Laubscher described for the hallucinations and delusions of Bantu schizophrenic patients.

On the physical side, it has been suggested that culture may influence the occurrence and type of psychiatric disorder in various ways. In a small group, not more than a few thousand, that is isolated from other groups, it is conceivable that some basic personality type especially vulnerable to psychiatric disorder may arise, due to the influence of inbreeding. Such a group may develop child-rearing practices that, according to tenets of Western psychiatry, would tend to produce malfunctioning adults. By ignorance of nutritional needs, sanitation, and hygiene, a people could undermine their health and lay themselves open to parasitic or bacterial infestation.

On the social side, the mental health of one sex may be jeopardized by the overvaluation of the other sex. Or where the shame mechanism is utilized to produce conformity, it may give rise to disorders of a particular kind, in contrast to a culture where conscience is inculcated and produces feelings of guilt for nonconformity. Or sanctions against particular acts—such as incest, improper behavior during menstruation, or giving birth to twins—may be so strong as to lead to suicide or murder of the offender. The ultimate is perhaps the psychological death described in several cultures, where a person, out of harmony with his culture, dies without any discoverable physical or physiological abnormality.

It has been suggested that some cultures foster mental disorder by rewarding disordered individuals with prestige roles. This usually refers to the medicine men or shamans who conduct religious rites and deal with the care of the sick. The idea appears to be based on observations of ceremonies in which trancelike or epileptic-like behavior is part of the procedure. The weight of evidence in recent studies, however, suggests that such behavior is not pathological.

Finally, it has been charged that some cultures produce mental difficulties for their members by an overabundance of stressful roles. These may be stressful because of ambiguity regarding expected behavior, because of inherently conflicting standards, or for numerous other reasons. In the light of present knowledge, it seems that such a state of affairs indicates

that the culture is undergoing transition due to either internal or external pressures. It appears, in short, that a well integrated, vigorously functioning culture presents a satisfactory balance, in at least a majority of its roles, between elements that make the position stressful on one hand and some balancing compensations on the other. The notion of a preponderance of pathogenic roles or practices seems untenable except where the whole culture shows signs of disintegration. Investigations of societies where slavery or a rigid caste system prevails would furnish evidence on this hypothesis.

It seems fairly clear that culture change can be quite devastating to the mental equilibrium of group members. Where the change is rapid and pervasive, many discontinuities develop—children continue to be reared by techniques that were appropriate for conditions no longer present; certain roles, once matched by compensations, become intolerable; traditional values no longer serve as adequate guidelines. At present, it is not possible to state how culture can change without these undesirable consequences, but it seems likely that, in time, an understanding of the details of the process and of the prerequisites necessary to success will develop. Many instances can be quoted where a marked change has taken place without apparent damage and of others where apparently slight change has wrought havoc. Suggested ameliorative factors are a flexible personality structure; an adequate level of cultural integration, which implies the availability of satisfactory leadership; and some sort of programming of change over time, so that the old ways are not discredited until substitutes can be offered.

Sex. This feature of an individual might be considered relatively culture-free. It is a biological attribute, to be sure, but a moment's reflection brings to mind the infinite complexity of cultural rules and regulations related to sex. A little boy in Western society should not be allowed to play with dolls, for example, nor should a man prepare himself for a vocation commonly filled by women; first or even second cousins should not marry; inheritance may be limited to the maternal or paternal line, and so on. However, Western society tends to be quite lenient regarding roles suitable and allowable for men or women as compared to many other societies.

What, then, is the significance of sex in relation to vulnerability to psychiatric disorder? It is not easy to assess this from mental hospital statistics because there are commonly an equal number of beds for men and women patients, and both are fully used; in addition, many selective factors determine who goes to the hospital or to someone for treatment. Population studies have to be examined for this information. In the Midtown study, no difference was found in the over-all prevalence of psychiatric impairment in men or women, but the women reported a greater number of psychoneurotic and psychophysiological symp-

toms. In the Swedish study and the Icelandic study (Helgason), the prevalence was slightly higher in women. In the Stirling County study, over-all figures showed a considerably higher prevalence in women; an even greater prevalence in women was seen in one carefully studied community and a higher prevalence in men than women in a second carefully studied community; in three communities the sexes were about equal. In some Nigerian Yoruba villages surveyed (Leighton et al., 1963), the men showed a slightly higher prevalence. Hinkle and Wolff have reported higher prevalence of mild disorders of all kinds in women but more serious impairment in men in two homogeneous groups of men and women in an industrial setting.

These data may strike the reader as "hit or miss" inconsistency, but careful scrutiny of related sociocultural features provides some plausible explanations. Mental illness in the popular sense is comparatively rare in all populations—less than 5 per cent—and the types of psychiatric disorder recorded are chiefly psychophysiological, psychoneurotic, personality disorder, and sociopathic behavior.

Looking first at Nigeria, it seemed quite obvious that the village men were in a difficult position because they were being subjected to considerable pressure to master European ways; at the same time they were required to perform as traditional Nigerians. The village women, on the other hand, were very little affected as yet by Europeanization. They were acting as they had been trained to act when they were little girls, and life had turned out about as they had been led to expect. Assuming that the kind of psychiatric disorder reported may be an evidence of stress on the individual, it is not surprising that the men were more affected than the women.

The Stirling County ratios may be taken as an indication that culture change is being experienced more acutely by the women than the men in the county as a whole and in the one village cited. This is very probably the case for large portions of the North American continent at this point in history, where the world of women is expanding and woman's role is much more ambiguous and full of conflict than a few generations ago. Like the Nigerian men, they are caught between the old ideals of being a good wife and mother on the one hand, the urge to find application for skills developed through their increasing education on the other, and, in some cases, the need to supplement the family income.

But what, then, of the village with the reverse ratio between the sexes, or the disintegrated communities where women and men are about equally affected? Available evidence indicates that the women in the Stirling County village were healthier than the men at the time of the survey for much the same reasons that the Nigerian village women were healthier than the men—the changes that had already affected the men had not yet impinged on the women.

Because of various historic and economic events, the men had had to alter their values and practices to a considerable extent, whereas the women were able to continue to function according to the habits and ideals of their youth. In the disintegrated communities, on the other hand, both men and women appeared to be reflecting, in the psychiatric disorder they demonstrated, the severe deprivation in virtually all areas of life to which they were subject.

The lack of statistically significant difference in prevalence of psychiatric impairment between men and women in Midtown may indicate that, as in the depressed Stirling communities, stresses are approximately equal, though not necessarily identical in nature, for the two sexes. In Sweden and Iceland, greater difficulty experienced by women can perhaps be explained by much the same reasons as suggested for the women in Stirling County as a whole.

This discussion leads to the conclusion that there may be nothing specific about either the male or the female sex that predisposes an individual to develop psychiatric disorder. What makes most of the difference is probably the interaction of sex with various features of any given culture, which may serve to place men or women in an advantaged or disadvantaged position. This, in turn, may protect or expose the sex as a whole to stresses leading to symptom formation.

Age. This, again, is a biological attribute of mankind. Most investigators have found that the proportion of the population showing evidence of psychiatric disorder increases with age. A few conditions, such as chronic brain syndrome, are more or less age-bound.

In his study of the Texas population in 1951-1952, Jaco showed that the incidence rate increases more rapidly with age for women than for men up to the 45 to 54 decade, after which it decreases until the oldest group; for men there is a more gradual but steady rate increase with age. Undoubtedly, many other factors besides age play a part, such as childbearing and child rearing in the women between 15 and 54. The decreasing economic and occupational importance of men after age 55 to 64 may have an effect on the increase in their rate (see Table VIII).

From the Midtown study's treatment census, opposite age trends are found between hospitalized in-patients and clinic out-patients (see Table IX).

Compared with this, one finds that the percentages with various degrees of psychiatric difficulty in the general Midtown survey population shift from predominantly well or only mildly affected in the earliest decade to a slight excess of the dominantly impaired or moderately affected in the oldest decade, with an intermediate plateau for the decades between (see Table X).

From the Swedish study and the Stirling County study similar findings emerge. Table XI expresses them in arbitrary units in which 0.50 represents the

TABLE VIII
Incidence Rates of Psychosis in Texas Study^a

Age Group	Incidence of Psychosis ^b		
	Males	Females	Total
years			
Under 15	1	1	1
15-24	42	48	45
25-34	90	117	103
35-44	98	127	112
45-54	106	135	120
55-64	133	127	130
65-74	155	122	137
75 and older	274	183	225

^a From Jaco, E. G. *The Social Epidemiology of Mental Disorders*. Russell Sage Foundation, New York, 1960.

^b Per 100,000 of population, 1951-1952.

TABLE IX
One-Day Prevalence Rates in Midtown Study^a

Age Level	Prevalence ^b	
	Total In-Patients	Clinic Out-Patients
years		
5-19	158	400
20-29	485	280
30-39	550	271
40-49	475	126
50-59	529	46
60-69	664	14
70 plus	1,318	0

^a From Srole et al. *Mental Health in the Metropolis*. McGraw-Hill, New York, 1962.

^b One-day prevalence rates per 100,000 of population.

TABLE X
Mental Health Classification by Age Groups in Midtown Study^a

Mental Health Category	Age Groups			
	20-29	30-39	40-49	50-59
	%	%	%	%
Well	24	17	19	15
Mild symptom formation	37	38	37	33
Moderate symptom formation . .	24	22	21	21
Impaired	15	23	23	31
Marked symptom formation . . .	9	15	11	16
Severe symptom formation . . .	4	7	8	11
Incapacitated	2	1	4	4
Number of subjects	(365)	(308)	(467)	(440)

^a From Srole et al. *Mental Health in the Metropolis*. McGraw-Hill, New York, 1962.

average risk that a person will show psychiatric disorder.

In the Stirling County group a peak is reached at 50 to 59, after which there is a decrease in risk,

TABLE XI
Age Trends in Mental Health, Swedish and Stirling
County Studies^a

Age Group	Swedish Community ^b	Stirling County Community ^b
<i>years</i>		
20-29	0.27	0.38
30-39	0.37	0.46
40-49	0.46	0.48
50-59	0.47	0.54
60-69	0.51	0.49
70 plus	0.52	0.44

^a From unpublished research reports.

^b For an explanation of units used, see the text.

whereas the Swedish group risk gradually increases with age. One cannot say what the Midtown trend after 60 would have been, owing to the cut-off age of 59 years.

This accumulated evidence points to a relationship between mental health and age, but it is not a direct and simple relationship. In every set of figures quoted, the best mental health occurs in the youngest group or groups, but in some populations there is a peak of psychiatric disorder in the middle ages, followed by a subsequent decrease; in others there is a steady increase with age. The differences in these two arrangements might be understood if enough were known about the life circumstances of the various age groups in each population, with particular reference to stressful factors. The figures quoted, however, are too diverse in age range and in type of analysis to do more than suggest possible avenues of enquiry.

Marital status. Here we progress from what appeared to be purely biological variables, albeit complicated by cultural interferences, to a very mixed biocultural one. There are few if any cultures in existence that do not specify in some way who may or must marry whom, how the change in status from single to married shall be signalized, and the obligations of the married pair to their families of origin and to their family of procreation. There is, of course, a considerable variety of patterns: monogamy, polygamy, matrilineal or patrilineal ties, extended families and unitary families, stable and unstable marital arrangements, great emphasis on economic or familial connections in picking a partner versus equally great emphasis on personal choice and attraction, greater or lesser restrictions on premarital and extramarital sexual relations, and so on. It is safe to say that there is no universally ideal pattern, for each culture has developed a set of marital customs and expectations that are interwoven with other aspects of life and could hardly be expected to suit members of some quite different culture. Nearly any pattern would succeed under the right circumstances.

It is common for members of Western culture, where monogamy is the ideal, to view polygamous

arrangements with horror. Seen in context, however, where emotional ties between husband and wife are usually not so strong as between mother and child, where additional working members of the family are a necessity for subsistence, and where both men and women grow up with the notion that this is a natural social configuration, polygamy seems quite as satisfactory as monogamy, which may bring with it strong and hampering emotional dependencies, suspicion of the spouse's fidelity, and the need to cope with life's problems with the help of only one other person. In short, neither type of marriage can guarantee an ideal mental health setting for its members. A good case can be made for either under suitable circumstances.

It is safe to say, however, that the commonest state for adults in most cultures is to be married in some fashion, so that adults who have never married and those who have married and given it up may be considered deviants. Widows and widowers are, perhaps, in a somewhat special category, since choice does not usually enter into the ending of their marriages. There is a popular idea that there must be something wrong with one or both of the partners who break up a marriage, but the status of one never married is not judged so clearly.

Jaco says of his psychotic subjects in Texas:

Annual incidence rates adjusted for age, sex, and subculture were found to be highest for the divorced, followed by the rates for the single, the separated, the widowed, and the married. . . . For the divorced, incidence rates were highest for not only the entire population, but also specifically for both sexes and among the Anglo-American and nonwhite groups. . . . One explanation that has been given for the higher incidence of mental disorders among the divorced than the married population is that a prepsychotic person, or an individual who is basically unstable and therefore 'difficult to live with,' is prone to marital instability and subsequent divorce. While this explanation has merit, it is also possible that any prepsychotic individual may not actually manifest a mental illness until the trauma of divorce occurs or the experience of breaking the marital bond takes place. In this formulation, the condition of divorce can be regarded as a social precipitating factor for such predisposed individuals in the onset of their psychiatric disorder.

From other studies a number of interesting findings have emerged. In the Midtown study, for example, it turned out that the mental health status of never-married women was approximately the same as for married women but that approximately twice as large a percentage of never-married men had been rated "impaired." The suggested explanation is that bachelors are more likely to have been actively rejected in the marriage market, presumably due to some obvious shortcomings, but spinsters may either have preferred their state or just not have been chosen, due to a plethora of women. Widows are about as healthy as wives. Table XII shows that in New York City, at least, divorce and poor mental health are closely associated.

The Stirling County study found no significant differences in mental health status associated with

marital status, although the use of a sample of heads of households slanted the subjects chosen in the direction of married people and may have distorted the picture. In comparing the marital status and mental health status of the Swedish sample with a systematic sample from one Stirling County community, however, some interesting contrasts appeared. In both communities, about three quarters of the sample are married. Among the unmarried in the Stirling County town, approximately equal proportions are single, divorced or separated, and widowed. In the Swedish sample three quarters of the unmarried are single, a fifth are widowed, and the small remainder are divorced or separated. Arrangement of married, single, separated or divorced, and widowed in rank order, for both mental health status and average age, shows that the differences are not due to an age effect (see Table XIII).

In each community, the group with the best mental health has the next to highest mean age, whereas the preceding section regarding age has indicated that better mental health is usually associated with younger age. The Swedish widows have the poorest mental health and are the oldest group, which is congruent with general findings related to age, but in the Stirling County community the separated or divorced group, with the worst mental health, are next to youngest. One cannot state with assurance all the significant aspects of these findings, but one can say that any given marital status seems to have different social and emotional significance in these two populations and seems to differ in mental health status from what one would expect, considering the mean age of people in a status and the relationship between age and mental health noted above.

Socioeconomic or class position. Differentiation of a cultural group into levels of influence or affluence or both is nothing new in the history of the world. It is, in addition, a very widespread characteristic of populations, usually less obvious in small groups than in large groups. Industrialization tends to emphasize such a stratification by its need for different degrees of skill and education and by its corresponding granting of rewards. In nonindustrial cultures, the basis for differentiation is more likely to be family lines, power, prestige, or special abilities, such as those for oratory, for learning the religious lore, and for being able to communicate with supernatural powers. A clear stratification of classes is mostly restricted to cities and their surrounding suburbs in an industrial culture; rural populations tend to be more egalitarian.

Many books have been written about class differentiation characteristics, suitable ways of indexing, and so on. Two of the classics, widely used by others, are those of Warner et al. and Hollingshead and Redlich. Another recent treatment of the subject has been provided by Kahl. National censuses have commonly made distinctions on the basis of income and of occupational type, starting at the top with

TABLE XII
Mental Health Classification of Married and Divorced Respondents (Aged 30 to 49 Only) in Midtown Study^a

Mental Health Categories	Males		Females	
	Married	Divorced	Married	Divorced
	%	%	%	%
Well.....	25	4	19	7
Mild symptom formation.....	38	36	40	19
Moderate symptom formation.....	18	20	21	32
Impaired.....	19 ^b	40 ^b	20 ^c	42 ^c
Number of subjects.....	(254)	(25)	(291)	(57)

^a From Srole et al. *Mental Health in the Metropolis*. McGraw-Hill, New York, 1962.

^b 0.02 level of confidence.

^c 0.001 level of confidence.

TABLE XIII
Rank Order of Marital Status Groups by Mean Mental Health Status and Mean Age, Swedish and Stirling County Communities^a

Rank Order	Swedish Community		Stirling County Community	
	Mental Health	Mean Age	Mental Health	Mean Age
1 ^b	Separated or divorced	Single	Single	Married
2	Single	Married	Married	Separated or divorced
3	Married	Separated or divorced	Widowed	Single
4	Widowed	Widowed	Separated or divorced	Widowed

^a From unpublished research report.

^b Best health, youngest age.

professionals and ending at the bottom with unskilled laborers. Intermediate ranks are usually semiprofessional, skilled, and semiskilled, but the definitions of the specific occupations included are not always the same in various censuses. The disposition of unemployed women poses a problem that is usually handled by classifying them according to the level of their husbands. Due to the lack of any clearly preferable scheme, many investigators interested in the relation between mental health and socioeconomic position have adopted the local census standards. In addition to being ready made, use of census definitions facilitates comparison of the sector of the population under study with the entire national group.

In a review of "25 or more attempts to count untreated cases of psychological disorder in community populations," the Dohrenwends noted that there

is no uniform relationship between judged psychopathology and age, sex, or race. Following the earlier discussion of the relationship between age, sex, and psychiatric disorder, their review supplies additional evidence that age or sex alone are not determining factors. They added: "Against this background of inconsistent results, it is almost startling to find that 14 of the 18 studies which present data on the relationship with social class yielded the highest rate of judged psychopathology in the lowest economic stratum. . . . Only one study reported the highest rate in the highest income group." The studies cover certain rural and urban populations in North America, northern Europe and Asia. The reviewers went on to say that "a relationship of such apparent strength must command attention. The cumulative evidence it represents appears to establish the association of low socioeconomic status with a high rate of judged psychopathology as an important source of working hypotheses."

It may well be that such a strong and widespread association indicates the supranational character of industrial development, which imposes a set of socioeconomic levels and values wherever it becomes established. It would be instructive to discover the relationship between psychiatric disorder and the lowest level of some hierarchy based on a noneconomic principle. In most populations, there is a coincidence of low social position and low economic position that makes it difficult to determine the effect of either alone. In Iceland, where, Helgason said, social class differences are negligible and where wages are more uniform than in most other countries, there is little difference in over-all expectancy of psychiatric disorder between classes.

A particularly interesting finding comes from the community in Sweden that Essen-Möller and Hagnell studied, where the relationship between socioeconomic level and psychiatric disorder is reversed, and the lowest level has the least risk of disorder. The conclusion seems inescapable that, at least in this community, Swedish social legislation and cultural attitudes have removed many of the difficulties that exist elsewhere for those at the bottom of the economic heap.

Studies related to the problem of poverty have shown repeatedly that it is not only lack of money but also lack of nearly all the advantages associated with money that make the position of the poor so hampering. A great challenge to Western society is to discover how to deal with the problems of this group in a constructive way, bringing to bear all the techniques and understanding that behavioral scientists have developed in modern times.

Sociocultural integration. The final variable to be discussed here for its relationship to psychiatric disorder has received attention in only two investigations in any systematic way, the Stirling County study and the Yoruba study. It approaches the first

variable discussed above, culture, but is an aspect or quality of culture, not the whole; nor is it a section of culture like religion or socioeconomic structure. It is conceived to have an over-all pervasiveness that affects all aspects of the culture. It is hypothesized that small homogeneous communities as units of culture can be placed on a range of integration from near zero at one end (disintegration) to a well functioning societal system at the other end that provides adequately for the sociocultural needs of its members (integration). So far, in Stirling County publications the theory and concepts of social disintegration have been applied only to small, quasi-organismic communities. Adaptation and modification of theory are necessary when it is applied to larger, more amorphous social systems.

To find where a community belongs on this range, one may use various sociocultural indicators: the poverty-affluence dimension; the over-all coherence or confusion of its culture values; the viability of its religious system; the stability of families; leadership and followership; communication networks; supportiveness of interpersonal relationships; etc. In homogeneous communities one commonly finds that there is a tendency for a given level on one axis to intersect many axes at about the same level—that is, if there are stable families, in all probability there will also be clear cultural values, religious activity, adequate leaders and followers, good communications, a reasonable economic level, etc. Conversely, in the presence of general poverty, one is likely to observe uncertain and variable cultural values, little interest or participation in religion, many broken families, unclear or absent leadership, poor communication, suspicion and hostility between individuals, and so on. Or most of the axes may intersect at some intermediate level.

In the Stirling County study, it was postulated that mental health would be best in an integrated community and worst in a disintegrated one. This was tested by selecting sample communities of each type as near the extremes as possible and surveying the mental health status of a sample of the population in such a way that the psychiatric judges did not know the kind of a community from which a given subject came.

The findings both in Stirling County and among the Yoruba supported the hypothesis to the extent that mental health was considerably better in the integrated than the disintegrated communities. A corollary of this hypothesis is that, if the integration status of a community improves, so will its mental health. This also took place in one disintegrated community in Stirling County over a period of a few years, which further strengthens the probability that sociocultural factors stand in a causative relationship to psychiatric disorder in populations. It seems likely that the reason the study of this aspect of mental health has received so little attention is

that few studies have been done with the aid of social scientists. The extensive work required to assess the indicators of community integration calls for more social scientific training than most psychiatrists, who have been the investigators in other studies, possess. In the Midtown study the nature of the community precluded assessment of its integration in the sense that it was done in Stirling County. Currently, however, an attempt is being made to study units of the metropolis that can be contrasted as to their state of relative sociocultural integration.

Goals

It seems clear that a start has been made toward approaching the goal of understanding that aspect of human functioning that we call psychiatric disorder against the background of biosociocultural features that constitute man's life experience. Concepts are still groping and faulty, their development hindered by a weight of traditional blind spots and biases. As concepts become more adequate, it will be possible to plan more crucial and enlightening investigations, utilizing the modern tools and methods that enable researchers to deal effectively with complex data. Much can be gained, even in the present stage of conceptualization, by accumulating systematic, comparable data on diverse human groups to test out the degree of regularity with which findings such as have been reported above occur around the world. Adoption of a common terminology for describing the findings will speed the formulation of new concepts and the delineation of the human universals. It is quite possible that a new classification for both psychiatric disorders and sociocultural features may result from more extensive researches.

The pertinence of such studies lies partly in their power to enlarge understanding of human behavior in more of its complexity than can be handled at present and partly in the leads they provide for dealing with psychiatric disorder by sociocultural rather than individual clinical means. The latter possibility can be viewed as partly therapeutic, partly preventive, and can be expected to play an increasingly important role in such activities as urban planning, community development, relief of the condition of poverty, and control of cultural change.

Suggested Cross References

See Section 5.1 for further information regarding the epidemiology of psychiatric disorders. For discussions regarding some fundamental concepts of cultural and social determinants of behavior, see Sections 4.1 and 4.2.

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45.4 UNITED STATES COMMUNITY MENTAL HEALTH PROGRAM

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The emergence of the theory and practice of community and social psychiatry, described in this chapter, was coupled with an attempt to establish coordinated community services and facilities which would provide comprehensive care for the mentally ill. This movement achieved the status of a national program with the passage of the Community Mental Health Centers Act of 1963. According to current projections, by 1970, approximately 500 of these centers will be in operation, and each will serve the mental health needs of the entire population of a given area.

The appearance of a community network of psychiatric facilities on the American scene for the first time in history may be attributed, in large part, to modern psychiatric research and increased clinical experience. In the course of their clinical efforts, psychiatrists have learned that in many cases early diagnosis and intensive treatment of acute psychiatric illness may obviate the need for long term hospitalization. It has also been hypothesized that efforts to prevent mental illness can best be implemented through a community system designed to provide psychiatric consultation to all of the community's helping professions. Recent trends in psychiatric education reflect these developments. Psychiatric training institutions have begun to include "community psychiatry" in their curriculum as an essential. And this exposure, however limited it may be at this point, serves to orient the psychiatrist of the future to a new facet of psychiatric practice. These events have broader implications as well. They indicate a wider acceptance on the part of the profession of a public health approach. And, in fact, increasing numbers of psychiatrists are beginning to recognize the need to develop the skills which will enable them to help large groups of people.

Mental Health Center Legislation

Provisions. Through The Community Mental Health Centers Act of 1963, mentioned above, the 88th Congress authorized the appropriation of \$150,000,000, over a 3-year period, to finance up to two thirds of the construction costs of any one mental health center program. Regulations governing the award of these construction grants have been issued by the Secretary of the Department of Health, Education, and Welfare. The National Institute of Mental Health administers the program aspects of aid to the centers; and the Division of Hospital and Medical Facilities, Public Health Service, administers the technical aspects of construction.

On August 5, 1965, President Johnson signed into law an amendment to the Act, providing additional federal funds to help pay the cost of staffing the centers during the initial years of their existence. This financial aid is available on a gradually decreasing percentage basis, and is earmarked for the operation of new centers, or for the financing of the expansion of an established program. Thus, the amendment is designed to help the centers cover the costs of professional and technical personnel during the interim period while states and communities work out more permanent funding patterns.

History. *Action for Mental Health*, the report published in 1961 by the Joint Commission on Mental Illness and Health, and, more specifically, the Commission's recommendation that preventive and treatment services be instituted on a local community level, played a major role in the adoption of mental

health centers legislation. The Commission's recommendation was precipitated by a number of factors.

Foremost among these were the demonstrated success of open hospitals and day and night hospitals in the treatment of psychiatric patients; the development of psychoactive drugs which permitted the treatment of many patients in their communities or their return to the community after a relatively brief period of hospitalization; the increased use of the inpatient services of general hospitals for the treatment of acute psychiatric illness; the growing number of out-patient clinics; and the expansion and extension of psychiatric knowledge. Psychiatric research over the past 2 decades has illuminated the possible role of genetic, social, and biological factors in the onset of mental illness. But, in particular, research findings have highlighted the importance of early life experiences and of interpersonal and sociocultural forces in shaping character, personality, and behavior. Concomitantly, psychiatrists have become increasingly concerned with the impact of the family and the community upon the individual.

This key concept—which is a cornerstone of the community mental health approach to treatment and prevention—was stated eloquently many years ago by Dr. Adolf Meyer. Dr. Meyer believed that the proper domain of psychiatry was the behavior of the whole man, as a manifestation of his reactions to environmental stress—past, immediate, and potential. Dr. Meyer explained his position in 1928, in reminiscing about his work in a state mental institution in 1904:

I had to reach out, in my actual work, more and more to a broader understanding of the patients, which led me to a study of the family settings and by and by also of the place where the individual first became a member of the community. The school . . . the life of the patient and of the family, the life of the patient in hospital, and the return to the community began to receive more practical attention. . . .

The adoption of mental health centers legislation was also fostered by the fact that the Commission's recommendations were made public at a time when the nation was beginning to regard mental illness as a public health problem. On one hand, state and local legislators, who had become increasingly concerned about the mounting costs of prolonged hospitalization of mental patients, encouraged the use of alternative types of care. Indeed, in many states, community mental health services acts were enacted under the joint financial support of the state and the local community. On the other hand, the community was better prepared to accept the idea that it might care for its mentally ill citizens without endangering its "healthy" citizens.

This changing attitude was reflected in the unprecedented Message on Mental Illness and Mental Retardation which President Kennedy delivered before the 88th Congress on February 5, 1963. The study of

the Joint Commission had been reviewed by a Presidential committee and Kennedy summarized its conclusions: "Government at every level—Federal, State, and local—private foundations and individual citizens must all face up to their responsibilities in this area."

Congress acted promptly in response to this appeal. A series of Congressional hearings was held at which leading authorities in psychiatry and related fields, including representatives of the American Medical Association, the American Psychiatric Association, the National Association for Mental Health, the Public Health Service, the Veterans Administration, and other organizations and agencies, expressed their wholehearted support of a nationwide program of community mental health services.

The Community Mental Health Centers Act, as well as several other measures of federal support, grew out of these deliberations. The National Institute of Mental Health was authorized to support projects for the improvement of state hospitals and institutions for the mentally retarded. The Institute was further authorized to expand its training program and to provide support for in-service training, focusing first on the training of ancillary hospital personnel who were directly responsible for the care of the mentally ill.

Structure and Organization of the Mental Health Centers Program

Above all, embarking on a national program to effect a widespread change or, more accurately, a revolution in the nation's established modes of providing care for the mentally ill, required sound planning. To this end, Congress appropriated a total of \$8,000,000 to underwrite comprehensive state mental health planning throughout the nation. Accordingly, preliminary outlines for planning procedures were drafted in every state and territory. Each state then surveyed its mental health needs and resources and, on the basis of these data, evolved comprehensive, long range plans for mental health services—a step unprecedented in any field of health. More than 25,000 psychiatrists and leaders of allied professions, State Mental Health Authorities, and members of State Departments of Health and Mental Health participated in this planning. And in at least 22 states, governors established special mental health task forces.

These comprehensive plans were followed by state plans for the construction of community mental health centers. Each state recommended that specific centers receive priority for federal support. By July, 1965, the first applications for federal construction aid had been reviewed by the National Institute of Mental Health.

The elements of community mental health services. To a significant degree, deliberations regarding the new mental health program focused on the types

of services to be offered through the centers. Previous experience with community mental health services and demonstration studies pointed to the need for at least five basic, or "essential" services. As defined by law, these include: (1) in-patient services; (2) out-patient services; (3) partial hospitalization services, such as day care, night care, or weekend care; (4) emergency services, available 24 hours a day, within at least one of the above services; and (5) consultation and educational services, available to community agencies and professional personnel.

In addition to these essential services, comprehensive community services also include: diagnostic services; rehabilitative services, including vocational and educational programs; pre-care and after-care services, including foster home placement, home visits, and halfway houses; training; research and evaluation. In light of this wide range of services, the mental health "center" might be described more precisely as a mental health "program" or "network" of services. Not surprisingly, the diverse services provided by the center are not necessarily under one roof.

Philosophy and goals. Nevertheless, the key to the system of community mental health centers is the integration of these varied services. Thus, while they will demonstrate inevitable physical differences, these centers share in common the essential quality that these services are so organized as to form a coordinated system of care. This arrangement makes it possible to provide patients with the specific type of service they require, depending on the intensity and stage of their illness. Moreover, when such services are provided within a community setting, treatment will cause only minimal disruption in the life of the patient and members of his family.

Another goal of the community mental health center is the prevention of mental illness through the provision of consultation services to nonpsychiatric physicians, teachers, clergy, representatives of the law, and others who are in a position to detect emotional difficulties in the people they serve. From a public health viewpoint, the problem of mental illness cannot be alleviated sufficiently by individual or group treatment alone. Professional consultation services as well as educational programs for the layman are considered, therefore, to represent essential aspects of the center's program.

The community system also seeks to bring the care of the mentally ill back into the mainstream of American medicine, where many psychiatrists believe it belongs. Thus, as mentioned earlier, in many community programs, the general hospital is utilized for the in-patient treatment of the psychiatric patients. Federal regulations encourage the participation of nonpsychiatric physicians in mental health centers also. More specifically, they are to be permitted, when qualified, to assist in the psychiatric care of their

patients, under the supervision of a member of the psychiatric staff, and, in any event, they are to be kept fully informed of their patients' progress. The advantages of close liaison between the psychiatrist and the family physician and the ways in which the system of community care encourages this liaison have been indicated elsewhere in this chapter. It may be added here, however, that the community mental health centers program as conceived in the United States is the instrument, and provides the facilities for this liaison, as well as for the emerging practice of community and social psychiatry.

Finally, a federal requirement of vital interest to both psychiatrists and the general public is that each mental health center must provide psychiatric care for everyone residing within the community served, regardless of length of residence or ability to pay for such services, and without discrimination as to race, color, or creed. As defined in federal regulations, a "community" has a population of from 70,000 to 200,000. Consequently, in several regions, centers serve the residents of more than one state, under interstate compacts.

Community Mental Health Centers versus Separate Services

The question is sometimes raised as to why, in view of the rapidly expanding number of out-patient clinics and other psychiatric facilities provided by the general hospital, it is necessary, or desirable, to undertake the community mental health centers program on a national scale. Many of the advantages of coordinated and comprehensive facilities are embodied in the federal regulations governing awards for construction aid. These programs have taken into account the needs of all age groups; and they are designed to ensure the integration of individual types of service according to the following criteria:

- that any person eligible for service within any one element of service will also be eligible for treatment within any other element of service;
- that any patient within any one element can and will be transferred without delay to any other element (providing that adequate space is available) whenever...indicated by the patient's clinical needs;

—that clinical information...obtained within one element be made available to those responsible for that patient's treatment within any other element;

—that those responsible for a patient's care within one element can, when practicable and not clinically contraindicated, continue to care for that patient within any of the other elements; —and that in cases where two or more of the individual elements of services are provided by different organizations, agencies or persons, the relationships between the individual elements must be evidenced by appropriate...formal written agreements.

A careful review of these criteria will point up the fact that the centers program presents psychiatry with new challenges and opportunities. The psychiatrist who works in such facilities is challenged to study individuals as they attempt to adjust to a wide variety of biological and psychosocial forces and to determine, on the basis of his observations, his patients' modes of adaptation to a variety of life situations. Concurrently, the psychiatrist is given a unique opportunity not only to treat maladaptation in its earliest stages, but also to develop an effective program for the prevention of mental illness and a concomitant program for the promotion of mental health.

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Chapter 46

Community Psychiatry. II: Intervention

46.1 PRIMARY PREVENTION

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Primary prevention has long been a well accepted public health concept and, as such, represents a community concept. Only within recent years, however, have psychiatrists incorporated this concept into their programs for the treatment of mental illness and the promotion of mental health.

As pointed out earlier in this area, community psychiatry and social psychiatry can best be understood in terms of public health concepts. By definition, primary prevention programs in psychiatry are designed to lower the rate of onset of emotional disorder in the community, by counteracting the stressful or potentially harmful social conditions which produce mental illness, and by prompt intervention when such conditions exist. It follows, then, that a primary prevention program will necessarily involve significant members of the community and engage those institutions of our society which, by virtue of their role, have a crucial impact on the bulk of our citizenry. More specifically, with respect to the individual, the principles of primary prevention are implemented by social agencies, schools and churches, physicians and health professionals, local government leaders, and, most important, the individual's family and other significant people in his life.

In fact, the concept of primary prevention, which, as mentioned above, represents a relatively recent addition to the body of psychiatric knowledge, can be truly effective only if its principles are applied by workers at every level of community activity. The integration of such principles into the programs initiated by community workers in the areas of general health, welfare, education, housing and urban renewal, and other cadres, will, inevitably, contribute to the quality and effectiveness of these community efforts. Concomitantly, exposure to the concepts of primary prevention in psychiatry may have a sensitizing and educational effect on these cadres, so that

it will be easier to enlist their cooperation in a comprehensive program to provide early intervention in mental illness, as well as in a realistic program for the rehabilitation of former psychiatric patients. In other words, the widespread application of primary preventive measures can serve, indirectly, to facilitate the implementation of secondary and tertiary preventive efforts.

The Role of the Institutions of Society in Primary Prevention

The techniques utilized by social institutions in the service of primary prevention can best be conceptualized in terms of the three major groups in the community to whom such efforts are directed—children and adolescents, young adults through maturity and our older citizens. It must be emphasized, however, that although this structural division will serve to facilitate discussion, in fact, these three groups are interrelated and cannot be arbitrarily divided in practice.

Children and adolescents

Maternal and family-centered programs. Services provided in this area will focus on the prevention of premature births; prenatal disturbances which may lead to brain damage (including prenatal intrauterine intervention); and the prevention, through prompt consultation, of emotional disturbances during pregnancy.

The role of the general practitioner with respect to this patient population includes anticipatory counseling. That is, in general, it is the physician's task to forewarn his patients of possible "crises" in physiological functioning, and, through the process of education, strengthen their capacity to cope with these crises effectively. Clearly, pregnancy constitutes one such crisis, and his contact with parents, particularly young parents who are expecting their first child, provides the general practitioner with a unique opportunity, not only to educate and thereby prepare them for the pregnancy itself, but to shape parental attitudes with respect to their responsibility toward the child.

Through direct discussion with the general practitioner, or through class discussions sponsored by social and welfare agencies, young parents can be helped to recognize that the healthy development of their child will depend, in large measure, on their ability to gratify his basic needs. Ideally, such discussions will also focus on the struggle between dependency needs and the desire for independence which is characteristic of the growing child, as well as the various stages of development and their accompanying patterns of growth.

Participation by parents in such discussion groups and instruction in these basic, and frequently unfamiliar, concepts may have a profound effect on their future attitudes toward the problems they will inevitably encounter as their child progresses from infancy to childhood, and then to adolescence. The early education of parents seeks to foster their awareness of the psychological needs of the child which, in turn, will enable them to provide a home atmosphere which is conducive to the child's healthy development. Obviously, such an environment will help to ameliorate many transient emotional crises which are associated with specific phases of development. But, in addition, psychological awareness can also help to eliminate tensions which may produce personality distortions in the parents and eventually lead to serious maladjustment in the child, as well as his parents. Distorted relationships may obtain for some time before they reach full pathological intensity. It is during this interim period, when the situational factors which have given rise to these tensions can still be corrected, that the intervention of the family physician or pediatrician or of well baby clinics may be particularly helpful.

It is equally essential that teachers, who will bear a major share of the responsibility for the emotional well-being of the school age child and adolescent, receive some instruction in developmental psychology and the dynamics of family interaction. If the school system is to play a more active role in primary prevention, it is imperative that training be provided at a classroom level which will enable the teacher to differentiate between the use of healthy and pathological mechanisms to cope with life stresses. Concomitantly, community service agencies should make trained professionals available for consultations with teachers when problems arise involving individual pupils or groups of children.

To illustrate, a program currently under way in the Woodlawn area of Chicago calls for regularly scheduled meetings between a team of mental health educators and psychiatrists and school personnel. The purpose of this in-service training program is to sensitize teachers to the presence of emotional conflict in the children under their supervision before symptoms appear, on the one hand, and to provide consultation for teachers of children with manifest symptom complexes, on the other. In a broader sense, the

goal of the program is to foster understanding of the psychological and sociological needs of the child and to help the teacher to develop the ability to meet these needs. Thus, these professionals expand their capacities as interveners who must deal effectively with children in stress and, concomitantly, help other children to learn to cope more adequately with the stresses of our society. The well defined critical periods in school life, when the child must make the transition from primary to intermediate curriculum, that is, from the neighborhood elementary school to junior high school and high school, provide a basis for discussion, with students as well as teachers, of the problems which typically surround such transitions. In brief, case finding and screening become part of the total educational program. Finally, this program is based on the awareness that the teaching corps constitutes a sizable—and accessible—group of professionally trained persons in responsible contact with large numbers of children. As such, the potential significance of the teacher's contribution to our preventive efforts must be recognized and implemented.

We must begin to train a cadre of child care specialists who will be qualified to intervene and work with children and their families during periods of psychological crisis. A list of the candidates eligible for such training would include pediatricians and other health specialists. In addition, comprehensive training in child psychology should be provided for those professionals who work with mothers, as well as children, and who, by virtue of the nature and scope of their activities, are given a unique opportunity to promote effective child-rearing concepts and implement legislation to ensure the health of the pregnant woman.

Prenatal and immediate postnatal instruction in child development, child rearing, and family life can and must be incorporated into the community's public health and mental health programs. If education is to become an effective instrument of preventive psychiatry, mental health specialists, in conjunction with other groups, such as the professionals who staff social agencies and even specially trained non-professional volunteers, must work in the field to disseminate factual information. At the same time, it must be emphasized that a program of psychiatric education directed toward the general public requires careful planning; obviously, if the information provided thereby evokes extreme anxiety or is unnecessarily confusing, the program will be of limited value. The overriding goal of psychiatric education at this level must be the improvement of community attitudes toward psychiatry and those psychiatric services which seek to prevent emotional and functional impairment, to remove the stigma attached to psychiatric intervention, and to dispel the air of mystery which continues to surround the psychiatrist and his treatment efforts.

This type of educational program can also help the community to plan for mental health. Ideally, it will facilitate solicitation of financial support for such efforts and thereby permit the effective organization of community resources and personnel. Accordingly, the information provided within this framework must clearly discriminate between scientific and unscientific therapies; it must encompass current hypotheses on the role of heredity and constitution in mental illness, on child-rearing practices, on child development, and on the etiology of psychiatric illness in adults. In brief, it must impart knowledge which will help the individual to understand his own, as well as his neighbor's emotional reactions.

Infant-centered programs. Such programs should include systematic evaluation of all newborns, registration of all infant defects, and establishment of treatment centers for brain-damaged infants.

Programs should be set up for well baby follow-up by public health nurses and other units, organized to reach every infant in the community. It is essential, of course, that such programs provide basic instruction by mental health specialists in the psychological aspects of infant development, as well as consultation services for the professional personnel directly involved in these services. Large scale day care programs should be designed to provide an optimal psychological milieu for infants from culturally disadvantaged families. Protective services, enforced by legislative provision, will enable supervision of families with a history of severe behavioral disturbance in relation to their children, e.g., infant battering, extreme neglect, etc. Preventive programs and techniques should be developed for premature infants and infants who must remain in hospital nurseries and institutions.

Preschool and school programs. These programs involve preschool round-ups of children between 3 and 5 years of age and appropriate alterations in the infant registries referred to above, i.e., deletion or addition of children in this age group, depending on current indications of their need for psychiatric services. This may serve as the basis for an effective school health program, carried out in close collaboration with health and welfare agencies in the community.

Day care and nursery programs with evaluative and remedial components will emphasize the initial manifestations of disturbances in personality formation, as these emerge in the expression of aggressive or sexual feelings. Mental health units in handicapped children's services and chronic disease clinics should be established.

Further integration of preventive efforts should be implemented at every level including psychologically oriented medical examinations and school health programs, with particular emphasis on school health-mental health components, and the availability of psychiatric consultation services.

Total evaluation should be made of children in the sixth and seventh grades to remove the names of those children who no longer require psychiatric care from the infant registries and add the names of others who have developed psychiatric symptoms in the interval since the preschool round-up described above. An early plan should provide for vocational guidance, when indicated.

Adults. If the community's efforts to reduce the incidence of psychiatric illness in adults are to be successful, it is essential that its major social agencies be thoroughly trained in mental health concepts. The ability to identify underlying emotional conflicts, the ability to differentiate between healthy and pathological methods of coping with stress, and a knowledge of consultation techniques are particularly vital. For, in fact, these agencies represent the community's psychiatric antennas, so to speak. More specifically, there is a strong likelihood that individuals in contact with public service agencies, e.g., the department of welfare, public health services and children and family services, vocational and marital counseling agencies, and legal aid societies, may be under considerable stress. Consequently, these organizations are in a unique position to provide counseling services which may prevent more acute psychological crises by helping these individuals to identify and cope with their problems. Concomitantly, the availability of mental health consultation to various groups which are not identified with the mental health professions may prove extremely useful. Thus, social agencies, community social centers, adult education groups, unions and industry-sponsored programs, as well as churches and pastoral groups, may make extensive use of the services of the mental health specialist.

An effective preventive program will evolve from careful investigations of causality, as well as the efficacy of various treatment modalities. And preventive services must continue to reflect the valid findings derived from such investigations. Thus, findings derived from epidemiological research will further our understanding of the nature of the problems of the families we serve, and of the situations which have given rise to these problems. This knowledge, in turn, will facilitate our efforts to develop workable procedures for the integration of preventive psychiatric services into the community "system" and thereby increase their accessibility.

For example, Lawrence E. Hinkle, Jr., and Norman Plummer at Cornell University Medical College concluded from their recent epidemiological studies: "The hazards of illness and accident seem to fall disproportionately on a small minority of the population." These findings have been supported by similar studies throughout the country which have shown that approximately 6 per cent of the families in each of the communities investigated suffered such a multitude of human ills that they absorbed more than 50

per cent of the community's services. Obviously, these multiple problem families must be dealt with by a complex of institutional agencies. Social workers have found, in this connection, that a variety of measures, implemented by agencies of diverse orientation, may have significant preventive value. To illustrate, pediatric hospitals may encourage frequent parental visits to counteract the adverse psychological implications of hospitalization; providing visiting nurse and homemaker services at a time of family crisis may reduce the effects of such crises on children; the efforts of legal agencies to modify adoption laws and procedures to facilitate earlier adoption may prevent the emotional scars frequently associated with prolonged foster home placement; and working with the mothers of children who require intensive psychiatric care at critical points in treatment can help to counteract the feelings of guilt, anxiety, and hostility they may experience in relation to the child, which will inevitably affect their over-all psychological functioning. At the same time, however, these services must be integrated, so that responsibility for the care of the individual and his family is not divided among a great number of social agencies which function independently. As a professional discipline, social work has access to many types of organizations and can often reduce fragmentation by coordinating community resources with needs of the individual.

Nurses are usually most aware of family tensions. Moreover, nursing care is well accepted by individuals under stress. Consultation with mental health specialists can provide the training and confidence which will enable the nurse to intervene effectively, on a preventive level, with individuals. Marital counseling can provide access not only to the emotional problems of the individual partners, but also to the psychological difficulties of the children of the marriage. Counseling, for purposes of crisis prevention, is provided by many family service agencies and community centers, and on an individual basis by physicians and clergymen.

Finally, industry has found that certain policies and procedures and particular attitudes on the part of supervisory and managerial personnel may produce tensions and unnecessary overwhelming anxieties in employees. Mental health education and consultation services for supervisory and medical personnel can facilitate the recognition of emotional disturbance in employees at an early stage, as well as the concurrent development of policies, procedures, and programs dedicated to the promotion of mental health. Typically, such collaborative efforts focus on the components of stressful work situations and the way individuals cope with the anxieties which arise in response to this stress. Thus, mental health consultation services to management can provide a healthier and more gratifying work situation for both management and employees. Consultation services may

also be an effective tool in the rehabilitation of executives and employees who are suffering from the ill effects of environmental stress.

The aged. For senior citizens, once again, primary prevention makes use of its traditional tools of education, consultation, and counseling, based on the premise that intervention through social groups sponsored by community agencies, together with in-service training and consultation to welfare workers, ministers, etc., can prevent breakdown due to the stresses of aging. Frequently, these stresses are aggravated by loneliness; by a society which deemphasizes the role and usefulness of the aged; and by premature, enforced retirement and the lack of leisure time activities. In addition, almost without exception, the aged have suffered multiple object losses through the death of relatives and friends and the maturation and marriage of their children; they must adjust to cumulative role changes; and, finally, they are handicapped by the physical infirmities of old age. Inevitably, these problems will diminish their previous capacity to cope with and master stress. New methods must be developed. Golden Age clubs help with realistic problems (adequate nutrition and housing), and group projects and therapy are appropriate preventive services for the elderly which may be implemented by community centers and social agencies.

Direct Intervention

Direct intervention for prevention in the field of mental health can best be effected by the mental health intervener. The "intervener" is described in some programs as a trained professional who serves the community by intervening directly with those individuals who are considered to represent a high psychiatric risk which, in turn, requires the prior identification of these individuals on some type of registry within the community. Thus, such a registry might include a woman who suffered a postpartum psychosis following the birth of her first child and is pregnant for a second time; a college student who is under considerable academic stress and must make a decision regarding his future vocation; a child who had a particularly stormy infancy and is now faced with the impending birth of a sibling.

In such cases, the mental health intervener, or the representative of a specific mental health agency, may begin to work with the individual or significant family members or friends, to set up a network of resources to prevent breakdown. Preventive efforts may take the form of counseling, education, or early treatment. Obviously, this approach differs from early detection and intervention in cases of demonstrable illness, for it involves predictive judgments which are based solely on the individual's previous maladaptation to stress. Moreover, close community collaboration is required for the identification of this potential patient population. Presumably, teachers,

policemen, attorneys, etc., would refer such an individual to an intervening agency or provide the intervener with information which would permit him to approach those in need of his services directly. In any event, this is a new concept which requires a highly sophisticated network of communication.

It also requires a benignly aggressive approach on the part of the intervener who must seek out and deal with individuals in culturally and economically deprived groups who are frequently poorly motivated for treatment. Yet, a number of sociological and epidemiological studies have established conclusively that there is a higher incidence of suicide, delinquency, and mental illness in socially disorganized areas. One possible explanation for this finding is that individuals who live in disorganized communities and are unable to develop effective living techniques are unaware of the care-taking and helping agencies within their environment. Consequently, mental health and social agencies must themselves seek out and approach these individuals to provide the intervening help which will diminish their emotional and social disorders.

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46.2 SECONDARY PREVENTION

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Secondary prevention may be defined as the early identification of disease and disorder, which, of course, is a prerequisite for prompt treatment. This section will attempt to explore those measures which are currently believed to facilitate such identification. For purposes of this discussion, the term "disease" is used to refer to pathophysiological conditions which arise from "impersonal" processes. In contrast, the term "disorder" is used to connote those disturbances of function which result from intra- and interpersonal conflicts. As pointed out elsewhere in this volume, diseases and disorders are frequently

both coexistent and interrelated, but their differentiation, particularly in children, is often important.

Infancy and Early Childhood

Psychophysiological disturbances of infancy and early childhood present unique opportunities for early identification of later more intractable psychological disorders and irreversible pathophysiology. Several authors, Stewart et al. and Escalona and Leitch among them, have demonstrated that sleep and feeding disorders and the colic of infancy may be a prelude to more severe disturbance in later life. The various factors which combine to produce chronic disturbances in sleep and feeding patterns and colicky crying in infancy may include the seeds of a seriously impaired mother-infant relationship. And this variable may emerge with greater clarity at a later stage of development as the crucial etiological factor in the genesis of autistic behavior, severe obsessive-compulsive or phobic symptoms, or marked physiological dysfunction.

In light of these findings, a number of contributors to Caplan's *Prevention of Mental Disorders in Children* have suggested that the diagnostic significance of these early symptoms, in terms of their relationship to future psychological or physiological dysfunction, can best be evaluated by close observation of the mother-child interaction. Thus, several investigators have recommended that the community mental health worker establish a relationship with the mother which will permit a clear assessment of her reactions to the pregnancy and the subsequent presence of the infant; the extent to which the care of the infant appears to drain her energy; the effect of the presence of the infant on her relationship with her husband; and, finally, evidence of underlying postpartum depression. The accounts by Levy and Call of their experiences in a well baby clinic demonstrate conclusively that psychotherapeutic intervention, where indicated, can be very effective at this stage. Such psychotherapeutic efforts may be relatively unsophisticated. For example, the worker's willingness to listen to the mother, his empathy and supportive concern, may play a significant role in the alleviation of the baby's disturbance. On the other hand, the worker may attack the problem directly and simply inform the mother that increased cuddling, tender handling, and playful stimulation may reduce the baby's disturbance. He may even demonstrate these techniques. In either event, the approach is task-oriented; it does not focus on maternal psychopathology and deep interpretation; and in this setting, with this patient population, it has proven most effective.

Psychophysiological disorders. The etiology and the specific mechanisms which underlie psychophysiological disorders in infancy and childhood are dis-

cussed elsewhere in this volume. This section is restricted to discussion of their early recognition and prompt treatment. The occurrence of eczema, asthma, gastrointestinal problems, and other psychophysiological disorders can frequently be related to the arousal of anxiety in the child. And again, most frequently, such anxiety is precipitated by an acute situational problem within the family or alterations or strains in the child-parent relationship which, in fact, are due to increased parental tensions and conflicts. Several contributors to the symposium on the *Prevention of Mental Disorders in Children*, cited earlier, contend that once the emotional aspects of psychophysiological disorders have been delineated and differentiated from increased exposure to antigens and other physiological stress, it is possible to reconstruct the history of the psychophysiological disorder and the nature of the stress which precipitated it. Once these data are available, they may serve to underscore the need for prompt psychological treatment, as a possible means of preventing irreversible tissue changes. It must be emphasized, however, that clinical experience has shown the treatment of psychophysiological disorders may prove ineffective if it is restricted to the emotional state of the child and the parent-child relationship. Rather, equally vigorous measures must be initiated for the medical treatment of the disordered physiology, including attention to allergens and desensitization, etc. In other words, all the aspects of the disorder must be attended to.

Equally essential for effective early treatment is a searching examination of the parents' anxieties regarding the child's illness and, more specifically, their parental responsibility to take whatever action may be necessary to alleviate the child's discomfort. For example, the failure of parents to administer medication promptly at the first signs of an asthmatic attack and their subsequent intense guilt when the full blown attack requires heroic measures may be considered from several perspectives. However, the efforts of the community mental health worker will be most effective if his attention is directed to examination of the parents' indecisiveness. Obviously, helping the parents to act promptly at the first sign of an exacerbation of the disorder is an important preventive measure. The child's well-being is the primary consideration. Thus, whatever the underlying causes of the parents' indecisiveness, whether it is caused by their conflicts with each other or disturbances in their relationship with the child, they must learn to put these aside, so to speak, to act on the child's behalf and thereby reduce the frequency and severity of episodes of asthma, eczema, cyclic vomiting, diarrhea, diabetic coma, and insulin reactions, etc. Often, detailed instructions about the action to be taken at the onset of the first symptoms, together with strong emphasis on the importance of prompt intervention, helps parents to recognize their

failure to note the early signs of onset of an episode, although they are well known. When the parent learns to behave appropriately early in the course of the child's psychophysiological disorder, he may function as a more effective parent in other situations, as well. In addition, his more constructive attitudes toward the child may correct some of the distortions in the parent-child relationship and even reduce his conflicts with the other parent.

Finally, mention should be made of the fact that the mental health workers on the staff of child psychiatric and pediatric centers which concentrate on the treatment of psychosomatic disorders have been impressed by the fact that evidence of a possible etiological role of psychological factors in the onset of the first few episodes of a psychophysiological disorder is frequently dismissed as only accidental or incidental. And, since the implications of disordered child-parent relationships are not recognized, they are not considered to require evaluation and careful investigation.

Psychological disorders

Neurotic disorders of infancy and early childhood. Severe neurotic disturbances are the emotional disorders encountered most frequently in infancy and early childhood. Furthermore, their early treatment and identification may play a crucial role in the prevention of impaired function in later years. The etiology, symptomatology, psychodynamics, and treatment of these syndromes are discussed in detail elsewhere in this volume. Above all, the early recognition of a neurotic disorder depends on the awareness of psychiatrists, pediatricians, public health nurses, etc., that the persistence of any aberrant behavior which clearly impairs the living and learning process of an infant or young child has potentially serious import. Thus, the problems which are commonly associated with sleeping, eating, crying, inappropriate fear reactions, head banging, head rolling, and withdrawal become important when they persist and begin to interfere with the child's development. Obstacles to the child's ability to fulfill his developmental tasks of exploring his environment, forming relationships, learning to his capacity, and adapting to family and societal norms merit prompt attention. Again, if, because of his atypical behavior, the child requires an inordinate amount of time and attention from the parents or parent substitutes, investigation is in order.

As mentioned earlier, the etiology of neurotic disorders in childhood has been discussed elsewhere in this volume. However, a brief example of the role of parental attitudes in precipitating such disorders, viewed from the perspective of community psychiatry, is relevant in this context. Parents' concerns about bowel and bladder training may, on the one hand, simply indicate their desire to be rid of the messiness and trouble which is a concomitant of

child care. But, on the other hand, when such excessive concerns are coupled with a picture of chronic constipation in the child, bowel retention, and fecal dribbling and smearing, they may have more serious implications; at the least, careful observation is indicated, and prompt therapeutic work with the child and his parents is highly desirable. Most often bowel difficulties in the child reflect the anxieties of young, inexperienced parents who are reluctant to exercise their parental prerogatives by being explicit in their expectations and firm in their handling of bowel training. Often, these parents are immature and irresponsible in many areas and need to be helped to accept the adult responsibilities for which their own childhood and adolescence has ill prepared them. In other instances, the same symptoms result from severe and hostile rejection of the child by very emotionally disturbed parents.

Excessive, irrational fears; obsessive-compulsive behavior; and demands for invariable sameness of routine, with panic when there is even a minor change in this routine, are indicative of the presence of potentially serious emotional problems. The child's fears of the noise of airplane engines, flushing toilets, elevators, sudden loud noises, and strange faces, at which times he cannot be reassured or comforted by the parent, may indicate the presence of similar fears and massive anxieties in the parent, which have been transmitted to the child, or they may represent a defensive reaction on the part of the child to his traumatic relationships with adults.

In the 2- to 4-year-old child, the failure to develop verbal skills and the inability to communicate on a verbal level may be the first indication of emotional conflict. Verbal communication is, of course, the essence of human interaction, and children usually learn to speak at this age. Therefore, developmental deviations in this area may reflect interpersonal problems or organic impairment. In any event, this problem requires prompt investigation, correct diagnosis, and appropriate remedial measures, to avoid the more serious sequelae of communication difficulties.

Psychoses of childhood. The reader is referred to the detailed discussion of autism and other childhood psychoses elsewhere in this volume. This section is restricted to delineation of those symptoms which are believed to be diagnostically significant. There is general agreement that the treatment of these serious disorders must be undertaken early and that intensive and all encompassing therapeutic efforts are required. Warning signals of the possible presence of a psychotic process include the child's withdrawal into a world of his own, with concurrent isolation from adults and peers; self-gratification through continuous sensual activities of rocking, twirling, and masturbation; failure to learn to speak, or the loss of speech after it has been learned, or the use of speech for idiosyncratic purposes, rather than com-

munication; sleep disturbances and severe feeding problems; ritualistic obsessive behavior which interferes with play and learning; hostile, aggressive, assaultive behavior, without apparent provocation; and many other symptoms.

Such children may require treatment in a residential setting; at the least, treatment should be provided within the therapeutic milieu of a day care center or preschool program. Moreover, treatment of the child should be coupled with treatment of his parents. Apart from the fact that the parents of such a child frequently present serious intrapsychic problems, on a more concrete level, they need help if they are to be able to live with and manage a psychotic child. In this connection, it has been the experience of a number of treatment centers that parents may learn a great deal by watching "experts" work with their child and handle his deviant behavior. At the same time, their own efforts to help the child, under the guidance and supervision of skilled personnel, may help them to function more effectively in this very difficult role.

Mental retardation. The mentally retarded child whose behavior is very disturbed—and disturbing—and who functions at a level below his limited capacities requires the same treatment measures prescribed above for the psychotic child. Here, too, the parents require considerable support and help with their feelings of guilt, as well as assistance in their efforts to manage their child at home. In these instances, actual task-oriented demonstration and appropriate follow-up have proven helpful in reducing disturbances in the behavior of the mentally retarded child and improving his functioning.

The School Age Child

Signs of emotional disturbance. Much of what was said earlier with regard to the early diagnosis and treatment of emotional problems in infancy and early childhood applies to the school age child as well. However, there are important differences in diagnostic criteria. At this age, the child's primary developmental tasks are learning and the acquisition of knowledge and of specific educational skills in school; concomitantly, serious interferences with learning are of real concern.

Most frequently, such learning difficulties are associated with the aggressive, the hyperactive, the withdrawn schizoid, and the sullenly apathetic child. But when a child presents such problems, diagnostic efforts must be both extensive and intensive, for their actual cause may not be readily apparent. To illustrate, a withdrawn, schizoid, 8-year-old girl was frightened of her classmates, could not retain information, and was unable to master even the simplest aspects of reading. On superficial examination, the presence of psychopathology seemed self-evident. In fact, however, this child had a serious thyroid deficiency. After she had received proper treatment,

she became an alert, interested student, whose serious learning impediment had magically disappeared. Similarly, the hyperaggressive child may be organically impaired, or he may have a neurotic behavior problem. And there is a third possibility: he may be a psychosocially deprived child, whose poor preparation for learning and consequent history of school failures have resulted in frustrated, angry behavior.

Treatment. Obviously, the treatment of the child must be based on etiological factors. In addition, however, parents must be helped to recognize their responsibility toward such a child. If remedial efforts are to be successful, parental cooperation is essential, and this will often include their willingness to accept specific suggestions about the handling of the child. Finally, the worker's efforts with child and parents must be of sufficient duration; that is, the therapeutic relationship must continue beyond first indications of an alteration in the child's behavioral and learning problems until their final amelioration.

Often, aggressive, antisocial behavior in school is reduced once the child is no longer frustrated by his inability to learn. A number of educational measures may serve to increase the child's learning capacity. For example, the use of small classes, so that each child receives more individual attention; the use of a wide variety of sensory and motor modalities in the teaching program; and, in general, increased stimulation to broaden the child's cultural horizons and interests have proven effective in this connection.

The foster child. Early diagnosis and treatment of emotional disturbance and concurrent learning difficulties in foster children and in children in institutional settings has received a good deal of attention in recent years. These children frequently manifest apathy and indifference, on the one hand, and an impulsive, conscienceless drive for gratification on the other. Either symptom complex, or both, should alert educators, physicians, and psychiatrists not only to the need for individual treatment, but for a variety of restitutive experiences with groups of children, and with adults who care for them as well. Arsenian has pointed out that, whatever their age, these children require the kind of experience provided in the preschool program for socially and culturally deprived youngsters. This program emphasizes concern for the well-being of the individual child; as such, the program provides a wide variety of stimuli, and each child receives constant, consistent help until he experiences satisfaction in the learning process. Arsenian's study of a group of children and young adolescents from inadequate foster homes presents conclusive evidence of the efficacy of this approach.

The Adolescent

Signs of emotional disturbance. The emotional turbulence which characterizes adolescence presents

special difficulties in early case finding and treatment. The ever present problem is differential diagnosis. The worker must be able to discriminate between an actual disorder requiring treatment and an exacerbation of "normal" adolescent turmoil. The treatment of adolescents may also present special difficulties. Thus, the diagnosis and treatment of emotional problems in this patient category merit careful consideration and are discussed at length elsewhere in this volume.

Although this may be true of the younger child as well, in adolescence, sudden changes in the usual behavioral and learning patterns are particularly significant and should be investigated. Intercurrent family stress often results in fairly rapid alterations in behavior and learning. Thus, when the good student, one without prior behavioral difficulties, begins to do poor work or act up in class; when the aggressive, teasing student suddenly becomes quiet and withdrawn, some inquiry is in order. Often, such abrupt changes in behavior are initiated by death in the family, divorce or separation of parents, birth of a sibling, father's unemployment, or the serious illness of a family member. In any event, early recognition of the behavioral change and efforts to find out its cause may be important for the prevention of future disorder. The youngster or adolescent who finds someone he can tell his troubles to, who may even help him when he feels alone and helpless, may quickly recover his equilibrium. When a helping adult is not available in periods of crisis, the disturbed behavior may continue. The feelings of helplessness and aloneness may then give rise to a variety of inappropriate efforts to restore equilibrium, which, in fact, are intended to "advertise" the adolescent's distress. If they persist, unrelieved, over a period of time, these deviations may finally become "set" as enduring maladaptive behavior.

A 15-year-old boy who was usually very truculent and defiant suddenly became quiet and depressed. His teacher's inquiries led to a surly "mind your own business." However, his involvement in several gang fights, which represented a new activity for him, led to his counselor's persistent efforts to discuss his sudden behavioral changes. After several weeks, the boy told the counselor, with much emotion, of his mother's death, his father's unabated drinking, and his concern for his younger siblings who were turning to him for guidance, help, and many parental decisions, for which he felt he was unqualified. With the counselor's help, homemaker services were provided, there were several conferences with the father, and the boy was persuaded to continue his counseling interviews. His fighting and depression abated promptly. As he continued to be aware of the counselor's support, he also became less truculent and difficult in class and more interested in learning.

Thus, in this case, a family crisis which impinged on preexisting psychopathology provided an opportunity for early intervention and prevention of a potentially serious disturbance. In addition, this crisis served as a therapeutic "springboard," which furthered the boy's total integration. In this sense, the crisis states of adolescence provide a variety of thera-

peutic opportunities. For the patient is helped not only to cope with an immediate crisis, but to resolve previously troublesome and maladaptive behavior patterns.

The adolescent's overwhelming sexual urges, his search for identity, and his ambivalent desire for closeness and independence make for potential violence. Some authors have stressed the fact that the antisocial behavior which is so common during this stage of development may be a defense against depression. Actually, once again, the first recognizable signs of such depression often take the form of sudden changes in social behavior. Thus, signs of imminent decompensation may be manifested by shifts from socializing with "well behaved" old friends and a good deal of athletic activity, to running with a delinquent gang; from a tendency toward isolation, to very gregarious, almost manic social activities; or, conversely, from a full social life, to complete isolation and intense preoccupation with one activity. Studies of suicide in adolescence emphasize the importance of these mood swings as indicative of emotional disturbance. Such sudden alterations of behavior may also indicate an incipient schizophrenic breakthrough, especially if the patient is excessively preoccupied with religion, or if he identifies with unpopular political or socioeconomic causes, to the degree that his activities include regular attendance at the meetings of lunatic fringe groups. However, the implications of a radical alteration in an established pattern of behavior may be more subtle. For example, one adolescent, who had previously demonstrated a complete lack of concern with science, suddenly developed an intense interest in chemistry. Although this new interest seemed commendable at first glance, investigation disclosed that the youngster was convinced that his chemistry set held the answers to the nature of living matter; once he had these answers, he would be able to save civilization.

Of singular importance is a sudden change in adolescents from conforming behavior (which includes a normal amount of truculence, argumentativeness, and loss of temper), to outbursts of uncontrollable and violent rage. In several instances, such sudden shifts have preceded violent psychotic episodes. In one case, where the sudden change to uncontrolled violence was detected early and led to hospitalization, it became apparent that the patient was potentially capable of murderous assault on his father. Retrospective studies of adolescents who murdered their parents have highlighted these sudden behavior and mood swings.

With the blossoming of secondary sexual characteristics, young girls who had little parental closeness and warmth in early childhood and have few friends or social contacts acquire an important weapon which may facilitate their search for closeness. Specifically, their provocative sexual behavior serves to give them the feeling of being wanted, albeit by

boys, and solely for sexual activity. Ideally, the school faculty will be alert to such unconscious attitudes and their expression through radical changes in behavior. Typical danger signals, such as an abrupt change in previous levels of scholastic performance and a shift in the adolescent's previous eagerness for the good opinions of favorite teachers, may be the forerunners of sexual acting out and pregnancy. One school has organized special groups for these youngsters, under the supervision of skilled group leaders. The members of these groups do achieve the closeness they yearn for, with both their peers and the group leader; this closeness derives from their joint efforts to explore and resolve their common problems. The community has benefited from this innovation as well, for there has been a conspicuous reduction in the number of unwed mothers who attend this high school.

Delinquent behavior. One cannot leave the problems of adolescence and their implications for secondary prevention, without brief reference to antisocial, delinquent behavior. Antisocial, delinquent behavior is usually attributed to sociocultural factors, i.e., to slum environments and the distorted values of the subcultures such environments breed. Clinical experience has shown, however, that this type of deviant behavior cannot always be correlated with socioeconomic deprivation. The delinquent behavior of an "advantaged" youngster may stem from mounting intrafamilial tensions, in which event prompt intervention with the parents, as well as the delinquent child, is essential. Some authors consider family therapy the treatment of choice in such cases. The work of the Children's Hospital Child Guidance Clinic in San Francisco is notable in this regard. The results of forced, i.e., court-ordered, family therapy in other settings have also been promising. In fact, prompt psychiatric referral by the courts and the subsequent collaboration of officers of the court and psychiatrists or members of ancillary professions are vital to the prevention of future antisocial, delinquent behavior. Ideally, however, the prevention of antisocial behavior in adolescence will begin with the school age child. According to Bower and Glueck and Glueck, the data collected by several school systems in the service of secondary prevention clearly indicate that impulsive, aggressive behavior, learning blocks, and a refusal to conform to school and classroom rules and regulations noted in the first three grades of school are excellent predictors of future antisocial, delinquent behavior in junior and senior high school. These findings underscore the importance of early diagnosis of impulsive character disorder in the child and/or disturbed family relationships; efforts to work with the child and his family at this point may prevent further disorder, intractable delinquency, and criminal behavior.

The pathological antisocial behavior described above must be differentiated from occasional anti-

social escapades and assertiveness. Joy riding in the family car may be distressing for parents and the community. However, it does not necessarily reflect an underlying emotional disturbance. That is, these occasional acts of rebellion do not usually become a way of life, and the major source of satisfaction and gratification.

Finally, special reference should be made to the type of antisocial behavior which has a sudden onset and then becomes increasingly serious, in which the adolescent deliberately leaves clues establishing his guilt, or performs acts of flagrant provocation. These youngsters want and desperately need to be stopped by their parents or by the authorities. In several such cases, this behavior was clearly part of a schizophrenic process which yielded to prompt hospitalization, therapy for the patient, and family therapy. Treatment focused on helping all the family members to understand why the repeated hints and clues given by the adolescent were not "picked up" and acted on by the parents or older siblings and also the nature of disturbances in family communication which prevented the adolescent from expressing his problems and needs directly.

Secondary Prevention in Adult Life

Signs of psychological decompensation. Evidence of psychological decompensation in the adult, which may result in severe depression, suicide, or psychosis, often emerges most clearly in association with life crises and concomitant changes in established patterns of behavior. As pointed out elsewhere in this chapter, parenthood may present one such crisis, especially if an unwanted child arrives at a critical point in the life of a family. In any event, parenthood will inevitably require some changes in the life style of the father as well as the mother. In addition, job changes, a move from one community to another, or the loss of parents, spouse, or other supportive adults may prove to be crucial events which lead to decompensation.

Awareness of the signs of incipient decompensation permits intervention, if they are understood and heeded. Therefore, such awareness is of crucial importance for the family physician, as well as the psychiatrist. Similar signs have been described as precursors of psychophysiological disorders, specifically asthma, peptic ulcer, arthritis, and ulcerative colitis. In general, these signs include acute dissatisfaction with one's work and way of life and the deterioration of integrative relationships. While they may appear similar at first glance, these manifestations are very different from the chronic griping which for many individuals constitutes a means of adapting to or coping with difficult or unpleasant situations. The signs of dissatisfaction which have serious diagnostic implications carry with them an underlying feeling of hopelessness with regard to the

individual's ability to solve his problems and the conviction that the future holds no promise.

Some authors have noted, in particular, inability of such adults to gain relief from their overwhelming feelings of depression and dissatisfaction through the activities or forms of recreation which they had found most enjoyable in the past. Repeated statements, over a prolonged period of time, that everything is flat, tasteless, and without zest are typical of this patient population. Recurrent, irreducible feelings of guilt about someone's death or illness or chronic anger and hatred toward a particular person in the family or work environment also carry with them the possibility of incipient and serious illness, especially when these feelings are related to crises and changes in life patterns. Some investigators contend that when psychological decompensation is suspected, it is better to err in the direction of unnecessary investigation and involvement of family members in treatment, than to wait in the hope that such feelings will pass. Many authors have also pointed out, in this connection, that an abrupt change in the patient's behavior, whereby pessimism and dissatisfaction give way to sudden optimism and gaiety, is not cause for therapeutic optimism but may, in fact, be a sign of impending suicide or a break with reality.

Psychological hazards of the climacteric. Obviously, the climacteric carries such hazards for both men and women. The feelings that one's life work and productivity are at an end, that one is no longer needed or wanted, attractive or desirable, are all potential precipitating factors of decompensation. The depression which accompanies the climacteric is a common phenomenon in women and has been described at length in the literature. A number of investigators have also made specific recommendations as to how women in this age group can be helped to feel useful and important after their children are grown. Much less attention has been paid to the effect of the climacteric on men; yet they have similar reactions, i.e., that their productive years are drawing to an end. The depression evoked by such feelings, preoccupation with somatic complaints, and paranoid feelings toward younger friends and co-workers need to be attended to promptly, for they are possible precursors of serious depression.

Many incompatible married couples are held together solely by their joint efforts to raise their children. Once the children are grown, some of these men and women are tortured by the feeling that they have sacrificed their own need for closeness, tenderness, and companionship in vain, for now their lives are without purpose. Such feelings may lead to acute decompensation. Severe depression, schizophrenic breaks, and, in several cases, manic episodes, have occurred at this juncture in the lives of both women and men in their middle forties. In these patients the preexisting psychopathology which was previously controlled or

sublimated in work and in the service of the family has now erupted with overwhelming effect. Retrospective evaluation of these patients has also disclosed that here, too, there were signs of incipient serious decompensation in the form of acute and continued dissatisfaction with everything and everyone in the environment. Sometimes, the patient sought to escape from reality by grandiose, and completely unrealistic, plans for the future.

After reduction of the acute process, clinical reports indicate that the use of combined individual and conjoint therapy is the most effective therapeutic approach in these cases. When it has been successful, therapy has focused on the realities of the present situation and marital relationship. This often permits each partner to verbalize, for the first time, what he (or she) wants and needs from the other. With the help of the therapist, they can proceed from this point to consideration of how these needs and desires can be met in the existing relationship.

Secondary prevention of psychophysiological disorders in adults. The investigations of Rosenman and Friedman of coronary occlusion have important implications for prevention and early intervention in psychophysiological disorders. These authors postulated, on the basis of their research findings, that those individuals who are driven to meet schedules, who are constantly pushed by their need to be perfect and above criticism, have a much higher incidence of coronary arteriosclerosis and coronary heart disease than others who do not manifest these characteristics. These individuals are unable to relax, to use recreation to renew themselves. Of particular interest are those studies which hypothesize that coronary occlusion may occur when an individual is under intense competitive pressures, when these feelings have been preceded by self-doubt, i.e., the conviction that he is no longer able to keep up with younger, brighter men, that he has lost his drive and alertness. He may be so drained by the pressure of competition that he is quite unable to marshal and use his accumulated knowledge, experience, and wisdom effectively. Consequently, he feels compelled to rely on increased output, to "perform," and to be well thought of. These signs become particularly significant when they follow major job changes or changes in residence. Thus, these investigations have important preventive implications for business and industry, in that they facilitate the more efficient use of manpower. In addition, of course, the psychiatrist's early recognition of the signs of incipient psychophysiological disorder and his prompt intervention may help these individuals to retool, so to speak, so that they may make more effective use of their capabilities and experience.

Secondary Prevention and the Elderly

Signs of psychological decompensation. With the passage of time, the senior citizen in our highly

industrialized technical society has grown progressively less productive and useful. Even in the sciences it is felt that most of the important discoveries will be made by scientists before they reach the age of 40. Thus, retirement and old age carry with them the psychological burden of uselessness; in addition, however, the elderly are frequently forced to enter new areas of work and recreation, in which they have had no prior training or experience. This sense of uselessness, in combination with the inability to derive satisfaction from life and a consequent lack of purpose, is considered by many workers to represent a crucial precipitating factor in the senile psychoses and in less serious symptoms, such as overreaction to somatic symptoms which, in fact, are neither serious nor disabling, and a preoccupation with the past which often precludes forming new relationships and adapting to a new way of life.

Secondary prevention and early intervention into the decompensating illnesses of old age seem to center around awareness of this frequent combination of events. The obvious goal of such intervention is to help the elderly to feel wanted, useful, and important to their families and the community. In light of this therapeutic prescription, it becomes easier to understand why the communities which have been established for the elderly represent a glaring failure of our efforts on their behalf. The senior citizen who resides in such a community is surrounded by others with whom he may have nothing in common apart from old age, ill health, and unhappiness. The fact that only recreational activities are provided to give his day purpose further underscores the inadequacy of this program. In marked contrast are those programs where the particular skills and talents, often latent, of the aged are mobilized and utilized by skilled group workers, to give the elderly a sense of purpose and worth. Perhaps the most encouraging examples of this approach are the programs which have been established in several homes for the aged where each newcomer is involved in a variety of community activities by a "reception committee" in the home. Because the members of the committee have lived through experiences similar to those the newcomer must now face, they can verbalize their awareness of his feelings. Through constant attention and preceptorship, they can then help the newcomer to find activities in the community which, for him, carry status and a sense of contribution. The members of the reception committee, in turn, feel that through their activities they have made a vital contribution to the community. Furthermore, in their efforts to help newcomers explore possible areas of interest, they, themselves, become involved in activities which are an unsuspected source of satisfaction. The costume designs of a retired insurance salesman for the twice-yearly drama productions at one home have been so good that the directors of some little theatre groups have come to him for help and advice. In another

home for the aged, for the most part, only residents with more serious complaints report at sick call; hypochondriasis is infrequent because most of these elderly people are reluctant to miss their daily activities.

Feelings of loneliness and isolation represent the most serious cause of acute decompensation. In terminal illness, the old person is frequently left alone and provided with impersonal nursing care, so that there is no sustaining and comforting concern for him as an individual during these painful and frightening hours and days. One of the most important committees in the homes for the aged described above, whose members are chosen for their stability and capacity to express their compassion and support, is the committee that visits the sick. In addition, the nursing staff has learned enough about each individual patient under their care to make him feel that he is really the object of their concern. The fact that the surgical staff does not hesitate to nail a broken hip in an 80-year-old man or woman, or to do other major surgery which in other institutions and hospitals is frequently fatal, is further evidence of the degree to which efforts are made to provide both physical and emotional comfort and support for these old people.

This discussion attempted to point up some of the vital ingredients of secondary prevention. It must be emphasized, above all, that early awareness and diagnosis of emotional disturbance and the efforts at early intervention express an implicit concern with the well-being of the individual of any age and a hopeful attitude that appropriate treatment and restitutive efforts will help to restore his equilibrium or enable him to develop more effective modes of adaptation in the future.

Suggested Cross References

For more detailed information regarding the diagnosis, clinical features, etiology, and treatment of the disorders mentioned in this section see Chapters 42 and 41, which deal with the psychotic, neurotic, and psychophysiological disorders of childhood, and Area F, which deals with these psychiatric disorders in adults. Primary and tertiary prevention of psychiatric disorders are discussed in Sections 46.1 and 46.3.

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46.3 TERTIARY PREVENTION

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Definition

By definition, tertiary prevention, as one aspect of the application of psychiatric principles within the larger setting of the community, addresses itself to the task of reducing the rate of defective functioning caused by mental disorder. Within this frame of reference, however, tertiary prevention would be considered to encompass all of psychiatry, or, more accurately, the life process itself, for the mental health status of a community at any given point will affect—and be affected by—its child-rearing practices, social attitudes, and every phase of its social and psychological life. For obvious reasons, this broad definition precludes precise discussion of the principles of tertiary prevention; consequently, the term is generally used in a more restricted sense. Gerald Caplan, for example, has limited the goal of tertiary prevention to “reducing the residual defect... which continues after the mental disorder has ended,” and has further defined “residual defect” as the individual’s “lowered capacity to contribute to the occupational and social life of the community.”

Implicit in this restricted definition is the crucial role of rehabilitation services which seek to enable the ex-patient to function with maximum effectiveness as promptly as possible following hospital dis-

charge. Since these services are particularly important immediately following hospitalization (i.e., during the "after-care" period), technically, they would be considered a continuation of therapy. However, it is the rehabilitative aspect that gives meaning to any therapeutic after-care service, whether it is provided in an out-patient clinic, a day or night hospital, or any other setting.

This section will confine itself to a discussion of tertiary prevention in this limited sense and, as such, will focus on issues pertaining to the rehabilitation of individuals who have recovered from the acute phase of their mental illness. At the same time, it is, of course, readily apparent that some of the elements which determine level of functioning after the cessation of a mental disorder may long antedate the actual onset of the disorder and have their origins in the individual's early psychosocial development. There is a tendency among some workers, based on such considerations, to disparage tertiary prevention and emphasize primary prevention instead. Certainly, the essential value of primary prevention in terms of the welfare of the individual, as well as the community, cannot be disputed. Nor is there any doubt that our efforts should be directed—first and foremost—to the implementation of the principles of primary prevention. However, this in no way diminishes the importance of tertiary prevention. While primary prevention may remain the principal focus of our activities in the field of community psychiatry, our efforts in the area of tertiary prevention must not lag: we must continue to apply present day knowledge, which is considerable, in order to provide services which will further reduce the rate of residual defect following acute mental illness. There is no question of the validity of Caplan's comments in this connection. He has pointed out that our knowledge of rehabilitation techniques for psychiatric patients has advanced considerably. Yet, "in this country we are only in the earliest stages of utilizing this knowledge and planning programs for that large-scale reduction of residual defects which is the essential ingredient of tertiary prevention." It has become increasingly evident that we cannot hope to achieve this goal or reduce the hard core of chronic patients who continue to deplete the community's resources unless we establish rehabilitation and after-care services of the highest quality.

Guiding Principles

If it is to be successful, a tertiary prevention program must fulfill certain basic prerequisites. First, such a program must, above all, reflect the central underlying proposition of tertiary prevention, namely, that planning for rehabilitation must begin with the onset of mental illness. Furthermore, thereafter, it must be inextricably intertwined with every facet of patient care throughout the diagnosis, treatment, and after-care.

Second, a tertiary prevention program must strive to ensure continuity of responsibility for patient care. More specifically, provision must be made for the care of the mentally ill patient at every stage of his illness—not only during the period of hospitalization, but during the transitional period immediately following hospitalization, and even after the patient has resumed his former role in the community. It is generally recognized that no matter how effective an in-patient treatment program may be, it is unlikely that the patient will be able to maintain his therapeutic gains after discharge from the hospital unless adequate follow-up services are provided. Yet, all too frequently, at various stages in the course of his illness the psychiatric patient is enrolled in different treatment programs sponsored by different agencies which make little attempt to coordinate their efforts to fulfill his individual needs.

Third, the effectiveness of a tertiary prevention program will depend, in large measure, on whether adequate precautions have been taken to guard against the "desocialization" of the hospitalized patient. In fact, the alienation which is a frequent concomitant of hospitalization has, quite justifiably, become an important focus of psychiatric concern within the past 2 decades. All too often the patient returns to the community after he has been discharged from the hospital only to discover that in his absence his family, as well as the community, has "closed ranks" against him. The consequences in terms of the patient's future progress are self-evident. In the past 20 years, too, various techniques and principles have been developed which seek to avoid—or, at least minimize—the "desocialization" which is an intrinsic element of all mental illness.

One such "remedy" immediately presents itself: "desocialization" can be avoided and rehabilitation facilitated by keeping the patient out of the hospital. This is not always possible, of course. However, through the development of community services (e.g., walk-in clinics, out-patient treatment facilities, and social work agencies), that is, the establishment of effective secondary prevention programs, the need for hospitalization can be eliminated completely or the actual period of hospitalization shortened significantly, in a large number of cases.

For another segment of the patient population, the home care programs which have been initiated by several hospitals represent a possible alternative to hospitalization. These programs provide for the treatment of psychiatric patients in their homes by ancillary personnel—e.g., public health nurses, occupational therapists, clinical psychologists, and social workers—under the supervision of the hospital psychiatrist. Apart from its value in reducing the sequelae of alienation, the home care program has important "administrative" implications. For one, a larger number of hospital beds become available for those patients whose illnesses are more severe. Sec-

only, it presents one possible solution to the serious problems posed by the current shortage of professional personnel in state institutions and general hospitals alike, which has become a matter of increasing concern. When the hospital psychiatrist is able to delegate some share of his responsibility for patient care to members of the ancillary professions, his services can be used to greater advantage.

Other innovations developed within the past 20 years are described in greater detail below as "rehabilitation resources." Ex-patient clubs, halfway houses, etc. serve not only to facilitate the rehabilitation of the psychiatric patient, but also to help prevent his rehospitalization. Similarly, the use of day hospitals, night hospitals, etc. may obviate the need for full time hospitalization and thus enable the patient to maintain his ties with the community.

Various techniques are employed to foster socialization in those patients for whom there is no alternative to full time hospitalization. These include ward meetings and discussions, group recreational activities, etc. In brief, the principle of the therapeutic community is generally recognized as a valid approach to the treatment of the hospitalized psychiatric patient, insofar as it reduces the residual defect which is an inevitable consequence of the patient's separation from society.

Finally, two well established principles central to the philosophy of community psychiatry must be mentioned in any discussion of procedures which seek to counteract the effects of "desocialization." Both propositions have met with increasing acceptance over the years, so that today they are applied almost automatically. The first of these refers to treatment of the psychiatric patient⁶ within the community, i.e., in the general hospital, whenever feasible (as opposed to his admission to a mental institution which may be many miles from his home and family).⁶ The second related proposition is concerned with the advantages of short term hospitalization (and subsequent treatment on an out-patient basis), as opposed to long term hospitalization. Clearly, the application of these fundamental principles is basic to any program which is designed to circumvent the ill effects of alienation.

Rehabilitation Services

Definition. In the strict sense, the purpose of rehabilitation services is to help the psychiatrically handicapped individual to achieve as high a level of adjustment as is possible on his return to the community following treatment. It is understood, however, that the level of functioning in any given case may be limited by the residual disability which persists despite all efforts. Accordingly, Bertram Black has extended this traditional concept of rehabilitation to include educational procedures and various forms of environmental intervention which are di-

rected primarily toward those individuals who, because their psychiatric disability had its onset early in life or was constitutional or genic in origin, had not had an opportunity to function normally in the community previously. Black has described such efforts, appropriately, as "habilitation" services.

History. With the exception of a few isolated efforts, for all practical purposes, no formal, community-based psychiatric rehabilitation programs had been established in the United States prior to 1950. Black has listed the rehabilitation resources which have been established in the United States in the years since in chronological order as follows: (1) ex-patient clubs; (2) day hospitals, night hospitals, and week-end hospitals; (3) foster home care, halfway houses; (4) rehabilitation services for the world of work; and (5) rehabilitation centers.

Ex-patient clubs. The great majority of the ex-patient clubs in existence today are sponsored by the administrative staff of the mental hospital or clinic with which they are affiliated. However, the original impetus for the organization of this type of facility came from the ex-patients themselves. While their leaders were recruited from their own membership rosters initially, today, to an increasing extent, they are administered by professionals from various disciplines who are paid for their services.

The primary objective of the ex-patient club is to help the ex-patient to learn—or relearn—social skills. To this end, it provides a permissive, informal ambience, in which socialization is encouraged through organized group activity and individual relationships as well. Those in ex-patient clubs engage in a variety of recreational activities, such as dances, sports events, outings, etc. Nor are educational opportunities neglected: members may attend lectures or participate in seminar and discussion groups, for example. Whatever the scheduled activities, ideally, membership in such an organization will serve to increase the ex-patient's sense of belonging and, concurrently, to decrease his feelings of alienation. However, ex-patient clubs have had only limited success in the United States, in marked contrast to their great popularity and consequent rapid growth in England. Olshansky has analyzed the reasons for the relative ineffectiveness of these rehabilitation resources. For one, members of any given group may be expected to demonstrate marked variations in terms of diagnosis and symptomatology, which would impede the social interaction among group members that is a primary objective of the club. Secondly, ex-patients are reluctant to join such an organization because of the stigma attached to mental illness: the club would serve as a constant reminder of the period in their lives which they are most anxious to forget, i.e., the period of hospitalization. To make matters worse, to date, hospitals and clinics have maintained a relatively permissive attitude toward club membership;

that is, no attempt has been made actively to recruit suitable candidates among their former patients. Finally, Olshansky pointed out that, as a result, those ex-patients who need help most would be least likely to enroll as members. This explanation appears to be valid; however, it cannot account for the fact that the ex-patient club has received a favorable response in England under similar conditions.

The day hospital, night hospital, and week-end hospital. The day hospital, and variations of this institution, which are discussed in further detail elsewhere in this volume, may serve as after-care facilities during the transitional period following hospital discharge, or as an alternative to hospitalization.

Foster home care, the halfway house. Historically, foster home care or family care may be traced back to the care provided for mental patients by the community of Geel, in Belgium. Currently, one type of foster home care program which has been set up in the United States is designed to fulfill the primary needs of the ex-patient by letting him live with a specially selected family for a limited period of time. The principles underlying these programs are similar to those which govern foster care programs in the field of child welfare. Foster care programs have also been modified at times to provide subsidized apartments as temporary housing for psychiatric patients following hospital discharge. As a rule, such installations, which include a variety of after-care facilities, are supervised by social workers.

Halfway houses may follow a variety of patterns.* In general, these are converted multiple dwellings, located in the community, which are supervised by a member of the professional staff of the hospital or mental health agency with which they are frequently affiliated. Ex-patients live together and share facilities in an environment which resembles a boarding house. For the most part, these communities are self-governed, although this is not necessarily so. External activities, that is, recreation and work, may be undertaken on a group basis or arranged to suit the needs of the individual patient.

Rehabilitation for the world of work. Since a major objective of tertiary prevention is to increase the ex-patient's capacity to contribute to the occupational life of the community, this aspect of rehabilitation merits careful consideration. During hospitalization, vocational counseling and vocational rehabilitation services should be provided in every treatment setting. Following discharge, municipal, state, and federal vocational rehabilitation agencies should be utilized to arrange specialized job placement for ex-patients.

The comparatively recent development of sheltered workshops in this country has been noteworthy, although such programs have a long history abroad. In any event, sheltered workshops serve multiple functions. For individuals with a skill, they may

serve as way stations and help them to make the transition from the hospital to regular employment. For others, the sheltered workshop may provide an opportunity to develop new skills and appropriate work habits. And, finally, for that segment of the patient population whose residual defect is of major proportions, the sheltered workshop may provide a permanent refuge.

Rehabilitation centers. Traditionally, rehabilitation centers are concerned with the treatment and rehabilitation of nonhospitalized persons with physical handicaps. To provide this wide spectrum of services, members of various professions, with a variety of skills, are assembled under one roof. Obviously, then, the rehabilitation center serves an important community function. Its services do not extend to the psychiatric patient population as yet. However, in light of the increasing awareness that rehabilitation plays a central role in the implementation of a comprehensive community health program, perhaps it is not unrealistic to suggest that rehabilitation centers will become part of a comprehensive community mental health program within the near future.

Tertiary prevention encompasses a large number of alternative and optional procedures for the after-care and rehabilitation of the former psychiatric patient. The psychiatrist must, therefore, undertake the arduous task of *evaluating* these various resources so that he may help program planners to make appropriate decisions concerning those installations which are needed most and those programs which are most deserving of support. Undoubtedly, it will be necessary to provide a variety of services if the needs of the entire community are to be served adequately. The decision as to which resource should be used for a given patient will then depend upon diagnosis, special considerations, the availability of the resource chosen, and the nature of the community itself.

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46.4 TREATMENT OF THE IMPOVERISHED

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In recent years there has been considerable concern for consolidating, integrating, and coordinating a wide range of educational, social, and medical services to meet more efficiently and thoroughly the needs of the poor. Whether the mental health programs being thus coordinated are appropriate or adequate to deal with these needs remains to be seen. There are in fact strong indications that the usual forms of psychiatric treatment may *not* substantially benefit this group.

If traditional techniques of psychiatric treatment will not do enough fast enough for the poor, what can be done instead? Many helpful new ideas are developing through the cooperation and cross-fertilization of psychiatry and sociology. It is being recognized that many problems in mental illness can result from environmental factors. One new technique, community mental health diagnosis, is essentially concerned with an assessment of the interaction between the individual and his environment and the results of this interaction. Up to now, most attention has been given to particular dysfunctional results and the effects of the physical environment on mental health. The community mental health approach also gives consideration to the texture of the *social* environment—that is, laws, organizational policies of special treatment agencies, and the general, uncodified attitudes and values of society as they circumscribe an individual's position in his community and affect the quality of his life therein.

In poverty as in mental illness, both the *when* and the *where* of the origin of the difficulty are often hard to place. Traditionally, psychiatry has focused on the past, and social reform has focused on the present as a point of departure. Now, however, psychiatry recognizes the influence of present circumstances on present behavior; and the national poverty programs are concerned with childhood cognitive deprivation as a cause of the vicious cycle of indigence. This broadened focus puts us in a better position to deal with the complexities of poverty and mental illness and to see more clearly the characteristics of the affliction and of the afflicted. What are needed are available forms of service suited to the characteristic needs of groups of people, along with a sophisticated diagnostic mechanism capable of bringing together that service and the people it can help.

Evolution of Treatment Programs

Two points must be made at the outset. First, there are not now, nor have there been in the past, any significant mental *health* programs for the poor or for

anybody else. There are, instead, programs concerned with mental *illness* and its prevention or alleviation. The second point is that the poor as a group have been defined into attention only recently. The economically impoverished have existed throughout history, but the poor as a group having singular characteristics (other than lack of money) have not long been the target of services specifically designed to bring them into another condition.

The programs. A mental illness program implies the existence of an agency of some sort. If this were not the case, the effort would not be a *program*. A chronological survey of programed efforts would be quite short, for widespread organization of efforts to deal with the mentally ill by other than individuals—relatives, for instance—is a relatively recent phenomenon.

State hospital programs were the first large scale efforts organized to deal with mental illness in this country. The result is now generally considered to be less than adequate. Dissatisfaction with segregated confinement of the mentally ill has given rise lately to a movement to bring at least the tractable cases back into their own communities. Here they are to receive treatment from professionals, and the treatment is to be supported in some measure by the community.

In the middle 19th century, mental illness was identified as a target for curative medical treatment, and, at the same time, increasing attention was being paid to the living conditions of the lower class. These conditions, particularly in the cities, were unbearable. The main idea was not that such conditions made people crazy, but simply that cities were dirty, crowded, conducive to physical illness, and unfit for children. The foulness of the environment could in some measure be overcome by improvement of the economic position of those living in it. Social reform movements for the betterment of these conditions arose. One aim was certainly to make people happier through environmental repair.

Lately, increased attention has been given to the community specifically as a target in the treatment of mental disorder. In many programs, there is a general movement away from help given by associates or professionals on a one-to-one basis and toward assistance by progressively larger agencies. The movement toward the community mental health center program looks like a return to treatment on the local level, which is in fact where the treatment is *delivered*, but the treatment is bought largely on the federal-state level.

Current treatment programs for the mentally ill poor are focused in cities. Although the implication of the community mental health centers concept is that those in rural areas who need help, such as American Indians and hillbillies, will receive attention, the poor receiving the most attention currently are the urban poor.

The patient. Describing a population as needy has not always been to describe them as unquestionably deserving. In 1848 John Stuart Mill wrote that it required much experience to determine that the poor might be supported "at the cost of other people . . . without fatally relaxing the springs of industry and the restraints of prudence." He went on to say that this support might be given safely only "if the relief, though ample in respect to necessities, was accompanied with conditions which they disliked, consisting of some restraints on their freedom, and the privation of some indulgences."

It is now felt that the poor *deserve* many things they do not have or do not seem to be able to get through their own efforts. Among these things is treatment for mental illness. Ability to pay for this service out of one's own earnings is not to be a limiting factor in the accessibility of such service; neglect is not to be countenanced on the basis of indigence.

A "program" to care for the mentally ill poor does seem to be necessary. The affluent can buy their own services, but the poor may have to be given theirs by society as a whole. The care they usually receive is often quite unrefined, as Coles wrote:

Whereas the wealthy and the well-to-do are more likely to be treated with individual psychotherapy, purchased privately or secured at clinics which largely provide for the middle classes, the poor are usually sent to hospitals and, once there, receive the less humane treatment of electric shock or drugs.

It has been observed that the psychiatric problems of the rich are treated as medical problems, but those of the poor are treated as social problems. The problem, however, is not the relatively simple one of giving the poor services like those the affluent receive. The reason is that the poor do not, in fact, seem to be the affluent without money; that is, poverty is now seen as a syndrome having specific characteristics with other than economic implications. One such characteristic is a trend away from verbalization and toward motor activity. As a consequence of this, it may be speculated that psychoanalysis, a verbal technique, is unlikely to be successful as a treatment for neurotic disorders in poor people.

Another reason treatment programs for the poor need to be different from the traditional ones is that the types of illness from which various groups suffer seem to be related to degree of affluence. Miller and Swanson found that the poor are more likely to develop symptoms such as conversion hysteria and catatonia, which involve malfunctions of the voluntary muscles. Middle class individuals more often exhibit obsessions and depressions, which are characterized by inhibition of voluntary movements.

There is considerable difference of opinion on this point. It is unclear whether poor people get sick differently from other people or simply present a different picture as a group because their illnesses seldom receive effective attention. Then too, there seems to be considerable class bias in the diagnosis of mental ill-

ness. Mental health is practically defined as middle class behavior, which puts the lower class at a disadvantage at the outset; the *reductio ad absurdum* of this is to see poverty itself as a sign of mental illness.

It should be emphasized that the distinction in types of treatment appropriate for the poor is not made solely on the basis of dollar cost or availability of trained treatment personnel. Rather, characteristics of the target population are the crucial factor.

The aims. The initial aim of actions directed at the mentally ill was to relieve the community of a dangerous or troublesome member. No attempt was made to cure the sick. Then this goal of riddance was combined with the humanitarian one of relieving, to some extent, the suffering of the afflicted individual. Then primary emphasis shifted, at least ostensibly, to treatment of the individual, often with the hope that he could be returned to a normal state. Insofar as mental illness is now seen as a form of deviance, emphasis is on eliminating or reducing this deviance.

The techniques. As medicine developed methods for acting on behalf of the mentally ill, the technique of psychoanalysis was developed for the treatment of neurosis. This technique involves one neurotic person in an intense personal relationship with a doctor. It is generally a long process, and its efficacy is incompletely documented.

Subsequent psychotherapeutic methods have been developed and some of them involve a number of ill people in treatment at once. Some of these group methods are less investigatory and more directive; there are indications that they may be more suitable for the lower class.

Organic treatment techniques are highly effective in certain types of mental disorders. The most widely useful of these are the psychoactive drugs. Because they circumvent the special difficulties inherent in the use of middle class verbal techniques, drugs are particularly useful for the treatment of the lower class.

These techniques all concentrate on the individual with symptoms. Lately, techniques have been developed that concentrate on factors outside the individual, and mental illness programs and social action programs have fused. S. M. Miller noted:

Services aimed at individual treatment are not enough. Professionals and their organizations must support and encourage action that will deal with the larger American scene in which poverty is being produced and maintained. The professional [must] pressure for social changes that will make individualized professional service more meaningful and effective.

Cleaning up a neighborhood may be seen as a way to keep the rats out of the living room *and* the bats out of the belfry. Some behavioral correlates of poverty can be eliminated as the conditions of poverty are changed. This may be a treatment measure, but it is also a measure in primary prevention.

New techniques for helping the disturbed individual who is poor have also been developed. Rendering of tangible concrete service, counseling rather than ther-

apy aimed at insight, role playing, and various forms of sociotherapy are among the many techniques used.

The time of treatment. Attention has traditionally been given to the mentally ill at the time at which the illness is most severe; the buildup and letdown phases of the disorder were largely ignored. It is, of course, perfectly reasonable to direct attention to the most obvious point of difficulty. But this kind of attention apparently does little either to prevent a continuous occurrence of dysfunction in society or to rehabilitate the stricken individual. Thus, increasing attention is being given to early detection and precare services and rehabilitative services by after-care and pathway agencies. Essentially, the *before* and *after* phases of treatment are the province of the social agencies, and the *during* phase of severe disability, if it occurs, is the province of the medical services.

The financing. Insurance programs, while not care-giving programs per se, are suited to the poor as an alternative to public handouts, for insurance does plan to give money to those needing it at the time of need. But the lower class, who are most likely to need money in times of emergency—mental illness being one—and are the least likely to have it on hand, are also the least likely to be able to buy insurance privately on a continuing basis.

There is, however, the Federal Social Security program which, under Kerr-Mills, furnishes medical care to the indigent. Public welfare programs generally are also a kind of insurance program, with the premiums being paid by the population at large, including the poor. Welfare programs also offer some kind of psychiatric treatment when indicated. Medicare has made it no longer necessary to be financially poor to receive federal benefits, and these benefits specifically include care for mental illness. All insurance programs that include treatment for mental illness are distinguished by the fact that they make provision in the present for service in the future. They are established with the idea that some people *will* become ill, and they are intended to finance care of some kind for that future illness.

The personnel. In the early days of psychotherapy, the givers of treatment were individual therapists. Where programs existed, they were in privately operated clinics or local hospitals. Then the state mental hospital developed, the programs were operated by state government, and many more indigent individuals came into care. Dissatisfaction with the state hospital system has resulted in the development of the community mental health center idea. Operation of these centers has been dichotomized: large scale financing and direction are moving to a larger body, the federal government; and actual care-giving is moving to a smaller body, the local community.

On the local level, mental health center operators—that is, administrative and line personnel—are obviously going to be needed in great numbers. Medical personnel—that is, psychiatrists—have in the past

been the actual care-givers in mental illness; social pathology has been attended to by professional social workers. But there do not seem to be enough of either of these to go around. Besides, the form of service that has been traditionally rendered may have to be modified to be applicable to or effective with the lower class. New kinds of mental illness care imply new types of treatment personnel with new approaches suited to the needs and characteristics of those in need.

The logical possibilities seem to be these: (1) no professionalization, (2) a congeries of professions, (3) an alignment of professions, (4) a set of new professional specialties, (5) a new profession, and (6) new knowledge for existing professions. The congeries of professions applies to the current poverty movement, where a variety of professionals enter but often seem to function in no specific relation to their professions. An alignment of professions refers to the multidisciplinary team approach, in which existing professional skills are used but are supplemented by a new common orientation. Community mental health programs now function this way, as an alignment of professions, but this movement has not yet produced any new professional specialties. The sixth possibility, that of attempting to widen the range of skills of current professionals, is promising. An example of this approach is the inclusion, in medical school and psychiatric residency curricula, of data about the characteristics of the poor and of techniques for their treatment.

Characteristics of the Poor

Gordon's description of an area in Harlem illustrates the kind of environment in which the urban poor often live:

One in every three families has an income of less than \$3,000 a year, and one in every two adults has had only a grade school education. The proportion of housing units in adequate repair and with private bathrooms ranges from one-half in one tract to less than 10% in another; delinquency rates in 1962 were three times that of the city as a whole; in 40% of the families there is no legal or common-law husband present, and over half of the children of the area live in one-parent households. The buildings are four or five stories with some four apartments to each floor. The mailboxes in the vestibule are frequently without names, and the entrance door to the hall is generally not locked. The halls are dimly lit and made even darker by the dark paint on the walls. The floors may be littered with empty wine bottles, candy wrappers, and just plain dirt. The streets are generally deserted in the early morning hours, but from noon until dark the stoops hold clumps of people—mothers talking, minding children, and waiting for the number of the day, winos and junkies in a world of their own making, and men slouching, expressionless, occasionally bantering with women who pass. One is struck by the number of people on the streets, particularly so many men—going nowhere, doing nothing.

It is not surprising that individuals who have lived in an environment so radically different from the one most middle class people are familiar with should regularly differ from them in patterns of thought and behavior. In fact, a cultural chasm has been described between middle class concepts and those of the lower

class. For example, Riessman has found the following points on the cognitive style of a variety of low income groups to be relevant to the new technology of poverty medicine, particularly as they affect the application of psychiatric service: (1) physical and visual rather than aural; (2) content-centered rather than form-centered; (3) externally oriented rather than introspective; (4) problem-centered rather than abstract-centered; (5) inductive rather than deductive; (6) spatial rather than temporal; (7) slow, careful, patient, persevering (in areas of importance) rather than quick, facile, clever; (8) games and action versus test-oriented; (9) expressive versus instrumental-oriented; (10) one-track thinking and unorthodox learning rather than other-directed flexibility; (11) words used in relation to action rather than word-bound orientation.

It must always be borne in mind that, when one speaks of the poor as a class one is speaking of human beings; their idiosyncrasies and group differences do not override their humanity. Nevertheless, to deal professionally with poor people—that is, to render helpful service to them—one must take account of their significant characteristics, particularly as these seem strange or hard to contend with. If efforts to engage the lower class in a mutual venture of communication and service are to succeed, it is necessary to know the life style well enough to understand their problems and to offer comprehensible assistance.

Attitudes toward time. A frequently mentioned difference between lower class people and the more affluent is in their orientation to time. Stated in rather extreme terms, the difference is this: the affluent are primarily oriented toward the future; the deprived are oriented toward the present and, to a lesser extent, the immediate past. Many middle class people have their time scheduled far in advance. Relatively few engagements have much significance for the moment; instead, many are oriented to the future and are essentially attempts to control the future. Usually, the present is important not for itself but because it offers an opportunity to affect the future. In other words, most activities are not ends in themselves but are means to ends.

Unlike the middle class person, the lower class American is likely to be strongly oriented toward the present or the immediate past. He is not a visionary, with his eyes on the promise of the future. He is a realist who is concerned with the problems and rewards of the immediate present. The present cannot be ignored. Its demands must be coped with; its rewards must be enjoyed now.

There are many illustrations of difficulties caused by this difference in time attitude. The lower class person can feel quite bewildered when asked by a therapist, "What day would you like to come next week?" How can he reply? How can he know how he will feel next week or what he will be doing then? What is there to make one day preferable? Why come next week any-

way, when he is at the clinic now? A particularly serious consequence of the present time orientation arises when preventive measures are refused because the individual feels well at the moment and sees no point in inconveniencing himself now in order to avoid more serious problems in the nebulous future.

Attitudes toward change. Closely related to the attitude toward time are views about change and progress. Our society is highly oriented toward change. Newness has come to be valued for its own sake, and oldness alone—quite apart from any other attribute a person, an object, or an event may have—is enough to make him or it undesirable. Isolated within urban centers and in a precarious equilibrium with their environment, lower class individuals have had little opportunity to experience change. The future, if envisioned at all, is seen as an extension of the present. The lower class person, living in a rapidly changing environment, is handicapped in his efforts to understand change, and he may fear new adjustments. Consequently, middle class persons may be exasperated at what they interpret as lack of initiative, backwardness, or satisfaction with things as they are.

Attitudes toward acceptance and resignation. A trait of many disadvantaged people is their greater readiness to accept and be resigned. Most middle class individuals believe that man must struggle and master the problems that beset him. The disadvantaged person is likely to meet difficulties by adjusting to them rather than by attempting to overcome them. Middle class people feel they must do something about overcoming sickness, and, when death occurs as the result of disease, they say, "We did everything that could be done." When the disadvantaged person is ill, he may seek help, but there is not the strong feeling that he should or must do so. If the disorder comes on gradually and involves no great discomfort in the early stages, the patient and his family may feel no strong obligation to do anything about it. Persons suffering from chronic disease are sometimes completely indifferent to treatment.

The attitude of accepting rather than fighting is sometimes given expression by withdrawal from unpleasant or potentially difficult situations. Lower class persons who need professional services may withdraw if they encounter hostility or if they are being too strongly urged to make a decision or take some course of action they are reluctant to pursue. The withdrawal may take the form of outright rejection, but it is more likely to find expression in polite reticence or a passive refusal to cooperate. The reluctance to come to clinics is a reflection of uncertainty as to what to expect from an employee whose bureaucratic impersonality seems to imply indifference to concrete problems.

Lower class individuals often seek to establish, even in situations that by middle class standards do not warrant them, personal relationships with employers, politicians, and other persons of influence and authority. Consequently, professional people who permit or

encourage a personalistic quality in relationships with lower class patients or clients often find that they are more successful in getting professional help accepted than those who insist on a rather rigid impersonality in their relationships.

Attitudes toward dependence. Among the cherished values of the middle class is a preference for independence and a corollary dislike and distrust of the dependent state. From this point of view, independence can hardly be overdone; dependence, even of a relatively slight degree, is regarded as undesirable if not downright pathological. They like neither to be dependent nor to have others dependent on them, and an implicit obligation of one who receives help is that he will at the earliest possible moment take whatever action may be necessary to make himself independent again.

Among welfare workers and other professional people, there is considerable expression of misgiving lest their efforts somehow damage the characters of those to whom they give services by making them more dependent. It is widely held that people should be helped to help themselves, and a good proportion of institutional services are deliberately designed to transfer people as rapidly as possible from a dependent to an independent state. But among deprived people, independence is not given nearly so high a value. The unit of independence tends to be the extended family or the local neighborhood rather than the individual.

Dependence, then, has one meaning for the lower class person and quite a different meaning and significance for the more affluent person. Those who accept help from another individual or an agency are, in the middle class ethos, supposed to do so reluctantly and to feel obligated to exert every effort to become independent at the earliest possible time. The deprived individual who accepts professional or institutional assistance is expected to feel the same way. But to the extent that his attitudes and actions derive from a different locus, he is likely to view the giving and accepting of assistance as the normal and proper functioning of an institutional relationship in which both parties to the relationship are simply doing what comes naturally. Traditionally, people helped or were helped as the need arose, passing in and out of dependency relationships with no thought that a dependent status might be wrong or dangerous or undesirable. Thus, professional people and agencies are expected to give help because this is their function. The individual needs help, and so he accepts it for as long as it is available and usable. There is nothing in the relationship to get excited about, and certainly no cause to terminate it while need—subjectively defined—exists.

In these attitudinal differences lie many of the bases for misunderstanding between the lower class individual and the treatment agent. As long as these differences exist, some mediation mechanism between the population in need and the care-giving system is called for.

Policies toward the Poor

The present policy toward the poor has developed through a series of approaches that have left lasting effects even as they have been largely superseded. According to the schema developed by Silverman, the major movement is from a model based on humanitarianism to a model based on national effort. The former is individualistic, and the latter is societal in outlook. Within the two major themes there is a movement over a pair of minor themes. The humanitarian model moves from a charity theme to a nondiscrimination theme. The national effort model moves from a new technology theme to a juridical theme.

Charity. Charity is an obligation on those who have means to care for those who are in want. In Judeo-Christian cultures among others, it is important to understand ethical demand. The one who gives gains prestige, and the one who receives may have his sense of social solidarity reinforced. Ideally, then, a main societal function of charity is social integration.

What are the shortcomings of the charity model? On the one side, to receive charity is more likely to be alienating than integrating because it conflicts with an ideal of independence and self-sufficiency. On the other side, there is a tendency for the giver to discriminate between the deserving and the undeserving poor. To be deserving generally means to satisfy the prejudices of the giver. Such discrimination perverts charity, which derives from a concept of Divine love, into a means of social regulation.

Nondiscrimination. It might be difficult to explain to the Lady Bountiful of the 19th century just what the public assistance worker of the 20th century is up to. Basically, he is administering a set of insurance schemes. Anyone may apply for benefits as a matter of right; and he will receive them as a matter of right if he has satisfied the impersonal and objective criteria of eligibility. One attractive feature of this scheme is that it covers everyone equally against the risk of indigency, regardless of his body weight or skin color or morals or social class.

Medical care also falls under the nondiscrimination model. Public and private sources along with the medical professional either cover or forgive any of the costs of medical care that the individual cannot meet. He is entitled to the best of care, no matter who he is or what he can pay.

The nondiscrimination model corrects many of the defects of the charity model in a most tactful way. But tactfulness is also its defect. It resolves to treat every class of man in the same way, and so officially it cannot ever distinguish one class from another. Therefore, it cannot ever notice that one class is not doing as well as another. And it cannot notice that procedures that work for one class may not work for another.

The various social classes, whose very existence is an embarrassment to the middle class, are in many ways separate countries whose ways are foreign to

each other. Subcultural differences can make a big difference as factors in disorders of various kinds and in the bringing of these disorders to the attention of agencies. Most care-givers are most at home in the middle class. The cultural characteristics of other classes, if they are to be taken into account, become objects of technical knowledge.

The new technology. The new technology model is used by professionals when they move into unfamiliar ground. It is a searching for knowledge, materials, and instrumentalities that will confer an ability to predict and control. Just as the space program has brought the new technology of space medicine to deal with effects of radiation belts and conditions of weightlessness, so the poverty program has brought the new technology of poverty medicine to deal with its raft of exotic concepts.

The new technology model, in and of itself, has no controlling morality. It was applied to problems of discovering and administering polio vaccine. And it was applied by the Third Reich to the problem of carrying out a policy of genocide. The memory of the latter example makes people uneasy where the object of the search for technical knowledge happens to be a group of people. They feel the need for principles that will set limits.

The juridical model. The juridical model uses democratic legal machinery to do social engineering, that is, to bring about changes in social institutions. Many laws, such as those on kidnapping and tax evasion, depend for their fulfillment on the fact that they are in harmony with the institutional status quo. But laws making alcohol illegal or school integration mandatory fall under the conception of the juridical model because they require changes in the design for living of many citizens.

The juridical model has certain hallmarks that may help to make it more recognizable and more comprehensible. There is at least some sociological sophistication in the use of this model, such as an awareness of the interdependence of institutional spheres, if social engineering is seriously attempted. And if there is indeed democratic use of the law, there is a concern for principles of justice and due process.

The right to counsel. Competent professional care for ills in society is nominally a common right. But the quality of such care varies directly with social class. Reliable access to care of high quality is a class privilege, and the goal must be to change it into a common right. But how can such a change be brought about? It will require a larger system of care, but of what kind? The same kind of system will probably give the same kind of results as before. A treatment program is in itself a social system with functions to perform for its own members. The poor would remain customers of the program but not members. On the other hand, a brand new system will probably give worse results than before simply as a result of sudden discontinuity.

Something that will work within the existing system is needed to transform it into something better.

One suggestion that may aid in meeting this need is drawn from the juridical model. It is both a due process and a social engineering conception. A perpetual role of government is to issue laws with punitive provisions, thereby putting citizens in jeopardy of the law. The legal system has developed and strengthened a conception of the right to counsel for the citizen in the face of jeopardy that is backed by the power of government. But what of the laws that create programs for service to populations at risk? The same elements of governmental power and citizen's jeopardy are involved; only the direction of action is reversed so that risk is to be removed rather than imposed. In addition, the dimensions of the present effort begin to suggest the *enforcement* of service, rather than its mere extension. The citizen is again entitled to due process. He should not be expected to face the Leviathan alone when his life chances are at issue. To make the encounter more nearly equal, programs of aid should institute the right to counsel.

The type of counsel needed is as much an agent or a broker as he is a lawyer. His duty is to help his client overcome ignorance, error, and adversity in facing the care system. He is an officer of the care system, but one who is charged with standing against it on behalf of his client. He is an adversary to his brother officers in the system whose interests are tied to the success of the program. It is precisely the issue of conflict of interests that calls for the separating out of the counsel's role in the care system. On the other hand, such a role cannot be divorced from the rest of the system because its enactment calls for an intimate knowledge of the actual operations of the care system in a particular place at a particular time.

It is doubtful that any one mechanism will do the entire job. But the principle should be given consideration by those involved in the creation and operation of treatment programs. For the client in any transaction to derive maximum benefit from the transaction, he must be able to use the product and be able to negotiate the system through which he obtains it. On the seller's side, he must understand what the client wants, have a product the client can really use, and have an efficient method for getting it to him.

Suggested Cross References

For a detailed discussion of the treatment methods mentioned in this paper, see Area G, on psychiatric treatment. For fundamental concepts regarding cultural and social determinants of behavior, see Sections 4.1 and 4.2, respectively, in Area B, on the basic behavioral sciences.

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46.5 MENTAL HEALTH CONSULTATION

MILTON GREENBLATT, M.D.

Growing awareness of community mental health needs and the vast expansion of the psychiatric frontier have served to point up the current shortage of mental health manpower and the need to develop methods that can extend the range and effectiveness of professionals in short supply. Mental health consultation emerges as one such method particularly worthy of attention in this era of community psychiatry, with its emphasis on prevention, environmental and cultural influences, early case detection, early intervention and crisis alleviation, and the high premium placed on brief and effective contacts.

The Joint Commission on Mental Illness and Health, aware of the manpower shortage, recommended training large numbers of mental health counselors, who could work under the direction of mental health consultants and give services to neglected areas. The great unmet needs for such services are equalled by the paucity of training for consultants. It is fair to predict that consultation skills will be more in demand in the future and that some training and practice in consultations may become part of the requirements of many, if not all, young psychiatrists of the future and probably many psychologists and allied professionals.

Definition

What is mental health consultation? It is usually defined as an interaction between a consultant and a consultee on behalf of a client. The consultant is a person with specialized knowledge in the mental health field; his consultee requests help in increasing his skills in handling a disturbance, crisis, or troublesome situation or in raising the mental health of a person or group for whom he is responsible. The client may be an individual, a group, an agency, or an institution.

Thus, the concept of mental health consultation is broad and susceptible to multiple interpretations. Within its boundaries it would be possible to include the familiar model of aid given to social workers in community agencies by consultant psychiatrists; the supervision of psychiatric residents in training in their individual, group, or milieu problems by senior faculty; legal counsel given by lawyers to psychiatric administrators; editorial suggestions given to psychiatric journal editors in regard to articles submitted for publication; the supervision of mental health researchers; and the consultative assistance by a broad range of professionals and laymen given to organizers of mental health programs.

Procedure

The procedure of mental health consultation begins with a *request* from a consultee sanctioned by his agency and his authority figures. The consultant and the consultee meet together over a specific problem with the expectation that the problem can be alleviated or resolved within a short time. Through study, education, or specific actions, the knowledge of both is used to arrive at a reasonable solution.

To be maximally effective, the interactions must avoid certain pitfalls. The consultant must maintain objectivity. He must strive for good will within the organization he serves by maintaining a continuing satisfactory level of sanction from the key figures in the hierarchy. He needs the patience to permit the relationship to mature to a point of real effectiveness. He must facilitate—not dominate or make dependent. He cannot be judgmental, delve too deeply into the motivational aspects of the consultee, or practice psychotherapy.

Caplan, whose experience is considerable, advocates strongly a work-oriented and not a psychotherapy-oriented approach. He points out that the basic contract for psychotherapy is not present and that there is no framework within which to deal properly with psychological resistances. Further, psychotherapeutic maneuvers are likely to threaten the consultee and alienate the group he represents.

If the consultation proceeds properly, the consultee's anxieties will be considerably allayed and his effectiveness thereby increased. Review of the situation with a trained objective person yields considerable clarification in diagnosis and opens up new attitudes, methods of procedure, and avenues of communication. Without the consultant taking over, a relatively small amount of his time—judiciously employed within the consultation framework—can be of enormous help to a client or organization.

An interesting case in point was reported by Wodinsky, who is concerned with the establishment of psychiatric liaison with medical and surgical services in general hospitals. Serving primarily in a consultant role, his task was to help nurses establish a better therapeutic milieu on a leukemia service. This involved

helping the nurses to understand their relationship with patients, doctors, and each other; to reduce their anxieties; and to tolerate the frustrations inherent in a difficult environment. The method employed individual and group discussions with nurses. Feelings of hopelessness, helplessness, guilt, and fear of death could be expressed, shared, and understood. These feelings separated the ward nurse from the patient and induced intolerable feelings of abandonment in the patient. Relationships to families who cajoled, criticized, chided, or obstructed treatment also received special attention. The doctors were often seen by the nurses as either omnipotent beings or cruel experimentalists. Wodinsky showed clearly how a psychiatrically trained consultant, without probing the deeper roots of conflict, may be of inestimable value in a sensitive work situation where support and understanding are primarily employed.

Research and Educational Potential

The consultation method can be applied over a wide range of mental health activities. The consultant does not necessarily have to know all about the field of endeavor in which he is consulting or become an expert in the area in which his consultee is practicing. Instead, he can provide great assistance with his general knowledge of psychiatry, psychology, and mental health and his specific expertness as a consultant trained in objective analysis, development of relationships with consultees, and sensitivity to how the latter's anxieties diminish his effectiveness. Since every consultation is in itself a learning experience for both parties, the consultant can greatly extend his awareness of problems and activities in the mental health field and open up channels of new information regarding community mental health practices, cultural values and influences, group interrelationships, and social forces leading to disease, crisis, or health. The consultation, therefore, may be useful in many research and educational contexts in addition to its value for service.

Training for Mental Health Consultation

Greater emphasis on mental health consultation training may be expected in the future. Exactly how this will be organized is open to trial, error, and experimentation. Only a handful of training programs in psychiatry make formal attempts to teach consultation.

Recognizing that no final answers can be given at present, one might suggest that, in order to be prepared for consultation work, one should have considerable experience in psychiatric diagnosis and treatment together with intensive grounding in individual and group dynamics. In addition, experience with other groups in the community whose values and attitudes are different from the trainee's would be worthwhile. An academic background in community and social psychiatry with some basics in the social sciences is recommended. Specific training in community psychi-

atric practice—as in a home treatment service where mobilization and coordination of practitioner, social agency, schools, clergy, and police are required—is almost a necessity. Finally, specific consultation activity in several settings under supervision and the opportunity to study and criticize procedures and results and to formulate theoretical views in a seminar-type conference over a considerable period of time are most important.

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46.6 ROLE OF COMMUNITY MENTAL HEALTH WORKER

MILTON GREENBLATT, M.D.

The present trend in psychiatry is to treat illness *where* it manifests itself and *when* the patient needs help, through mobilization of all relevant community resources in the immediate environment. Hospitals and mental health centers are assuming responsibility for identifiable sections of the community and are attempting to know all about these areas—their history and development, inhabitants, values, cultural modes, leadership, civic organizations, police force, schools, religious institutions, social welfare resources, and politics—with a view to assessing factors and influences leading to health and disease and ways to bring these forces under control or modification.

Mental health professionals must identify and relate themselves to all those who could be of aid to sick individuals before, during, or after hospitalization. They should take the initiative in educating or training these mental health workers, who have diverse capabilities, orientations, and potentialities.

Estimates of prevalence of mental illness in the community are surprising and alarming. The Midtown study suggests that a majority of Americans in

New York City either are consulting professionals for emotional distress or have illness of a degree that warrants such consultation. Data from Los Angeles indicate that about 3 to 4 per cent of adults have at some time in their lives made a suicidal attempt. *Action for Mental Health* reveals that one out of five people surveyed felt at some time that he was going to have a nervous breakdown. About one out of seven patients from a representative population sought help at some time, 42 per cent for problems relating to marriage, 18 per cent regarding matters of personal adjustment, and 12 per cent regarding their children.

To whom did these troubled people turn? Some 42 per cent went to the clergy, 29 per cent to general practitioners, 18 per cent to psychiatrists or psychologists, and 10 per cent to social agencies and marriage clinics. Of these, 58 per cent said unequivocally that they were helped; 14 per cent said they were helped, but they expressed some reservations; and 20 per cent said they received no help.

An additional 1 in 10 persons recognized that he had problems that might have benefited from professional help, although he did not actually seek it. They turned, instead, to spouses, family, or friends, or they prayed or did nothing.

Of great significance from the standpoint of national planning is the fact that the better educated, younger, urban citizens are the ones who are more able to obtain help in times of need. In rural situations either the facilities are grossly lacking or the citizens are far less motivated. In their Connecticut study, Hollingshead and Redlich demonstrated that mental illness predominates in the lower classes, for whom the chief pathways to therapy are via hospitalization in state institutions. It is clear to those responsible for hospital and clinical services that new methods must be devised in many parts of the country to reach the poor, the underprivileged, the uneducated, the foreign-born, and the Negro. Many Negroes are reluctant to go to clinics dominated by white professionals and white philosophy.

With so much need, such a great poverty of psychiatric manpower, and the tendency for people in trouble to turn first to untrained family and friends and only secondly to clergy and nonpsychiatric physicians or social agencies, it is obvious that a great task lies ahead in bringing aid, whenever and wherever needed, to people with emotional crises. Meanwhile, many are cast in the role of mental health confidant who do not define themselves thus; nor are they prepared, trained, or properly guided for such critical service to their associates.

The Clergy

Troubled Americans often turn to the clergy. Fortunately, hundreds of pastoral counseling programs are being offered in seminaries, and some thousands of clergymen have taken formal courses in mental hygiene. Since the clergy outnumber psychiatrists 35 to 1

and are the immediate resource for so many patients, whatever is invested in their education seems to promise considerable mental health dividends.

Weiner et al., in their study of the clergy in the Dorchester community of Boston, interviewed parish priests, Protestant ministers, and rabbis representing 73 per cent of the total available pastors and curates in the area. Of the entire sample, only two said they saw no mental patients during the previous year; the case load for those who did see mental patients ranged from 1 patient to more than 300 a year. Of the total of 2,411 patients or potential patients seen by this group, 327 had had previous psychiatric treatment, and 68 were being seen concurrently by a formal therapist, not necessarily a psychiatrist.

The studies of Weiner et al. reveal in the clergy an inverse relationship between training in psychology and age, the younger clergymen having received more formal instruction in psychology. Those with more instruction knew that the private psychiatrist and sectarian counseling services were available as consultant resources. Those with little or no training were unaware of any consultant resources. Some 20 per cent of the clergy were not aware that consultant resources of any type existed. All the clergy were less sure what to do with hospitalizable patients than with nonhospitalizable patients, and clergy with the least formal course work in psychology demonstrated the poorest use of available dispositional resources outside of the hospital. Those with less training tended to use the police rather than professional psychiatric resources.

The study concludes that the clergy who play an active role with psychiatric cases do so in relative isolation from psychiatric resources and that psychiatric institutions could fill this gap by providing assistance in case finding, rehabilitation, and care-taking and in defining the clergy's ancillary role in the treatment of patients who resist psychiatric referral. The clergyman obviously occupies a sensitive position in the community and is a key resource in every aspect of community programs. It is now psychiatry's responsibility to recognize, accept, and support what the clergy is able to offer.

Much could be done to bring the clergy properly into the therapeutic orbit as collaborators with psychiatric professionals. Toward this end, for example, seminars for theologians of various denominations have been arranged in the Dorchester area of Boston by Drs. Becker, Drouin, and Weiner—with considerable success. These seminars discuss case examples from the experience of the clergymen against the background of the psychiatrist's knowledge. Hospital training programs for theology students and for graduate clergy have been in existence for some time in mental hospitals in collaboration with schools of theology. Here case study, group seminars, ward observation, and social therapy participation are incorporated into a larger program.

There are hundreds of centers for the training of

pastoral counselors. Some are connected with their church of origin, and some are not related to a church group. Many of these give diplomas or certificates for work with mentally ill cases, and some have requested aid from psychiatrists, either in planning curriculum or in actually conducting training courses or seminars. Several national organizations, such as the Institute of Pastoral Care, help bring the clergy and psychiatrists together.

General Practitioners

Since the majority of patients going to physicians for medical ills either have an associated emotional disorder or primary mental disease, general practitioners are deeply involved in the care and treatment of the mentally ill. In addition, the second most sought resource for those with a primary emotional disorder is the general practitioner. Although psychiatrists have long been somewhat estranged from their medical colleagues, it is now recognized that collaboration between psychiatry and medical practice is a necessity for optimal service to the sick.

General practitioners recently graduated from medical schools and hospital internships are better oriented toward psychiatric thinking than those graduated years ago. Unfortunately, practitioners are so busy that they are often not inclined to give psychiatric patients the attention they require. It is not only costly in time and money, but their training and experience do not equip them to understand and tolerate bizarre symptoms.

Brown, in a study comparing general practitioners with psychiatrists, stated that with few exceptions general practitioners find symptoms such as aggressiveness, hallucinations, delusions, and suicidal gestures grounds for immediate referral to a mental hospital. Psychiatrists, by contrast, are much more comfortable with these manifestations and are better able to handle their own anxieties in coming to an appropriate decision about hospitalization.

A study by Weiner from Boston State Hospital indicates that general practitioners are especially sensitive to the feelings of the community and family in making a referral to a psychiatric physician or to a state hospital. The stigma and negative attitude of the community toward psychiatry and the mental hospital are often shared by the physician. Further, the relationship between the general practitioner and the psychiatric profession is far from ideal. For example, mental hospitals often do not take the trouble to inform the practitioner of the clinical course of the patient he has referred for admission. Yet, because he has a well established place in many families, he is a potentially critical agent in early case detection, treatment, and rehabilitation.

How can the general practitioner and psychiatrist be brought closer together in the interest of the patient? On the medical school level, the teaching of psychiatry is assuming an increasingly important role. In the future, it is hoped that medical schools will so

train all physicians that they will be qualified to manage most of the psychological disturbances they encounter in practice, referring only the most disabling ones to psychiatrists. In this way, the general practitioner will be a true community mental health worker. As to training the present generation of general practitioners in psychiatry, the National Institute of Mental Health has inaugurated a successful program to facilitate postgraduate instruction in psychiatry. From such programs, some general practitioners have returned to their work considerably enlightened about the handling of patients with emotional disorders. Many courses and seminars have been held for practitioners, but they usually involve only about 10 per cent of the physicians in a given area. In several states, attempts have been made to open up wards in hospitals for patients referred by practitioners where the latter can relate to the psychiatric team. Hospitals are trying to bridge the gap by closer work on individual patients, refresher courses, and teaching institutes. Progress has been slow, but definite gains are being made.

Teachers and Guidance Counselors

The school system provides an excellent entree into the lives of students and, through them, into their families. School children can be observed from an early age, and significant behavioral problems can be followed from childhood through adolescence. Teachers can function in many capacities when properly alerted to mental health problems. They can detect early deviations, request consultations, provide information of diagnostic or treatment significance, participate in treatment planning, and execute a rehabilitation program. Their relationship with the family provides a fulcrum by which parent participation and education can be developed, and the Parent-Teachers Associations are an excellent forum for mental health education.

As sophistication grows and school budgets increase, special guidance teachers have been employed to help school children with their careers and to handle adjustment problems as they arise. The system has been elaborately implemented in some colleges, which now employ teams of psychiatric specialists who may see approximately 10 per cent of the student body during their college career. There is every indication that such psychiatric consultation and guidance are of valuable assistance to the young person to tide him over a crisis; coming as it does in a critical period of his growth and development, it may have a lasting effect on his mental life and alter forever his attitude toward mental illness and health.

In college programs for teachers, the role of a psychiatric consultant has been explored in curriculum development, analysis of training techniques, instruction concerning normal and abnormal growth and development, and diagnostic assistance directly to students and educators.

Social Agencies

In the modern metropolitan city a great variety of agencies deal with every type of human problem, including welfare needs, legal counsel, housing, home-making, family crisis, and child welfare. Some of these agencies are now being amalgamated into multiservice institutes under the antipoverty program. These agencies have tended to develop a selective clientele or to specialize in relation to available manpower or manifest interest of staff. In some cases, efforts are duplicated, or difficult clients are shunted from one place to another in the hope of finding a person who really takes interest and responsibility. Many students of social organization find these agencies poorly coordinated to take care of the whole person. Proper integration of services constitutes a great challenge.

Within these agencies are a legion of potential community mental health workers. Many have long sought and received consultative and educational help from psychiatric professionals. Some mental hospitals have taken the lead in providing educational seminars.

Public Health Nurses

One link between mental health and public health is the public health nurse. Within her district, she has access to many homes and knows patients and families well. She is in a position to note mental symptoms and to undertake the rudiments of mental health care, provided proper guidance is given. In after-care or pre-care programs of some hospitals, psychiatric personnel and public health personnel meet to share information on the patient and to provide continuity of responsibility. Education of the public health nurse through psychiatric consultation, seminars, special courses, and collaborative work on individual cases and families will go far toward increasing their value in mental health programs.

Families of Patients

Since mental illness is born and bred within families and since family members are participants in the sick relationships that have led to the breakdown, it is imperative to reach families for prevention, early case detection, and cure. Individuals afflicted by painful emotional problems very often turn first to family members as an initial line of defense; when this barrier is broken, the clergy and the medical profession are then approached.

How can families be reached and helped to become allies in mental health work? A great potential exists in the families of the mentally ill who receive treatment. In Massachusetts, for example, it is estimated that 1 out of 10 citizens will be hospitalized at some time during his life. Within a relatively short period, therefore, it should be possible to reach a significant portion of the families in the Commonwealth. If proper attention were paid to them—if they were educated, oriented, and brought into the therapeutic orbit—a considerable task would be accomplished.

Families can be reached by group meetings with

those families who have patients hospitalized or attending out-patient departments or after-care, day hospital, or night hospital programs. Sessions of patients and families together have proved to be a powerful vehicle toward emotional development of family members. In those clinics where individual psychotherapy is the idiom, it is almost always fruitful to refer selected family members to the psychiatric team for attention. As a method of crystallizing the family's positive relationship to mental health, it is often helpful to organize some type of voluntary role in support of the clinic that serves them.

Volunteers

A great mass of citizens may become enlightened mental health workers by volunteering in mental health services. In recent years the movement has grown very large indeed. It includes both students and adults from all walks of life. Participation in mental health work under guidance is beginning to be recognized as a force for psychological growth and sophistication. It is also a powerful recruiting instrument for mental health careers.

An example of how mental health workers are prepared by volunteer work is contained in the history of the student volunteer movement in Boston. Originated by Harvard and Radcliffe students, it later spread to many institutions for higher learning in the country. The students have given generously to mental patients in back wards of hospitals, acting as social work case aides, ward aides, occupational therapy aides, research and laboratory assistants. Students have also established a cooperative halfway house, with patients and students living together in a rehabilitative enterprise. Community volunteering in relation to patients in after-care has also been developed.

Adult programs include groups of every description. The movement is growing rapidly as citizens find both challenge and enjoyment in helping the rehabilitation of patients. At the same time, hospital and clinic personnel are learning to trust the volunteers and are using their considerable talents in the common cause.

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PSYCHIATRIC SUBSPECIALTIES

Chapter 47

Geriatric Psychiatry

47.1 • • •

ALVIN I. GOLDFARB, M.D.

For want of a better term, special psychiatric attention to the aged may be called "geropsychiatry." Because of the interweaving of physical, psychological, social, and economic factors in the etiology, aggravation, or exacerbation of disease in aged people, they and their families have special needs. These needs affect the psychiatrist's allocation of time and his institutional affiliations and favor the development of special skills and treatment techniques.

In the past, there was a tendency to overestimate the importance of brain dysfunction and brain damage in the etiology of mental disorders of old people. This often led to pessimism about the outcome and the value of treatment, and at times it led to relative neglect. However, depressive reactions and emotionally or psychologically determined disorders of thinking and perception are very common in old age and are found in association with organic mental syndrome as well as in relatively pure form. Recently, there has been increased attention to the contribution made by genetic factors, life experience, and immediate circumstances to maladjustment in the aged, whether or not brain syndrome is present.

Endogenous, psychogenic, or functional mental disorders of youth may persist into, recur in, or first emerge as significant in old age. Among the patients with disorders that begin earlier in life are the large numbers of persons who have aged in psychiatric hospitals. Persons 65 years and over account for about 30 per cent of the mental hospital population; however, less than half of them were first admitted in old age.

Persons who have aged in the hospital or who have long term and recurrent mental disorders that begin before the age of 65 fall more in the province of general psychiatry and hospital psychiatry than of geropsychiatry. They are mainly chronic schizophrenics, most of whom require continued care within a protective setting. If they are meek and mild or well

adjusted to institutional life, they are often considered to be candidates for transfer to nonhospital institutions. However, usually this transfer is not a return to the community but merely a shift from one institution to another that is not necessarily better or more helpful to the patient. When more attention is paid to these patients, their seeming deterioration is eliminated or decreased, and their sociability and productive capacity are increased. Because they have lost their places in the community, the most humane care may be the provision of a variegated community within a hospital setting.

This chapter is more concerned with those disorders that develop in old age in association with illness, physical or mental impairment, and the changes and stresses of chronological and functional aging. Persons whose mental disturbances develop or emerge as significant in old age are the true geropsychiatric problems. Their mental disorders can be subdivided into two major groups: (1) disorders of affect or content in the absence of evidence of brain damage and (2) disorders related to brain damage as reflected in brain syndrome.

In the first group are many persons who are relatively ill equipped to cope with the problems that accumulate with the years and others who, although psychologically adequate, meet with unusually stressful situations. In some, life-long patterns of behavior, previously marginally adequate for social adjustment, emerge in old age as full blown mental disorders. Still others have suffered with illnesses that were masked because of special personal attributes or circumstances. The most common psychiatric reaction in the chronologically old is depression, often with paranoid trends. Many aged individuals with these disorders of affect or thought content respond as well to psychiatric care as do younger persons with similar disorders. The need for immediate and short term psychiatric care of chronologically old persons with depressive reactions requires a great expansion of out-patient clinics, private care, and in-patient psychiatric services.

The second group of geriatric mental problems can be subdivided into (1) persons with acute brain syn-

drome: transient severe mental impairment, usually related to illness or intoxication; (2) persons with relatively uncomplicated but irreversible mental impairment: chronic brain syndrome; and (3) persons with disorders in which a mild or moderate chronic brain syndrome is joined by complicating disturbances of affect or content.

Patients with acute brain syndrome are in need of intensive medical care. Persons with severe brain damage are likely to die within a few years; they often require continuous institutional care. Individuals with disorders of affect or content associated with mild to moderate brain syndrome usually improve with psychiatric treatment, but their complete social recovery cannot be expected; they too usually need continued supervision and protection under medical auspices.

Invalidism or disability in the aged can often be averted or deferred if acute, reversible states of mental impairment are promptly recognized and treated. Acute brain syndrome can occur either in the absence of irreversible brain damage or episodically in persons with chronic brain syndrome. Common conditions provocative of acute brain syndrome are infections, pain, fractures, malnutrition, heart failure, coronary thrombosis, drug intoxication, malignancy, and emotional overreaction. The outlook for improvement in mental functioning is good if the patient survives the underlying disorder. Prompt general medical treatment of the underlying conditions and insurance of adequate cerebral, circulatory, and metabolic support, including protection from situations provocative of fear and anger, are indicated to prevent irreversible brain damage.

Persons with moderate or severe chronic brain syndrome generally require a protective, psychiatrically oriented environment such as can be provided in a good residentially comfortable psychiatric hospital. Many old age homes and nursing homes have, in effect, become such units. On the other hand, psychiatric hospitals, which should fulfill this function, often fall short of doing so. State-financed mental hospitals and locally supported institutions, eager to hold their expenses low or to select recoverable cases, tend to define their roles so that the care of the aged mentally disordered is made the responsibility of other institutions. Some planners have recommended general hospital care or the transfer of geriatric patients to old age and nursing homes as an alternative to the use of state hospitals. Actually, there are few geriatric patients in state mental hospitals who have no medical or psychiatric need and who do not belong there, and it is more the exception than the rule for aged persons to be mistakenly referred and admitted. It is true that many aged patients can be cared for in nonhospital institutions which provide comprehensive medical care and admit the patients promptly at times of crises or prophylactically. However, good care for an aged patient is inescapably expensive wherever it

is provided because the needs of the patient remain the same.

Because of the interwoven medical, psychological, economic, and social problems of the mentally disordered aged, they need comprehensive medical care in every setting—whether in their own home, an old age home, a nursing home, a general or a psychiatric hospital—and in this care the psychiatrist should play an important role. In general, so far as in-patient care and treatment of the aged is concerned, where medical care is good, psychiatric care should be improved; where psychiatric care is good, medical care should be improved; where both are good, social services should be improved. Not only are individual psychiatric and group treatment methods likely to help older persons, but frequent psychiatric conferences for staff members and psychiatrically led seminars have a morale-sustaining, stimulating, and beneficial effect for all concerned.

Definition

It is customary to regard old age as beginning with the 65th year. However, aging is best defined in functional terms as an inevitable, progressive process of impairment in the capacity to adapt, adjust, and survive. The aged state, then, is a condition in which decline of functional capacity—physical, mental, or both—has become manifest, measurable, and adaptively significant. Sensory and motor impairment is prevalent in persons who have reached 65, but the truly aged are generally older persons in whom there has been functional decline that significantly affects total functioning. Because of their physical or mental impairment, they usually require special social or economic protection, supervision, and care. Many persons are not able to fulfill even the expectations of a society that tolerates a considerable degree of functional decline and ascribes a special role to the chronologically old. The aged, therefore, may arbitrarily be defined as persons who are 65 years of age or over or who, although younger, have suffered physical, mental, or socioeconomic reverses characteristic of the older group.

Epidemiology

The increased need for geropsychiatry is partly a result of the absolute and relative increase in the number of aged persons in our society. In 1900 the chronologically aged made up about 3 per cent of the total population in the United States. Today, they make up about 10 per cent of the population, nearly 20 million persons. The number of aged persons has tripled, and the medical and psychiatric problems they present have multiplied even more. The admissions rate to mental hospitals, for example, is higher for persons 65 years and over than for any other age group, and their rate of release alive to the community is the lowest. Less than 10 per cent of persons first admitted to state psychiatric hospitals in old age have

a functional, as opposed to an organic, mental syndrome; this small group contributes a disproportionately high percentage of releases alive.

Unquestionably, current estimates of the incidence and prevalence of psychiatric disorders, especially the functional type, are too low.

Admissions to public mental hospitals do not give a true picture of the probable incidence of functional mental syndromes in old age. Functional psychoses afflict a higher proportion of the aged persons admitted to private psychiatric hospitals and the psychiatric units of general hospitals. Nor do hospital statistics reveal the large number of aged persons with affective disorders who remain in the community under the care of private physicians, in private hospitals under general medical care, or receiving no care, since mental illness in the aged may be tolerated as a normal emotional and intellectual effect of aging or dealt with as a legal, administrative problem.

Recent psychiatric examinations of representative samples in a New York City housing project found that 25 per cent of the aged had functional disorders. The Newcastle-on-Tyne survey of Kay, Beamish, and Roth revealed that about 30 per cent of persons 65 years and over have some form of functional mental disorder, two thirds of them mild or chronic neuroses or character disorders.

The disproportionate increase in admission to psychiatric hospitals and other institutions and the prevalence of depressive syndromes in the aged population at large have been deplored as evidence of loosened familial ties. Both of these problems are attributed to a change in attitudes of families and a developing cultural tendency to reject the aged. However, worship of youth and rejection of the old do not

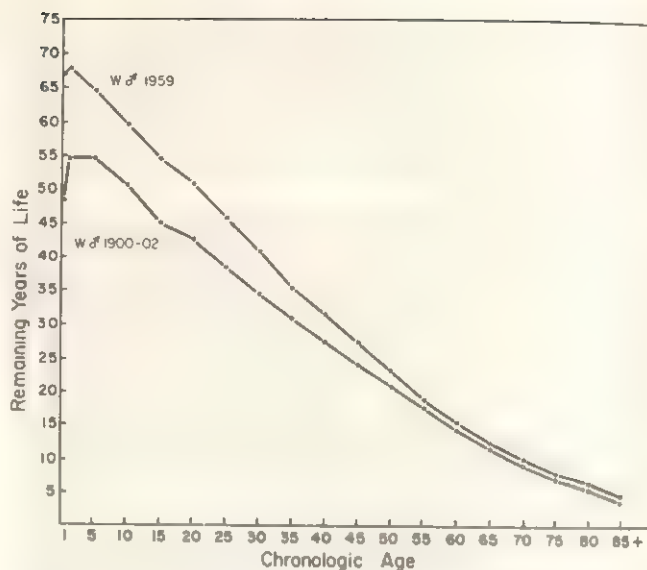


FIGURE 2. Average remaining years of life for white males in 1900-1902 and 1959. (From *Vital Statistics for the U.S.*, vol. 1. United States Department of Health, Education, and Welfare, Washington, 1959.)

seem to be the true causes of these problems. Smaller houses and apartments, the fact that women now work outside the home, the increased mobility of families, improved diagnosis and utilization of institutions, an increase in the number of facilities for care, and the increased economic independence of aged persons who receive social security benefits or welfare and care have all played a part in separating old persons from families. Also, there has probably been a true increase in the number of maladjusted aged for other reasons.

In societies where socioeconomic conditions are poor, where sanitation, housing, and public health facilities are absent or rudimentary, and where medical care is inadequate, the proportion of chronologically aged persons is about 3 per cent. The proportion of aged nonwhite persons in this country has, until recently, been similarly low, and these survivors appeared to be exceptionally hardy (see Figure 1). An important reason for the increased need for psychiatric and medical services by the aged may be the relatively recent preservation of many average persons into old age and not only, as in the past, of the stalwarts (see Figure 2).

Culture and Care of the Aged

Attitudes and practices with respect to the aged, the ill, and the weak appear to be determined largely by a society's survival needs and cultural traditions. In root- and berry-gathering primitive groups, the aged receive no special protection; they survived only as long as they were able to provide for themselves or to dip into the small communal stockpile. In nomadic hunting societies, where survival depended on rapid, efficient movement of small groups from one seasonal

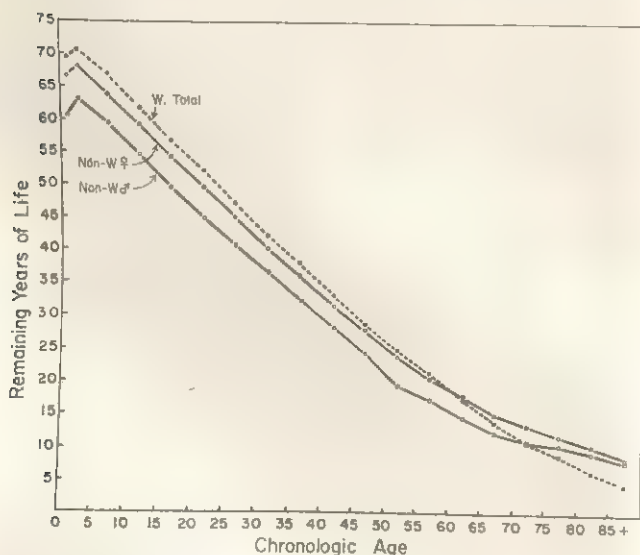


FIGURE 1. Average remaining years of life, nonwhite male and female, and total white population. (From *Vital Statistics for the U.S.*, vol. 1. United States Department of Health, Education, and Welfare, Washington, 1959.)

hunting ground to another, seemingly drastic methods of relieving the group's burden of aged persons were adopted. In one Eskimo culture, an aged female whose contribution to the group had become minimal and who could not keep up with the dog sleds would be left in a temporary structure with a supply of food and fuel, to "recover" while the group continued its journey, presumably to return later. After she and her family sorrowfully acted out this play at temporary separation, she lay down to die, and they mourned her at a distance, as was ritually prescribed. In such societies, few males survived to be social burdens. When a man did, he might, at his own request, be mercifully put to death by a son. In such cultures, carrying out the provision for such unnatural deaths was considered a filial obligation and a way of according honor to the parent rather than evidence of rejection or neglect. However, it is likely that these traditions were implemented only under situations of dire stress. In many hunting societies the aged, ill, and weak often found aid and support, not only from their own kin but also among groups of strangers, each group providing aid in recognition of its own nomadic members' possible future needs.

The stable family units of agrarian and herding societies are better able to care for the aged. Relatively well to do rural families could in the past, even as now, care for aged incompetent parents in special wings or in small cottages removed from their main house. And the well to do could then, as now, exhort the poor to follow their example in honoring their fathers and mothers, although for the poor this was and still remains economically and socially impossible. In this way families may be encouraged to pursue programs of protective care that can destroy family units or overburden inadequately prepared communities.

Even before the advent of industrialization, social pressures in urban centers resulted in the development of havens or hospitals for the care of the aged, the ill, the weak, and the socially disturbed who required protection and care. In Western culture, religious groups have been important in developing homes and hospitals; their example of what was good and helpful has more and more been adopted as governmental responsibility; what was first offered as a charity has become, in many parts of the world, a responsibility of government and a legal right.

Social welfare has become progressively more necessary with increasing industrialization and urbanization of society. However, at the present time many subcultures of our society still provide examples of almost every historically identifiable way of handling the problems of the aged. Examples of masked euthanasia, family care, care by neighbors or unorganized community, and varying degrees of private and public welfare concern can be found in this country, side by side.

Special Problems of Old Age

A chronologically aged healthy person usually behaves and has needs that do not differ greatly from those of younger persons. He desires friendships of varying types and intimacy with both sexes. He wants to keep busy at work or at play that is within his physical capacities and is commensurate with his intelligence and background, and from which he derives a sense of accomplishment. He looks for and objects to frustration of relief of biological tensions, such as hunger and sexual desire, and the gratification of culturally determined needs.

Ideally, an aged person has confidence in his capacity to relieve his tensions and obtain gratification in a culturally acceptable manner, and he maintains a continuity with his past in terms of interest, goals, and gratifying pursuits. In contrast to the young adult, he may put less emphasis on current performance and more on self-assurance that he has made an impression on this world in his lifetime by his words or his deeds or by having reproduced himself. Review of past achievements or the behavior of children or disciples can contribute to his self-esteem. Unlike young people, he may show mellowness—a lack of haste, a patience with himself and others, and a tolerance that has grown out of satisfied curiosity. Most important, he appears to have internalized the values of his culture so that he continues to be capable of playing the various roles required by his achieved or ascribed status. Ideally, he has been and is a rational, considerate, cooperative, self-reliant, self-disciplined person able to gain pleasure through his own efforts and with others; he has few complaints and is minimally complained about.

This ideal, however, is rarely achieved. In chronological aging there is usually a decline in function of one or another organ or system. This may be the result of genetic factors, illness, or accident. Furthermore, there may be changes in the environment or in the person's social role for which he is psychologically unprepared. Such changes may reveal a paucity of resources for adequate functioning even in someone relatively intact; when he is also physically ill or mentally impaired, and especially if he has developed incapacitating psychological inhibitions, his capacity to adapt successfully may be so grossly inadequate that he becomes inefficient, disturbed, and socially disturbing.

Before true old age becomes manifest, the chronologically old may suffer loss of social and economic resources and may apprehensively anticipate physical and mental decline. Those with psychogenic disorders only are, as a rule, relatively energetic and vigorous. Unless they are specifically ill, as with cardiac or malignant disease, they usually have a better outlook for survival than the debilitated and frequently incapacitated aged in whom psychogenic disorder accompanies an organic mental syndrome.

Their mental disorders are frequently similar to those found in younger persons, are fully as responsive to treatment, and are as liable to aggravation by neglect. In fact, their late emergence is an indication of the relative hardness and resistance to psychopathology of the afflicted; however, this may be neutralized or outweighed by special social, economic, and health hazards in aging that predispose to stress and increase vulnerability.

Resources useful or necessary for the mastering of internal or external problems are diminished or lost with aging. Simultaneously, the person may be faced by new and unexpected actual or potential stress. There may be physical or psychological decline, loss of family and friends, loss of status or occupation. Losses of one type may be related to others with snowballing effect: loss of physical strength and skill may lead to loss of occupational status, this to change of environment because of retirement, this to loss of friends and associates and sometimes to removal from family. The loss of personal resources and the stresses imposed by the environment decrease the individual's ability to adjust successfully to his changing environment, to relieve tensions, and to satisfy his biologically and culturally determined needs. With these losses and changes, old quiescent mental disorders may be revived, persistent disorders aggravated, latent disorders revealed, or new reactions developed.

Physical and physiological losses. Many physical changes in the aged are the result of illness; others appear to be the effects of the aging process itself. As medical knowledge increases, more of the functional decline associated with aging is attributed to disease and less to genetically determined processes. The genetic contribution to aging, however, appears to be strong. As Pearl showed, the life span of an individual can be fairly accurately predicted from knowledge of the ages of his parents and grandparents. The sum of these ages he called the index of Total Immediate Ancestral Longevity (TIAL). Marked longevity is associated with a high score. Undoubtedly, genetically determined life-shortening or life-preserving factors interact with environmental influences to determine the individual's life span.

Physical changes include decreased sensory acuity, decreased executive capacity because of diminished motor strength, changes in bodily appearance that affect social and economic role and status, and decline in central nervous system integrative efficiency.

Visual defects or blindness affect about 4 per cent of persons in their early sixties but about 15 per cent of persons in their eighties. Hearing impairments are present in about 5 per cent of persons in their sixties and in at least 25 per cent of these in their eighties. Taste suffers because of the decrease in the number of taste buds. Smell may also become less acute. Not only sensory loss but sensory disturbances may occur: small hemorrhages in the brain stem may cause equilibrium difficulties; glandular alterations may cause drying of

the skin and contribute to feelings of heat or formication.

Gross decline in motor strength of the aged is evidenced by paralysis in about 1 per cent of persons at age 60 and in over 3 per cent of those aged 80. Osteoarthritis is an extremely common condition that severely restricts the mobility of many old persons. Following strokes, weakness short of paralysis is frequent. Loss of muscle mass, decreased elasticity of connective tissue, osteoporosis, and spontaneous fracture of the hip with its limiting sequelae are common. The shortening of steps, bowing of spine, and shrinking of torso may induce troubling changes not only in the attitudes of other persons but in the aged person's attitude toward himself.

In neuromuscular disabilities, the interweaving of somatic and mental disorder and the emotionally determined exacerbation, exaggeration, aggravation, and exploitation of illness is especially notable. It is often difficult to determine how much of a disability is the result of impairment in neuromuscular and skeletal systems or pain and how much is related to ignorance, fear, and depression.

Cardiovascular and respiratory diseases obviously also curtail activity.

Reactions to physical, chemical, and living assaultive agents are often impaired. The decreased defensive and healing capacity affects the interaction of persons and assaultive agents so that diseases are masked—the aged person feels and is more ill than signs may suggest.

Physical losses and losses in central nervous system integrative capacity after brain damage undoubtedly contribute to the high accident rate of the aged; these accidents, in turn, make a large contribution to the physical impairments of old age (see Figure 3).

Physical illness and death. The anticipation of illness, pain and suffering, and death—the ultimate loss of powers and the final loss of the things and the persons they have loved, watched over, and derived pleasure from—constitute serious psychological problems for most persons.

The relationship of health and psychological reactions is complex. Childhood experiences with ill health, parental and social attitudes toward the sick person, the time of life in which these illnesses occurred, and the type, severity, and duration of illness all undoubtedly influence self-evaluation, control of self, feelings of fragility or vulnerability, and tendencies to utilize or exploit illness. With aging, individuals may react to illness or debility with feelings of helplessness and fear. Many persons in their sixties become significantly depressed when ill, and depression frequently precedes and heralds the existence of a somatic disorder. Moreover, latent illnesses such as glaucoma, diabetes, and hypertension may be exacerbated. Progressive cardiovascular disease, with its recognized threat to life and the functional

limitations it imposes, may provoke fear, anger, and depressive reactions. Conversely, emotional overreaction can aggravate previously mild cardiovascular, endocrine, and other disease processes.

Disability commonly exceeds what the impairment would seem to justify. Exploitation of illness by a frightened person is common. Persons who appear to have healthy personalities, who have been and continue to be relatively assertive, active, and interested in youthful pursuits and social interchange, tend to evaluate themselves as happy and symptom-free and have an optimistic outlook on life, even in the presence of obvious impairment and ill health. Well-adjusted aged persons think of the old as capable, active, energetic, and flexible, even though their own physical condition belies such a view.

Physical alterations in appearance and strength may constitute real losses in assets for persons whose occupation or social and domestic success depends on seeming youthfulness of face, figure, or movement. The same may be said for changes in performance and capacities for self-gratification. For some persons, these changes in appearance, energy, and stamina provoke fears, anger, and self-hatred; disease may even provoke shame or feelings that this is punishment for past behavior or current attitudes toward others. Obviously, psychological reactions to aging and illness complicate the effects of the changes in structure and function. Some persons aggressively deny illness or aging and attempt to continue all previous activities; others, in fright or resentment, excessively limit themselves.

Social and economic losses. Personal, social, and economic losses or changes are important factors in the emergence of mental disorder in the aged. The loss of family or friends, social position, money, residence, or occupation all have adverse effects.

To the aging person, retirement, for reasons of health, business policy, or desire for leisure, often means a change in role and a decrease in social status and prestige. With retirement and cessation of wages, self-regard and sense of purpose may evaporate. Changes occur in interests, attitudes, and values as environmental demands, new ascribed role, and decreased opportunities for individual achievement affect the person's status and activity.

Socioeconomic factors affect the development of the individual from earliest years. The socioeconomically deprived appear to be less well prepared to tolerate the adversities and changes of old age than those with more nurturant, educational, and occupational advantages. Economic security appears to be an important factor in the maintenance of morale in old age. Income from savings, pension, or Social Security benefits are not only smaller than previous income but also progressively devaluated by the unceasing inflationary trend, adding financial hardships to psychologically traumatic experiences. Poor aged persons who have achieved a measure of economic security

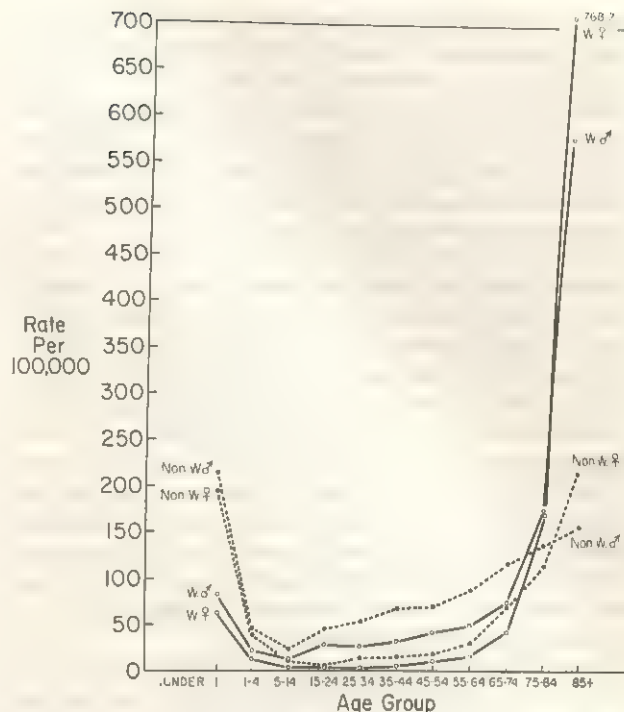


FIGURE 3. Accident death rate (nonautomobile) for male and female. (From *Vital Statistics of the U.S.*, vol. 1, United States Department of Health, Education, and Welfare, Washington, 1959.)

appear to be less anxious, angry, and depressed than those who are dependent on relatives and an uncertain income. Persons who are financially well off appear to have higher morale and are less prone to display chronic affective disorder than poor persons.

Certainly, good adjustment in old age is only partially attributable to economic security; such security generally reflects good opportunities early in life, which have resulted in greater personal, social, and economic resources. Nevertheless, economic resources appear to take precedence over most others as a supportive factor in old age. The influence of economic security on morale and as a counter to depressive reaction appears to supersede even physical status. In short, from the point of view of good spirits and social integration, it appears that in old age it is better to be rich and sick than poor and healthy.

Family and interpersonal relationships. As people grow older, their families and friends become preoccupied with their own problems, change jobs, move, become ill, age, or die. Often, their families can be neither socially nor economically helpful. If not themselves aged, their children are likely to have families of their own. The nuclear family of comparatively young parents and children is relatively mobile, lives in small quarters, and is separated geographically from the grandparent generation. In addition, both husband and wife generally work, out of necessity rather than for luxuries. Consequently, the

burden of protection, supervision, or residential care for aging or aged parents is shifted to community organizations.

Contrary to popular notions, aged persons who live with or see family members frequently are not necessarily happier or freer of psychiatric disturbance or less lonely, blue, or bored than aged persons who live alone and seldom see their families. In fact, the converse is often true; living with one's family or making frequent visits to them may be evidence of financial need, illness, or anxiety on the part of the aged rather than of family solidarity and cohesion. Loneliness and boredom of aged persons cannot be regarded as causes of psychiatric illness; rather, they are symptoms of a recognized or unrecognized affective disorder in which the aged person is yearning for and attempting to gain a special protected relationship with a child or another parental surrogate. A distinction can be made between the aged isolate—one who can pleasurably live alone—and the aged desolate—one who, having lost family or friends, remains inconsolable or desperately in need of replacements.

Sexual losses. In both men and women, change in appearance and loss of sexual value may pose serious problems. Men are often severely troubled by loss of potency, which was not only a source of pleasure and a fancied way of rendering service to a woman and guaranteeing her interest but also a symbol of masculinity and worth as a person. For a woman, loss of sexual attractiveness may threaten her feelings of security in a marital relationship, although she may welcome the decreased sexual interest of her mate. In both men and women, the decline of sexual interest and activity appears to be related to early acquired sexual habits and interests. The timid, prudish, and inhibited tend to welcome loss of sexual powers and drive and to limit activity or lose sexual capacity earlier than those who have been active and relatively uninhibited. Therefore, one partner may tend to refuse the other by saying, "You (or we) are too old for that."

Adaptation to losses. In general, it appears that persons who retain a youthful, vigorous, problem-solving view of life tend to make a better adjustment in old age than those who accept old age as a time of diminished resources and agility or of relatively stereotyped behavior. Persons who, although themselves chronologically aged, feel that the aged do not need protection but are likely to be healthy or socially vigorous are relatively well adjusted, even when their own physical status and socioeconomic condition belie their conviction.

Persons who have had a self-assertive, problem-solving approach to life tend to be less hypochondriacal and less prone to depression in old age. Even when they become ill, they have fewer complaints and tend to be less depressed by their physical illness. In contrast, the relatively nonassertive, more passive persons complain more and, although greatly in need

of people, are generally less well integrated socially. This is not to say that dominating, domineering, or controlling persons make a good adjustment in old age. Many persons manifest their need for others during maturity by gaining and holding them through overly compassionate mothering or socially accepted directive behavior. These people are not self-assertive; they are, rather, aggressive persons whose personality constriction is partially compensated for by controlled anger. In old age such persons, on removal of children or when widowed, complain of loneliness and boredom. These complaints, which are evidence of their fear of being alone and without a guaranteed protective person, may be masked by controlling oversolicitude with children, grandchildren, or friends.

Many of the losses of aging affect men more adversely than women. Women, unless severely disabled, can usually retain their roles as housewives and remain useful, or seemingly so, until late in life; furthermore, for women the successful maintenance of relationships is usually more important than work performance or earning money. This is probably why they can adjust better than men to the loss of friends and family, occupation, material objects, or their accustomed living quarters.

Personal, cultural, socioeconomic, and physical changes probably contribute to mental disorder, invalidism, alcoholism, and accidents in old age and undoubtedly contribute to the high suicide rate of aged white males (see Figure 4). The differing suicide rates of males and females and of whites and non-whites probably reflect socioeconomic conditions, differential survival into old age, and culturally determined patterns of reaction. The suicides in old age appear to be directly related to ill health and depressive reactions and not so much, as in younger persons, to clear cut interpersonal difficulties and unstable personalities.

From the foregoing, it is clear that money, social position, supportive persons, psychological adaptability, and physical health protect the aged from stressful circumstances and from the emergence of patterns of intrapsychic and externally obvious behavioral disturbances. The decrease or loss of such resources for adaptation provokes or permits the emergence of maladjusted, inefficient behavior called mental disorder. Physical changes, especially those following illness and those affecting the brain, may have great influence on the individual. At times, however, economic adversity, loss of family or friends, and changes in their attitudes have greater impact. The relationship of physical, psychological, social, and economic resources to the preservation of good functioning and mental health is shown in Table I.

Dependency. As previously noted, illness, accidents, and genetically determined processes contribute to the loss of resources, diminish adaptive capacity, and complicate previously existing deficits. The newly lost resources can be categorized as: (1) physical:

health, strength, and appearance; (2) psychological: cognitive and emotional; (3) social: family, friends, associates, avocations, prestige, social status, respect, utility, and personal acceptability; (4) economic: property, income, or gainful occupation.

Loss of any of these resources is capable of evoking grief or depression. Running counter to these losses and protecting against the depressive reaction are such factors as special skills, prestige, financial position, legally or socially vested powers, and the special interest of family, friends, or society, based on previous relationships and cultural attitudes.

For most aged individuals, the loss of resources is added to already limited resources for adaptation. Those that chiefly interest the psychiatrist are the deficits in adaptive capacity based on psychological inhibitions—fears—that are usually acquired early and are modified, reinforced, and elaborated in the lifetime of the individual. Not only have these inhibitions limited the person's capacity to act self-assertively, productively, and creatively, but they may have interfered with formal learning and with profiting from experience. Frequently, ignorance or failure to acquire efficient adaptive techniques is the result of lack of opportunity to learn, because of socioeconomic deprivation in early life or social neglect.

When protective or compensatory factors are outweighed by the losses of aging and the preexisting limitations, the individual anticipates or experiences failures in mastering the problems and challenges of everyday life. This leads to feelings of helplessness.

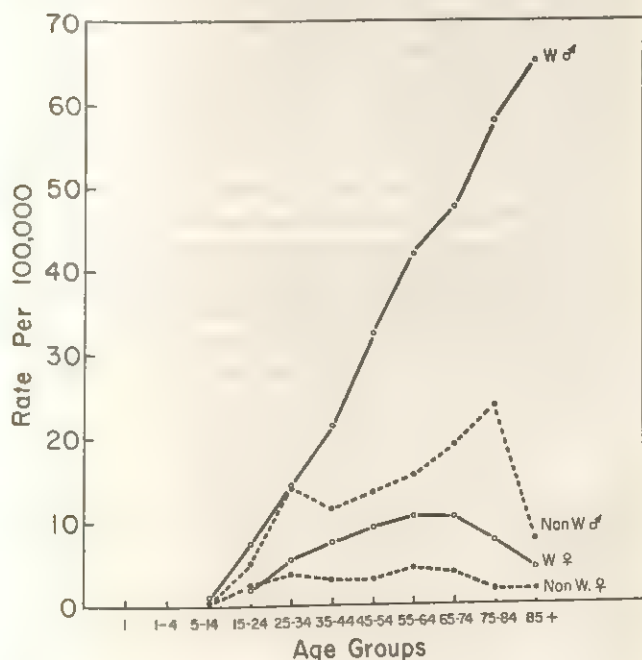


FIGURE 4. Suicide rate by age, color, and sex in the United States in 1959. (From *Vital Statistics of the U.S.*, vol. 1. United States Department of Health, Education, and Welfare, Washington, 1959.)

TABLE I
Contributors to High Morale: Factors Which
Counteract Depression*

Factor	Protective Device	Protective Effect	Result
Relative affluence	Economic security: food, shelter, services, mobility, medical care	Freedom from fear and anger	Limited need for family and friends
	Physical security: power, physical comfort, pleasure	Assertiveness	
High educational level	Well established mechanisms of psychological, social, and emotional adjustment	Self-confidence Self-esteem Self-direction: interests and purpose Sense of identity	Responsiveness to needs of family
	Diversity and range of interests		
Social status	Social security	Social independence	Capacity for solitary self-enjoyment
Good health	Power Mobility Physical comfort or pleasure Physical security	Physical independence	Ability for independent productive or pleasurable activity

* From Goldfarb, A. I. Responsibilities to our aged. *Amer. J. Nurs.*, 64: 64, 1964.

For most persons in this society, feelings of helplessness are unpleasant and frightening. Helplessness and failure—real or anticipated—decrease self-esteem, sense of worth or dignity, and confidence. Activity becomes restricted, and purposiveness decreases. Anger often becomes mixed with fear and is accentuated by limitation of ability to master everyday problems, to achieve relief from tensions, and to provide oneself with gratifying experiences. Anger is often directed against oneself for being damaged, a failure, helpless and worthless—further decreasing self-esteem and self-confidence. Anger is also directed against persons and natural processes that appear to be increasingly harsh and threatening as the individual becomes progressively impaired or weaker. At times anger adds to feelings of strength and permits mobili-

zation of the remaining resources, but expression of anger usually leads to increased fear because of guilt, conviction that one should be punished, and a realistic fear of retaliation (see Figure 5).

Fear and anger occasionally mobilize the person to relatively efficient action, thereby decreasing feelings of helplessness, fear, and anger. However, emotional overreaction usually tends to disorganize action, thereby decreasing efficiency. In this setting of cyclically increasing fear, anger, and helplessness, the person's need for others becomes accentuated. He looks to others for assistance, aid, or emotional support (see Figure 6).

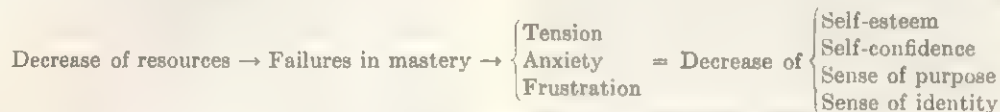


FIGURE 5. The intrapsychic evolution of disturbed and disturbing behavior in the aged.

This search for aid and support is a manifestation of the dependent state in which an individual who regards himself as weak and in need of assistance strives to find another he believes to be strong to assist him. His efforts become devoted to searching for or gaining such actual or promised assistance and to maintaining this relationship. This search for aid is sometimes transparently clear, but more often it is complex and obscure; the person hides it from himself and others. It is revealed by the person's conversational flow and his behavior toward family members or potentially helpful persons. The search for aid is, in essence, an attempt to make someone else be something he is not or do something he cannot and to have him remain in the desired gratifying role and relationship. The patient's search for another presumed to be stronger and capable of helping and the maneuvers to hold the other in a helpful or potentially helpful relationship are sometimes called dependency or dependency striving.

Individuals who feel helpless and in need of assistance can seek aid in a rational, constructive manner while also displaying inefficient, irrational behavior.

For example, a physically impaired or ill aged person could seek out a physician and cooperate with him to eliminate or ameliorate a disorder. This does occur with many older persons. More often, however, the individual's search for aid is primarily irrational, even when the rational elements are present. That is to say, there is a search for emotional support; the person seeks evidence to convince him that aid is promised, can be called on, and will be made available by the delegated protector.

A belief that such a person's aid or powers have been gained permits the individual to feel secure on illusory as well as on substantial grounds. This, un-

fortunately, renders him susceptible to charlatans, faith healers, and quacks for the same reasons that he may improve under the care of skilled physicians who provide effective aid through therapeutic use of the self in an easily fostered, controlled therapeutic relationship. The protector or recipient of the dependent person's love can be called a parentified person, and the patient's pleas for understanding or love are, in effect, a turn toward a delegated surrogate parent figure. Unsophisticated persons can mistake their delegation to special status by the patient for real love and make misguided psychotoxic responses based on their own needs, fears, or resentment. The patient's verbal and nonverbal behavior usually tells the physician what attributes and powers the patient desires in the parentified person. These serve as clues for the physician to what he should not do, lest the patient becomes disillusioned, unnecessarily disengaged, or harmed.

Common Psychiatric Conditions of Old Age

Almost all the mental disorders found in younger persons can persist into or recur in old age. Schizo-

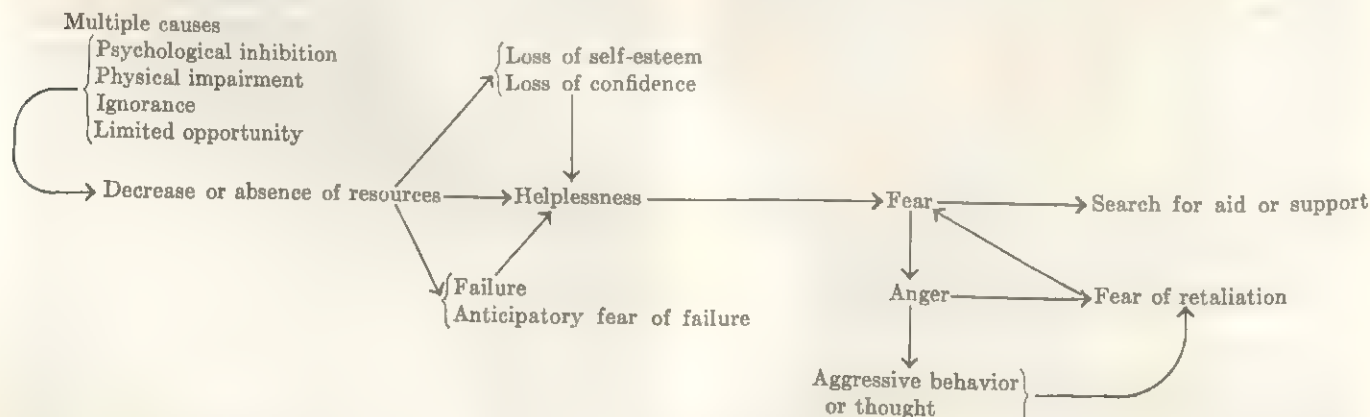


FIGURE 6. Elaboration of Figure 5.

phrenia, manic-depressive psychoses, involutional psychoses, drug dependence, alcoholism, and the organic mental syndromes are common mental disorders in old age. The physician must be familiar with the various patterns of all these disorders and recognize their continuation or periodic exacerbation in old age. Although these traditional diagnostic categories can help orient the physician with respect to prognosis and treatment, such categories are too broad in that they obscure individual differences and too restrictive in that they appear to be mutually exclusive and chronic.

Current official classification systems can be regarded as nosological groupings that are determined by medical fashions at the time of coinage, and their use is biased by the training and predilections of physicians or by the immediate goals of therapy. They are not of great value in geropsychiatry. As stated succinctly by Post in 1962, "In individual cases the psychopathological picture [can] change from a depressive to a schizophrenic one," and in 1964, "Subdivision of affective disorders into those due to cerebral-organic changes, involutional processes, and endogenous, constitutional, and reactive psychogenic causes has a low scientific status." Traditional classification may identify only the well advanced, well crystallized biologically and culturally determined expressions of fear, anger, and appeals for aid.

Some of the preexisting well crystallized personality patterns or ways of life to which classical diagnostic terms can be applied take on new significance or first emerge as troublesome to patient or family when circumstances and personal attributes change with aging. In addition, physical, social, and economic losses and challenges that frighten, anger, and depress the individual may evoke florid neurotic and grossly disordered behavior that frequently defies classification.

Because of these multiple contributions, mental disorder is very common in old age. Any of these syndromes may be further complicated in old age by the simultaneous presence of organic brain disorders.

Organic brain disorders. Differentiation between the purely or chiefly organic disorders and the psychogenic disorders is of value in prognosis and in formulation of treatment plans. Moreover, emotional and psychological factors may be of primary importance in the prevention of mental symptoms, even when brain damage is present.

"Brain syndrome" is the term applied to the group of measurable defects of mentation that reflect brain damage or dysfunction. When these deficiencies are transient, the condition is called acute and is thought to reflect reversible cerebral disturbance; when the deficiencies persist, despite adequate environmental and medical corrective measures, the condition is deemed chronic and is ascribed to brain damage. The older the patient, the more likely it is that brain damage plays a part in the genesis of behavioral

disorder, but chronological age should not be used as a diagnostic criterion.

Signs of brain syndrome. Brain syndrome consists of the following characteristics: (1) Disorientation for time, place, or person. (2) Evidence of impaired immediate recall. (3) Deficits of recent and remote memory. (4) Weakening of intellectual functions, as indicated by difficulty and errors in doing simple calculations or in recalling simple items of general information. (5) Defects of grasp and comprehension. These defects may be indicated by difficulty in retaining and reacting to questions or commands. They may also be indicated by faulty reaction to a situation or an interpersonal transaction, revealing that it is not understood. This can be called situational disorientation. (6) Intermittent or persistent occurrences of the above, as shown by a reliable history from the patient or other sources.

In the absence of stupor, coma, catatonia, excitement, complete deafness, marked language difficulty, or other factors that make examination impossible or its results questionable, the first four signs are diagnostic of brain syndrome. In chronic brain syndrome, one of these deficits is rarely found without the others, although some may be less obvious or severe than others. If only one or several of the signs are found, developing brain syndrome may be suspected. The diagnosis of chronic brain syndrome is best made only when all of the first four signs are present, even if only to a slight degree.

Other presumptive signs include emotional lability, focal neurological signs—including aphasia, agnosia, and apraxia—slovenliness or poor habits, poor judgment not clearly related to emotional disturbance, and apathy. When these signs appear to be irreversible and related to brain damage, as opposed to brain dysfunction of a reversible or transient nature, the condition is termed chronic.

Acute brain syndrome. This is a transient and potentially reversible condition that is usually related to an acute febrile, debilitating, or exhausting illness. There is often evidence of dehydration or malnutrition. Common conditions provocative of acute brain syndrome are malnutrition; infection; pain; fractures; heart failure; coronary thrombosis; drug intoxication; malignancy; electrolyte imbalance related to diuretics, vomiting, or renal disease; and emotional overreaction. In the aged, however, fever, tachycardia, leukocytosis, or obvious physical signs may be absent even with acute illness. This may lead to a mistaken diagnosis of chronic brain syndrome. Blood count and chemistry, urinalysis, and physical examination give clues to reversible disorder by revealing acute illness. Anemia, nutritional history, or a history of drug ingestion often point to the etiology of the disorder.

With acute brain syndrome, all the signs of brain syndrome are not necessarily present simultaneously. There are usually fluctuations in degree of disorienta-

tion, misinterpretations, and occasionally hallucinatory phenomena. At times the disorder may be quiet; at other times it is characterized by restlessness, helplessness and bewildered confusion, or a tendency to wander, both physically and verbally. In some cases, as an exaggeration of preexisting chronic brain syndrome, the disorder can attract attention to underlying or developing illness, signs of which may or may not have been noted previously.

In almost all cases, the existence of acute brain syndrome in the aged may be taken as presumptive evidence of the simultaneous presence of developing chronic brain syndrome. Attacks of acute brain syndrome often contribute to a steplike progression of the more chronic form. Whenever there is an episode of acute brain syndrome, attempts should be made to determine whether chronic brain syndrome is also present.

Chronic brain syndrome. Diffuse brain damage appears to be necessary for the emergence of signs of chronic brain syndrome. Single episodes of cerebral thrombosis, hemorrhage, or embolism appear to give rise to signs of focal rather than diffuse damage, unless there is cardiovascular, pulmonary, or other systemic disease that contributes to generalized cerebral damage through influence on blood supply or metabolism. The effects of expanding intracranial lesions when cerebral intercranial pressure is high and decompensation is occurring or when the lesions are multiple may be mistaken for cerebral arteriosclerosis in aged persons. The concept of functional neuronal mass may be helpful: brain syndrome can be considered to have emerged when functional neuronal mass has been decreased to a critical point. Patients can evidence many strokes before the emergence of brain syndrome, despite signs pointing to foci of brain damage.

The patient with cerebral arteriosclerosis and focal damage is usually acutely aware of loss of physical and mental powers and reacts to his losses with feelings of depression, a common reaction to severe or threatening illness of any kind. Depression is especially notable in those whose personal integrity is threatened by the effects of brain damage. Attempts to repair, ward off, or defend oneself against the threat of disintegration are occasionally abetted by anosognosia, in which the patient does not know and knows not that he knows not. Under such circumstances, even such gross physical defects as hemiparesis may not be attended to, admitted to, or come to the patient's awareness.

Senile brain changes are presumed to be etiological factors in the production of chronic brain syndrome when there are no focal neurological signs and when there is no history of stroke. This disorder usually begins after, rarely before, age 65; it is more common after age 70 and is almost universal in the eighties. It is often insidious in onset; its progression may be introduced by vaguely defined emotional disorders

and, at times, by clear cut depression. When diffuse brain damage develops slowly and environmental circumstances are supportive or when there is a minimum of stress, the individual may be able to compensate for functional loss with relatively little emotional upset. Depressive reactions even in very late life, therefore, should not be dismissed as secondary to brain damage or cerebral arterial sclerosis.

With brain syndrome due to any cause, good education, high occupational and economic status, and the early acquisition of socially acceptable patterns of behavior tend to protect against troublesome behavior. There may be excellent preservation of function, especially on a social level, despite severe brain syndrome. Social behavior may be so well preserved as to mask severe memory deficit and disorientation.

The brain damage which leads to the emergence of brain syndrome may be the end result of many factors. Chronic brain syndrome in some persons appears to be the result of genetically determined cerebral deterioration, in others the result of extracerebral or intracerebral arterial vascular disease, and continued or episodic cerebral malsupport such as can elicit symptoms of acute brain syndrome.

Old classifications of patients as having senile dementia, senile psychosis, or cerebral arteriosclerosis with psychosis may place undue emphasis on organic factors and lead to neglect of opportunities to improve behavior and decrease suffering. Clear differentiations should be made between the degree of organic impairment present, and changed behavior, alteration of mood, disorganization of thought or action, and the type of intensity of distortion of thought content and behavioral disturbance present (see Figure 7). The alterations of mood, content, and behavior may be complex, motivated, goal-seeking—albeit painful, inefficient, and socially disturbing—elaborations that require a certain minimum of cerebral competence that is absent in persons with severe brain syndrome. Persons with mild or moderate degrees of brain syndrome may generate severe affective or paranoid reactions; persons with severe brain syndrome may display agitation or disorganization of behavior but do not appear to have the cerebral cortical wherewithal to elaborate recognizable affect or content.

Chronic brain syndrome may be considered mild when defects of general information are present but memory and orientation are relatively good. It can be called moderate when calculation, memory, and general information are impaired but orientation is fair or good. It is severe when there are obvious defects of orientation and of memory and intellectual function.

Disorientation can be considered mild when the patient can recognize and name friends or persons in the family correctly, answer the question "Where are you now?" and correctly give the year, the month, and the approximate day of the month. Disorientation is moderate when the patient almost always correctly

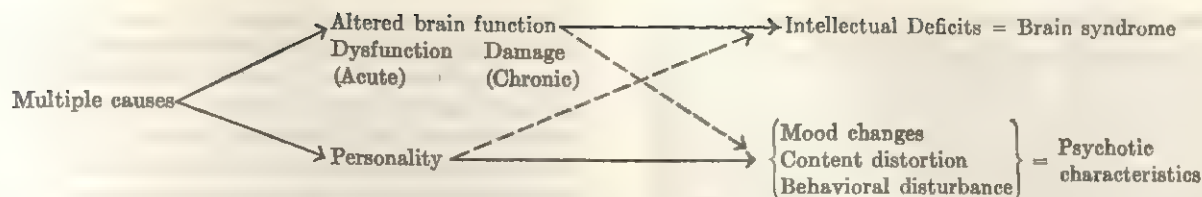


FIGURE 7. A diagram showing the variety of factors lying behind acute or chronic alterations of brain function. Etiological factors may act singly or in combination, slowly or rapidly, continuously or episodically, once or repeatedly, to result in dysfunction or damage. Individual personality patterns the measurable organic mental syndrome with respect to what is more or less selectively forgotten, retained, or attended to. Brain malfunctioning or decreased functioning may itself contribute directly to mood, content, and behavioral disturbance; but it is the person's previous personality which, in reaction to the impairment, the social situation, and the probable future, has the more important influence in the production of "psychotic" characteristics.

identifies persons, but only approximately identifies or locates places and cannot give the correct year, month, and day of the month. Disorientation is severe when the patient misidentifies persons, incorrectly names and locates places, and cannot give the correct year, month, and day. When disorientation is severe, chronic brain syndrome can be considered severe.

In rating the severity of chronic brain syndrome, the psychiatrist may be helped by 10 questions that test for orientation, memory, and ability to do simple calculations. The questions are: (1) Where are we now? (2) Where is this place located? (3) What is today's date, day of month? (4) What month is it? (5) What year is it? (6) How old are you? (7) When is your birthday? (8) What year were you born? (9) Who is President of the United States? (10) Who was President before him?

The mental status questionnaire, when scored in terms of number of errors made, correlates well with psychiatric estimates of degree of brain syndrome, as shown in Table II. This correlation, of course, is expected because the questionnaire is a standardization of the items generally used in arriving at the psychiatric judgment.

This approach to the diagnosis of brain syndrome is admittedly somewhat rigid. Many clinicians feel that the diagnosis of organic mental syndrome, specifically that of cerebral arteriosclerosis with psychosis, is justifiable even in the absence of disorientation or memory loss. They base their opinion on the fact that the disorder can be considered a postcerebral thrombosis reaction type, in which social judgment is impaired, emotional lability is present, paranoid ideation is common, and depressive or hypomanic behavior may emerge as highly troublesome and resistant to treatment. However attractive it may be, this concept that affective disorder is a stage in the development of an organic mental syndrome in old age is not supported by careful clinical observation. Affective disorders can, however, be precipitated or aggravated by a stroke or by emergence of brain syndrome in predisposed persons.

In addition to a brief mental status questionnaire, double simultaneous stimulation of the cheek and the dorsum of the hand may yield information confirma-

tory of brain damage. The test is performed with the patient's hands on knees, facing the examiner, who says: "I am going to touch you. Please tell me or point to where I touch you. Close your eyes." The examiner then simultaneously touches, or brushes lightly, the cheek and dorsum of the hand on the right side, then the left side, then one cheek and opposite hand, and then the reverse; each time asking for a report of where a touch has been felt. This is followed by simultaneous stimulation of the two cheeks and of the two hands; these are considered "teaching trials" in that these are almost invariably reported correctly by even severely brain damaged persons, provided they are testable. Following these two teaching trials the patient, if free of brain damage, usually reports a repetition of the first four trials without error. If errors are made the test is repeated with the eyes open; it is of interest that about 80 per cent of persons who make errors with eyes closed tend to do so with eyes opened. The errors made are almost invariably failure to report correctly the stimulus to the back of the hands. There is either extinction, reporting the stimulus to another part of the body, or pointing to the hand of the examiner or into space. The examiner must be aware, however, that like all tests it must be understood within the context of other findings. Manic or depressed patients who are unable to attend may make errors unrelated to brain syndrome unless the test is patiently and carefully administered.

TABLE II
Rating of Functional Impairment by Mental Status Questionnaire^a

Number of Errors	Presumed Mental Status
0-2	Chronic brain syndrome absent or mild
3-8	Chronic brain syndrome moderate
9-10	Chronic brain syndrome severe
Nontestable ^b	Chronic brain syndrome severe

^a From Kahn, R. L., Goldfarb, A. I., Pollack, M., and Peck, A. Brief objective measures for the determination of mental status in the aged. *Amer. J. Psychiat.*, 117: 326, 1960.

^b In the cooperative person without deafness or insuperable language barrier.

Functional disorders

Schizophrenic reactions. The chronologically aged with schizophrenic disorders can be subdivided into three categories. In the first are the persons who are in psychiatric hospitals. Many of these persons have made a good hospital adjustment and can be adequately cared for in exceptionally well run nursing homes or foster homes if there is adequate psychiatric supervision. They get along equally well in hospitals organized as small communities. Other patients have deteriorated to such an extent that they require constant close supervision and care in a hospital setting. The large scale removal of persons with mental illness who require long term care to nursing homes has been advocated. This may solve financial or administrative problems, but it cannot now be considered a preferred treatment method. Nursing homes are not themselves capable of providing the community setting for social and occupational integration that a well organized psychiatric hospital can provide, nor are they part of the larger community.

A second category of persons are recognizably ill but, with family and community support, have remained socially integrated. Among these persons are some whose special skills or attributes serve to protect them from social and economic difficulties that would make hospitalization necessary.

A third group are persons in whom paranoid or other symptoms are well handled by the person or are so unobtrusive that they have escaped notice until old age. Many of these persons are considered arrogant, eccentric, or suspicious. Among them may be included the paraphrenic persons described by Roth. In many, hearing defects appear to reinforce or trigger the development of paranoid symptoms. Also in this group are chronologically old persons who have become mentally impaired, physically weak, or, in men, sexually impotent and who develop angry, paranoid ideas that usually focus on the spouse or family. In men, especially those with prostatism or postprostatectomy, delusions of the wife's infidelity are common. Women often complain of being spied on, subjected to stimulation by concealed electrical appliances, or poisoned by fumes sent under the door. In general, the paranoid symptoms appear to be related to preoccupation with physical decline or discomfort; they provide clues to what frightens the person and reveal what he wants from the persons around him. Paranoid symbolic representation of discomfort with serious and frightening illness is common. For example, a man with rectal carcinoma complained that "men in the cellar are causing trouble" and wanted someone to deal with them.

Aged persons with schizophrenic symptoms of any kind tend to respond well to phenothiazine drugs. Medication must be judiciously administered so as not to reduce marginal cerebral competence by direct drug action on the nervous system or by lowering blood pressure. Chlorpromazine and thioridazine appear to be

most effective and best tolerated. Electroshock therapy is not of great value; although response may be more immediate, it may be a spurious improvement with memory loss. Recovery of memory may result in reemergence of the disorder or relapse.

Affective reactions. Persons with manic-depressive psychoses can be categorized as those who are in the hospital; those who, although ill from youth, remain socially integrated; and those in whom the disorder has escaped attention in youth but emerged as troublesome in old age.

A large number of persons with affective disorders remain effective in the community, despite alternation of depressive and hypomanic or relatively well periods. With aging, the disorder may become more regular and predictable. Some persons have shorter or more rapid alternating episodes; in others, the episodes become longer, and there is no true free period. A large number become chronically depressed. It is doubtful that age ever brings with it a relief from such symptoms.

Persons with depressions generally respond fairly well to antidepressant drugs. As is true for the phenothiazine group, these medications—amitriptyline, imipramine, and the monoamine oxidase inhibitors—must be carefully supervised. Electroshock therapy is of greater value than the antidepressant drugs only in depressive reactions in which vegetative signs are minimal and agitated and belligerent behavior is prominent. The use of prophylactic electroshock treatment is of doubtful value. Leukotomy has been recommended by some European authorities, but it appears to be unnecessarily drastic. Recently, lithium salts have attracted attention as of value in manic states. If begun in the manic or "well" intervals, regular daily oral administration of lithium carbonate (about 500 mg.) may reduce the severity of the manic symptoms and both shorten and decrease the intensity of the depressive episodes, with eventual almost complete subsidence of the disorder. This drug is not yet released for general use. The patient should be carefully watched for signs of low blood sodium and potassium.

Involutional psychotic reaction. The existence of involutional psychotic reaction as an entity has been legitimately questioned. Nevertheless, there does appear to be a special subgroup of mental disorders worthy of special classification. This subgroup is characterized by depression, hypochondriasis, low self-esteem, guilt (especially about sexual behavior and desire), with self-deprecatory and self-accusatory trends (especially about sex and sinfulness), often associated with florid paranoid ideation and behavior. In women who have had emotional reactions temporally related to their menstrual cycle, there is often an emergence with aging (but not necessarily related to sexual involution) of prolonged tension, depression, and paranoid trends similar to those that periodically occurred in the past. In both men and women in whom mental disorders become prominent in middle age or later life, the prognosis when paranoid ideation is present is not

as good as when such ideas are absent or are very clearly secondary to depression or elation.

Pseudoneurotic affective or mood-cyclic disorder. With the advent of old age or life-threatening physical disease, many persons begin to review their past with feelings of regret; they feel that they have failed to achieve cherished goals, to make adequate use of their assets, or to realize their potential. They are grieved and depressed by the loss of a potentially viable self, much as is a woman after an abortion, but less consolably so, for they feel there is no second chance.

Clearly affective disorders that closely resemble the involuntional psychoses are often incorrectly categorized as organic mental syndromes when they occur in chronological old age. At first glance, many appear to be first depressive episodes, but a careful history often reveals that they are actually exaggerations of prior symptoms. The previous episodes or symptoms had either gone unnoticed or had been considered an aspect of psychoneurotic behavior, periodic hypochondriasis, or recurrent exacerbation of such physical disorders as arthritis. In retrospect, many of these persons appear to have been suffering with pseudoneurotic mood-cyclic disorder. Some of these prior episodes may have been recognized as depressions and classified as involuntional.

In the past, electroshock therapy was regarded as specific for these disorders. Now, there is disenchantment with respect to its efficacy as increasing experience attests to the recurrent nature of these depressive reactions of middle age and early old age, and the relative uselessness of attempting to differentiate between endogenous or reactive, mood-cyclic, involuntional, and neurotic affective reactions. It is probably best simply to differentiate between affective disorders with prominent, typical vegetative signs and disorders of affect with few or no such signs.

Manic and hypomanic disorders. Although less frequent than depression, these disorders are nevertheless common in old age. The patient and his family frequently fail to recognize the hypomanic phase of mood-cyclic disorder. They may regard it as a period of well-being, despite the presence of aggressiveness, overactivity, and poor judgment. The afflicted persons are usually hostile or paranoid, often accusing a specific close person, such as the spouse or child. The family may regard this behavior as an exaggeration of previous characteristics and unpleasant disposition rather than as a phase of illness. Treatment or hospitalization may be sought only when the disorder threatens the family's physical, social, or economic welfare.

When excitement is prominent, these disorders may be mislabeled agitated reactions or be mistaken for dementia. Their resolution sometimes results in their being called, in retrospect, states of pseudodementia. They usually follow a depressive reaction which may have been so brief as to escape attention. They may be mixed with depression and invariably include paranoid

trends. They may occur in compulsive, relatively passive persons after a frightening illness or bereavement or in anticipation of loss, as by the marriage of a child. The response to treatment is good; phenothiazines alone, followed by the addition of antidepressants as the manic behavior subsides, are usually effective. Electroshock therapy is of no great long term value. Lithium salts have been suggested for recalcitrant cases and, as previously noted, show promise.

Alcoholism and drug dependence. Alcoholism is probably the most common form of drug dependence. Aged alcoholics who pose psychiatric problems are usually found among the younger segment of the old-age group. For the most part, they are individuals who began to drink in youth or middle age. Their health, habits, and circumstances have been such that, despite alcoholic excesses, they have survived into old age. Included in their ranks are many divorced men, widows, and men who never married. When called to medical attention, they are often persons who have no families or who have left or have been abandoned by their families because of their poor social and occupational adjustment. Many are in the lowest socioeconomic groups.

The preponderant number of aged persons who reach prisons are excessive drinkers whose arrests for vagrancy are directly related to alcoholism. Without work, income, or helpful family, they tend to spend more time in jail awaiting trial—for they can muster no bail—and serving short sentences than they do in the world outside.

The contribution of alcoholism to accidents and suicides in old age is not known. Much more information about the genesis, development, and course of this disorder in old age is needed; it has not yet been adequately studied either medically or psychiatrically.

Excessive alcohol intake, poor nutrition, and concomitant illness frequently cause acute brain syndrome. When this happens or when the alcoholism is complicated by physical debility or aberrant behavior, medical treatment or hospitalization is required. These persons have a good prognosis for the acute episode and for discharge from the hospital; therefore, many have repeated hospital admissions until the development of chronic brain syndrome makes long term care necessary.

The management of the excessive drinker is complicated by poverty, inhumane social and legal attitudes, and a dearth of facilities. For the aged alcoholic who has socioeconomic supports, management depends on the willingness of the individual to enter into a supportive relationship with a physician or other persons who can be of assistance in regulating his behavior and helping in the resolution of personal and situational problems. Prolonged institutional stay is often required for adequate treatment of the physical and psychological disorders.

Dependence on drugs such as hypnotics and narcotics is probably more common in old age than is

generally known. Many aged persons are habituated to sleeping pills, and some insist on regular doses of sedatives for chronic pain. Hypochondriasis is at times partly determined by the aged person's dependence on a favorite medicine. Tonics and similar nostrums are more often prized for their alcoholic or sedative content than for their otherwise generally inactive ingredients.

Psychoneurotic reactions. Almost all the psychoneurotic syndromes seen in younger persons can be carried into old age. With the advent of brain syndrome, they often emerge so floridly that they simulate psychotic symptoms. Especially prominent psychoneurotic manifestations are frank anxiety, depression, the exaggeration or exploitation of actual illness, and physical or mental impairment in the pattern of conversion psychoneurotic reactions; but phobic and obsessional syndromes are also carried into old age. Obsessional preoccupation with detail and compulsive cleanliness are frequently misinterpreted as the cantankerousness and finicky behavior of the aged. Psychoneurotic traits appear to be exaggerated by depression and improve with treatment of the affective disorder.

Psychophysiological reactions. As with psychoneurotic reactions, many psychophysiological disorders are carried from youth into old age, but some seem to improve or burn out. It is possible that many persons who suffer severely from the psychophysiological disorders do not survive into old age. Nevertheless, persons with asthma, spastic colitis, and peptic ulcer are found among the aged. Within a well organized home for the aged, persons who have been admitted with such disorders tend to improve markedly during the period of their residence. It is possible that institutionalization answers their needs for total care, which lends strong support to concepts that emphasize the importance of dependency striving or ungratified dependency needs in their genesis and of emotional overreaction and depressive states in the perpetuation of such disturbances.

Other disorders, such as diabetes, hypertension, and glaucoma, may be accentuated in the presence of a depressive reaction. Vigorous treatment of depression can have such a salutary effect on these conditions that the use of drugs seemingly contraindicated by the pathophysiology is clearly indicated. Thus, amphetamines may, paradoxically, help reduce blood pressure and tachycardia through amelioration of the depression, and amitriptyline may result in decreased intraocular tension for the same reason. Diabetes usually becomes more severe and more difficult to manage with depression. The first appearance of diabetes may signal the onset of a depressive reaction; psychic improvement may convert frank diabetes to a latent or milder form.

Anorexia and constipation are common in the aged. Like insomnia, they are almost invariably associated with depression. Contrary to popular belief, aged persons need more, not less, sleep than do young adults.

Sleep disturbances are pathognomonic of psychic disturbances in the aged, and complaints about insomnia are a clue to a need for psychiatric attention.

Miscellaneous conditions. A variety of depressive syndromes are difficult to classify. They are found either alone or—because depressive reactions can occur in schizoid, retarded, or otherwise mentally impaired or ill persons—in association with other mental disorders or as concomitants of physical illness. All functional mental disorders may be regarded as part of a continuum. According to this scheme, the disorders or syndromes of the maladjusted aged are viewed as motivated goal-seeking appeals for aid within a social transaction. Depending on circumstances and environmental response, variations of a search for aid can be displayed by different persons or by the same person at different times. The variations are patterned according to the values and beliefs of the individual, his view of culture, and the social response to his behavior.

A patient may be openly frightened or brave, ingratiating, seductive, belligerent, coercive, withdrawn, or pseudoanhedonic—all with appropriate subjective dynamics as circumstances appear to require. Even late developing depressive reactions, manic-depressive, paranoid, and schizophrenic syndromes can be viewed as struggles between the patient and his social environment. In all, the patient appears to be attempting to manipulate others in a context of misunderstanding. Even when he appears to be withdrawn and apathetic or violently hostile, the patient may be attempting to gain assistance or emotional support from those about him or from a desired special other person of his fantasy.

Treatment

Because many of the aged are physically or mentally impaired or have limited socioeconomic opportunities, the physician must be prepared to limit his treatment goals and yet be wary of personal predilection or social persuasion to give up too easily. Treatment of mental disorders in the aged requires that attention be paid to more than the patient. Not only the complaints of the patient but those of his family, the community, and the persons charged with his care must be attended to. The need for treatment is often indicated when the disorder creates a family or community disturbance.

The physician must be certain that any acute or chronic medical condition of the patient is recognized, that action is taken where indicated for the amelioration of pain, and that acute brain syndrome is reversed through specific and generally supportive medical care. Furthermore, the presence and degree of chronic brain syndrome must be ascertained in planning the type and goals of treatment.

In general, the goals of treatment are to decrease the patient's suffering so that he has a minimum of complaints; to improve his behavior and decrease interpersonal friction so that he is minimally complained about; to increase his capacity for making and

retaining friendships with persons of both sexes and for socially acceptable sexual behavior; to restore him to work or an equivalent avocational activity within the limits of his remaining resources and commensurate with his intelligence, training, skill, and customary social role; to motivate or remotivate him; to evoke a desire to act so that he is maximally productive and creative. When a patient is motivated or remotivated and takes part in what he feels is meaningful and effective problem solving, there is accompanying pleasure through successful action. He regains a sense of purpose and identity.

To reach these goals, the physician can aim specifically to decrease the patient's actual or felt helplessness or his fear and anger. In some persons, the fear or anger that arises at the beginning of treatment may cause action that decreases the sense of helplessness. Subsequent feelings of guilt, fear of retaliation, and resentment may be useful in directing behavior along socially and personally acceptable lines. Although the warning and inhibitory actions of emergency emotion can often be utilized, emotional overreaction usually grossly disorganizes behavior; its unfavorable effects on self-confidence and self-esteem are particularly undesirable. Self-esteem and self-confidence must be fostered and restored; the patient's motivation to do and to succeed must be heightened; he must be encouraged to develop purpose and interest. When he acts and has a goal, his sense of who he is and what he is and where he is going—his sense of identity—is reinforced or restored.

These goals and aims can be achieved by a variety of techniques. Psychotherapy, occupational or avocational activity, group or individual therapy, and drugs or physical methods all have as their effective common denominator motivation and organization of behavior within the framework of a personal relationship.

Whatever the vehicle for psychotherapy, the psychiatrist starts by regarding the patient as having become bogged down in his own ineffective attempt to recoup losses and to compensate for weakness. He has become increasingly helpless, frightened, and angry because of continued failure. He is caught up in a search for aid or support. The psychiatrist responds to this search by permitting the patient to regard him as the sought for surrogate parent. He refrains from discouraging the patient's tendency to delegate him as such and to take pride in his ability to interest the physician. With patients who have socioeconomic and personal mobility, the physician can help the patient gain insight, learn new techniques, and make helpful major changes in patterns of action and life situation. In the care of the aged, however, especially the mentally or physically impaired, the gains must often be limited to what the patient derives from the reassuring and supportive relationship.

Traditional classification is of limited aid in prognosis and treatment. Not only is it difficult to differentiate between neurosis and psychosis, but it is not

always clear how one can differentiate between the types of psychosis in the aged. A psychodynamic and psychosocial construct in which dependency and helplessness are central is of help in structuring treatment plans. Hypochondriacal or paranoid trends commonly present themselves first in disorders of mood, depression or elation accompanying or alternating with angry, accusing, or frankly paranoid ideation. With elation, there is commonly seen an underlying or alternating depressive trend, and depressed persons often behave in an expansive, grandiose manner. Such paradoxical behavior has its roots in the patient's conviction, on the one hand, that the experience or display of suffering will gain and hold the desired protective, helping person and, on the other, that a show of power and worth will win the desired protector. For the individual, behavior he believes may gain aid carries with it a sense of relief and joy. The distressed patient, even as he feels scared and in pain, may feel more secure and more powerful because he is feeling and performing so as to gain help. In many persons, self-aggrandizement and self-confident behavior are utilized consciously or automatically to impress, please, gain, and hold the desired and needed support.

Milieu. The debility of the aged and their need for nursing make the use of hospitals, special nurses, or attendants imperative for many and useful with others. As at any age, hospitalization may prove to be a beneficial removal from disturbing home circumstances and relationships, can provide a salutary regimen, can offer protection to the person with suicidal or assaultive thoughts or behavior, and can afford rest and relief to the family. In addition, the well equipped hospital offers many opportunities for therapeutic relationships with staff members, and its various occupational, vocational, psychiatric, and other ancillary medical services are potential vehicles for psychotherapy. Medical care itself, over and above its specifically beneficial effects on physical health, has an important psychotherapeutic effect, usually based on the patient's conviction that he has obtained the aid of the omnipotent helpful parental equivalents.

Although they are most frequently seen in private practice, clinics, or general hospitals, many aged persons with depressive, paranoid, and other psychiatric syndromes find their way into old age and nursing homes. The successful treatment of these institutionalized aged persons requires that basic services be adequate and competently administered. In the absence of proper nutrition, housing, and good medical care, the more subtle and sophisticated ministrations are of little value. In the provision of these basic medical services, the paramount importance of the patient-staff and patient-doctor relationships can never be ignored. In Rado's words, one can inflict pain but not pleasure. It is possible to contribute to the patient's comfort and to avoid the infliction of pain, but it is impossible to force pleasure on him; this must be elicited and be given opportunity and encouragement

to emerge in and by way of the relationship with staff members and as the patient recognizes his own success.

Psychotherapy. The patient-doctor relationship is basic to good psychiatric care, whether in or outside an institution. In some conditions it is the primary treatment; in others it seems to help the patient to begin and sustain the salutary medical regimen.

The psychiatrist should be prominently eligible for selection and delegation as the parental surrogate. As such, he attracts and impresses, not because of his personal attributes so much as because of what the patient is looking for and predisposed to see. Someone has said, "A psychiatrist should not be impressive; if he is, it should appear to be camouflage." The patient must be able to read into the person what he wishes to find and needs to believe is there. For this reason, certain persons appear to be more eligible than others to fill the required role.

Selection or delegation is made by the person according to his acculturation and experience. For middle class persons, a physician, psychiatrist, member of the clinic staff, institutional administrator, or any person who has access to these powerful figures, such as their secretaries or assistants, may be parentified. The designated person may permit himself to appear to be appraising and evaluating the patient vis-à-vis; it is often useful to let it seem that some effort on the patient's part is required to gain the therapist. Therapists who appear indiscriminating may be regarded as unworthy by the patient. But this situation should never be threatening; delegation should not be obstructed because the therapist is too hard to get. The delegated role must be accepted. Clues given by the patient are used to avoid violating the illusion that he has found the desired and needed person. At times the therapist must allow himself to be made a target for punishment. This permits guilt and fear to arise in the patient, which prompts him to improved behavior; at times the therapist may provide "token punishment," but only where necessary to keep behavior within tolerable bounds and to forestall self-punitive expiatory action and to provide a quasi-parental figure consonant with his needs. The therapist should recognize the symbolic nature of the patient's complaints and be guided by the need expressed but appear to deal only with the reality situation the patient presents. Similarly, the therapist should recognize that somatic complaints and querulousness are signs of depression but, as far as the patient is concerned, he must appear to accept them at face value while discouraging unnecessary and possibly harmful treatment. He may help the patient verbalize anxiety and discuss its seemingly rational origins or usefulness, but he must not join the patient in his fears. He must regard complaints as justified without encouraging tendencies to exaggerate or exploit. Above all, the patient must be permitted to believe that the therapist has accepted his delegated role because of the patient's personal worth, skill, attractiveness, or other good qualities. The patient may be

permitted to believe he has tricked the therapist, triumphed over him, or gained him by "strength of character." The patient must be permitted to believe that the therapist is the friend, ally, and powerful servant he has been searching for.

Figure 8 lists some of the more commonly reported subjective complaints and clinical observations of mentally ill aged persons. This list is not all inclusive but may serve to illustrate how the variations and intensity of signs and symptoms may be useful in deciding on type of treatment and improvement regardless of nosology.

In the second column of the figure are listed some symptoms and signs of disorders, usually categorized as psychoneurotic, in which the therapist-patient relationship is of primary importance.

In the third column are listed the relatively mixed signs and symptoms usually regarded as "psychotic," and the more severe signs of these disorders are listed in the last column. Especially troublesome behavior in the last column usually indicates a need for hospital care and may require electroshock therapy to avoid exhaustion or accidents.

Pharmacotherapy and physical methods. It is a rule of thumb that medication is helpful in the development and maintenance of a therapeutic relationship with persons who have few or no vegetative signs, whereas persons often regarded as psychotic, in whom the physical concomitants of depression are relatively severe, require a good patient-doctor relationship to ensure adherence to the drug regime (see Table III). Drugs suggested for the symptomatic and relatively specific treatment of mental disorders can be classified as antidepressants, tranquilizers, sedatives, hypnotics, analgesics, vitamins, hormones, and vasodilators.

Antidepressants and tranquilizers. The search for aid may itself be called a depressive syndrome; however, it may be elaborated in a manner that calls for antidepressant medication, tranquilizing medication, or both. When sadness, guilt, and self-depreciatory or self-punitive behavior are obvious, the depressive aspects may attract attention and determine the classification. The choice of medication is best made on the basis of whether or not a shift in physiological equilibrium, measurable by sleep and gastrointestinal function, has occurred. Diurnal mood change, early morning waking, anorexia or bulimia, and constipation or diarrhea are signals that depressive rumination and depressive affect have encompassed or are being determined by a physiological shifting of gears to a special and abnormal homeostatic level, for which electroshock treatment or the antidepressant drugs are helpful. Such illnesses are generally self-limited and recurrent, but the duration and course of the illness in a person who has had no previous attacks are not usually predictable.

Until recently, the only reliable treatment that decreased suffering and shortened disorders in persons who had vegetative signs with depression was elec-

Symptom	Mild	Moderate	Severe
Evaluation of problems	"Difficult"; "feels nervous"; "can't cope with problems" Would like or yearns for help or relief	"Life a struggle" Feels urgent need for help; pleads, commands	Problem overwhelming Desire for complete care or riddance; suicidal thoughts or acts; homicidal thoughts or acts
Energy and activity	Fatigability; normal or decreased activity	Lethargy or restlessness; hyperactivity	Retardation or agitation; incessant hyperactivity
Interest	Loss of interest; decreased desire "to do"; slow start in morning, afternoon good; desire to do better	Inaction; all day bad, evening fair; envy of others who "do"	Apathy; purposelessness; relief just before or only with sleep; bitter self-recriminations, envy and hatred of others
Concentration	Impaired	Poor; preoccupied	Completely unable to concentrate to highly distractible
Mood	Subjective malaise; joyless; blue, low	Active discomfort; unhappy; sad	Painful depression; apathy; pseudoanhedonia; painful misery
Sleep pattern	Longing for rest Longing for night; longing for sleep Unable to fall asleep or early waking Bedtime worry	Frequent recourse to couch Late out of bed Very early waking with rumination Rumination about problems	Remains in or returns to bed by day Very early waking with agitation, tension, and rumination Rumination about "this illness"
Gastrointestinal	Poor appetite Digestive distress	Anorexia or bulimia Constipation	Nauseated, revolted by food; hypochondriacal delusions Obstipation
Weight loss in previous 4-12 wks.	None	0-5 lb.	5-15 lb.
Self-esteem	Low	Self-deprecatory	Self-accusing, guilt-ridden; convinced has done serious harm (last two rare in aged); feelings of worthlessness; self regarded as "poisonous" and containing poison; conviction should be eradicated
Self-confidence	Low	Feelings of failure; helpless	Completely helpless, ineffectual, incapable
Somatic complaints	Somatic preoccupation; somatic fears	Hypochondriasis; fear of death	Somatic delusions; conviction of impending annihilation
Interpersonal or social behavior	Indecisive; "can't make up mind" Asks advice, looks for help Complaints about others or another; distrustful	Puzzled, "don't know what to do" Denies complaint; acts out search for aid Blames others or another; suspicious	Bewildered; "confused"; <i>déjà vu</i> ; depersonalization (last two rare in aged) Clinging, demanding; insistent or commanding; coercive, assaultive, suicidal Accusing; ideas of reference; feeling of passivity and manipulation; delusions of persecution; threatening hallucinations
Fear/anger	"Anxious," worried; irritable	"Afraid," angry; sustained fright and anger	Intensely frightened, panicky, enraged

FIGURE 8. Symptomatic guide to treatment. These are listed in terms of social impairment, disturbing quality, and subjective distress. The *solid lines* in the diagram enclose conditions in which antidepressant drugs are usually helpful. The *broken lines* enclose symptoms and signs in which phenothiazines are often useful. The conditions enclosed by *both solid and broken lines* are those in which the combination of antidepressants and phenothiazines is usually indicated. For the symptoms *not included in the broken or solid line areas*, a variety of sedatives or stimulants may be helpful.

troshock therapy. Now there are medications—the tricyclic compounds and the monoamine oxidase inhibitors—that are fully as effective or better for most persons. Amitriptyline (Elavil) is the most useful of the tricyclic drugs, and imipramine (Tofranil) is almost as good. Phenelzine (Nardil) appears to be the best of the monoamine oxidase inhibitors for use in the aged.

Amitriptyline and imipramine are best started in

divided doses of about 40 to 100 mg. a day. This can slowly be increased by the addition of 20 to 50 mg. every 2nd or 3rd day to 125 mg. a day in small or debilitated persons, or in the more robust to 250 mg. a day, as tolerance to the medication increases and until depression decreases. A dose of 250 mg. a day is not unusual for persons in the 7th decade. They may also benefit from the simultaneous administration of small amounts of dextroamphetamine sulfate, which serves

TABLE III
Autonomic Dysfunction as a Clue to Therapy

	Physician-Patient Relationship	Pharmacotherapy
Mild or no vegetative signs	Primary	Secondary
Vegetative signs	Secondary	Primary

to decrease subjective depression more immediately and serves to maintain blood pressure.

Dextroamphetamine sulfate in doses of from 1.25 to 2.5 mg. in the morning, at noon, and at 3 P.M. can give a boost early in treatment to patients receiving a tricyclic compound, which works more slowly, but it is most useful after 2 to 3 weeks to help break through plateaus. It is also useful in patients whose prominent symptoms are fatigue, lack of initiative, and poor spirits. Its value is enhanced by combination with 8 to 15 mg. of amobarbital. Methylphenidate (Ritalin) has been advocated as of similar value, with the claim that it is less likely to elevate blood pressure or evoke tachycardia, but it appears to have no real advantage. Like dextroamphetamine, it should be given in small doses of 1 to 2 mg. These medications appear to prime or energize the individual in the fashion of epinephrine and, like the tricyclic compounds, act by favoring sympathetic as opposed to parasympathetic autonomic nervous system tone.

For agitation, excitement, hypomanic and manic disorders, chlorpromazine (Thorazine) and thioridazine (Mellaril) appear to be most effective. Small amounts may be sufficient; therefore, 10 mg. of either drug given four times daily may be a starting dose. This can be increased rapidly to 200 mg. or more each day as need and tolerance suggest. However, patients with marginal cerebral competence may become confused with even small doses and may tolerate promethazine (Phenergan) best; 12.5 mg. of this may be given two to four times daily. The prophylactic use of anti-Parkinson medications with phenothiazines is unnecessary; these drugs complicate matters because of their agitating effects and their tendency to promote paranoid ideation. Lithium carbonate promises to be an effective "tranquilizer." While this is still in the experimental stage, it seems that from 125 to 250 mg. given once or twice daily, monitored by plasma levels during the first 3 weeks of administration so as to keep under 1.5 milliequivalents per liter, will bring agitated, excited, and hyperactive states under control within a period of days or weeks; phenothiazines and antidepressants may be used conjointly. Toxic symptoms resemble those of heat stroke; low salt and low potassium levels were reported from unsupervised, indiscriminate use of lithium as a salt substitute. Discontinuation of lithium, urging fluids, and supplementary NaCl and KCl, by mouth or vein, correct the toxic state. Special caution is required in the presence of cardiac or renal disease.

Sedatives and hypnotics. As previously noted, aged persons need more, not less, sleep than young persons. Lack of sleep and rest may be a cause of mental disorganization and complication of an affective disturbance. The correction of insomnia is, therefore, important, but insomnia of the early morning waking type is not substantially improved by hypnotics, and only relief of the depression is effective in improving sleep.

Sedatives and hypnotics have little effect on the manifestations listed in the last column of Figure 8. Their action is usually good for complaints such as those listed in the second column and only sometimes for those listed in the third column. One must rely on antidepressants or phenothiazines and wait for their effect, and not expect barbiturates, meprobamate (Equanil, Meprospan, Miltown), chlordiazepoxide (Librium), or diazepam (Valium) to be of real assistance in these more severe disorders.

The older drugs, warm milk, warm baths, and a soothing atmosphere may be of value in contributing to rest and sleep in disturbances listed in the second and third columns. Paraldehyde now has limited use because it is distasteful to both patient and attendants. The new tranquilizers can be useful in small doses as sedatives; in larger doses, distributed throughout the day, they may help dispense with medication for sleep at night without unduly hampering behavior or alertness by day.

Chloral hydrate (Noctec, Somnos) is a safe hypnotic but is not preferred to the barbiturates. Barbiturates especially the shorter acting ones such as pentobarbital sodium and secobarbital (Seconal), are generally useful and more effective for patients in whom kidney and liver functions are good. When kidney function is good, phenobarbital in small doses can safely be used. Amobarbital is especially useful in agitated persons. In persons with early morning waking, these medicines are best given when the patient awakes at night, to decrease the anxiety and rumination, rather than at bedtime. Seemingly healthy aged persons may develop signs of brain syndrome with small doses of barbiturates; this suggests that cerebral competence is marginal. In such persons there is generally a fine line between the amounts of medication that may quiet, agitate, or render stuporous.

The use of a compound containing reserpine in any amount is to be discouraged. Reserpine appears to have little real sedative value and is commonly a contributing cause to delayed—6 or more months later—depressive reactions.

Analgesics. Pain may give rise to fear and disorganization of thought and behavior. An aged woman who agitatedly claimed she was being persecuted and that her eyes were endangered was found to have glaucoma. Another who insisted on constantly searching for a slipper was found to have a painful plantar wart. On another occasion, she complained about her stocking and was found to have a painful phlebitis of the

calf. In addition to required specific treatment, relief from pain is indicated as a means of controlling the emergence of florid psychopathology in frightened persons with reduced or marginal cerebral competence.

An analgesic, sedative effect may be obtained from 10 to 15 grains of acetylsalicylic acid with 5 grains of soda bicarbonate, or as buffered aspirin. Dextropropoxyphene (Darvon), 32 to 64 mg., may also be helpful.

Vitamins. Aged persons may subsist on a poorly prepared, monotonous, inadequate diet because of frugality, debility, poverty, poor memory, or lack of interest in cooking for oneself. Fresh fruits and vegetables are among the first foods to be neglected by the aged who succumb to poor diet habits. Nevertheless, supplementary vitamins are of limited value in psychiatric disorders of the aged except when malnutrition is present with depression or brain syndrome.

Nicotinic acid deficiency, as is well known from the dementia of pellagra, may contribute to cerebral mal-support and to reversible brain syndrome; up to 500 mg. one to three times daily may have a mild energizing, helpful alerting effect. Thiamine chloride and ascorbic acid for a week or 10 days at initiation of treatment may be helpful for persons who have brain syndrome and associated disorder. Thiamine chloride has a mild sedative action, is a mild stimulant to appetite, and is a substance that under stress tends to be depleted in the adrenal cortex, where it has essential metabolic action. A dose of about 200 mg. daily appears empirically useful. Ascorbic acid also appears to be essential to adrenal cortical function. It is rapidly depleted with stress and poor nutrition; 200 to 500 mg. daily are ample doses for replacement and maintenance.

Hormones. Hormones have little use and play little part in the treatment of psychiatric disorders of the aged. This is so despite the fact that some women in their sixties still complain of hot flushes, night sweats, and malaise. For them, small doses of estrogen or estrogenic substances can be helpful. However, the value of these preparations is greatly overrated, and their ability to provoke or accentuate depression is greatly underestimated.

The use of testosterone in the male as a tonic agent is probably more often effective because of the recipient's powers of imagination than for its physiological action. As an anabolic agent, testosterone alone or in combination with other medications may be of minor value. In some persons it appears to affect appetite and weight beneficially. Testosterone is best administered orally as methyltestosterone; 10 mg. daily for about 1 week, then every other day for about 1 week, and less frequently thereafter is ample dosage. The injectable propionate is less effective.

Female hormones, when used in males with prostatic carcinoma, may induce mild depressive reaction, which clears with discontinuance of the medication. Whether the depression is at times a reaction to the patient's knowledge of the disorder for which the hormone is

prescribed, to accompanying surgical procedures—prostatectomy or castration—or to feminization of habitus is not clear. Probably all factors play a part, some with greater force in particular persons than others.

Alcohol. The cocktail has become an American subcultural custom; for those accustomed to it, it has its value prior to the evening meal. For hundreds of years small amounts of spiritus frumenti before meals have been advocated as a tonic for the aged, to be given as such or masquerading as the vehicle for some relatively inert tonic. This use is decidedly limited in psychiatry, as is its traditional use in the form of champagne for its value in decreasing gastric discomfort through the effect of its carbonation. Carbonated water is cheaper, and cola drinks are sweeter.

Side effects. The patient may tend to incorporate side effects of medications in his symptom complex, complicating the emotional disturbance. A good patient-doctor relationship permits neutralization or even beneficial use to be made of the side effects. In the aged, one must be on the alert for hypertensive crises, which can occur paradoxically, and also for the development of hypotension, which evokes brain dysfunction and threatens brain damage due to poor cerebral support. The antidepressants also appear to have direct cerebral action which may induce or exaggerate symptoms of brain syndrome.

The patient may be asked to regard harmless side effects such as drowsiness, blurred vision, and dry mouth as evidence of favorable drug activity. Drowsiness usually disappears in a few days in patients who will be favorably affected by tricyclic drugs; its persistence may suggest trial of another. Blurred vision usually persists and must be tolerated. Dry mouth also persists and is greatly accentuated by mouth breathing and talking; increased fluid intake is of no value and may accentuate peripheral edema. Lemon peel or other salivary stimulants chewed or held in the mouth and frequent rinses can be helpful. Swelling of the ankles, if mild, sometimes responds well to the judicious use of diuretics. Drug reduction may be indicated. A welcome side effect in most aged persons is the tendency of the tricyclic drugs to decrease urinary frequency and nocturia. It is of interest also that, with lifting of depression, many men who have awakened in the night to void, presumably because of prostatism, no longer do so. This does not appear to be entirely a direct drug effect; the benefit sometimes persists upon drug discontinuance.

Although glaucoma is listed as a contraindication to the use of the tricyclic compounds with anticholinergic action, the action of these drugs upon the depression appears to have a favorable effect upon intraocular tension which often outweighs its possible dangers. Ophthalmological supervision may be increased and extra amounts of miotics prescribed as a precaution. Because many hypotensive agents in medical use are monoamine oxidase inhibitors, a careful history of

prior and current treatment is especially necessary before beginning treatment of depressed hypotensive persons. Other medication taken should be reviewed and careful use of or discontinuation of antihypertension agents is recommended when antidepressants are administered. Dietary precautions—against fermented cheeses and wine with monoamine oxidase inhibitors, and with respect to alcoholic beverages with phenothiazines—are in order.

Evaluation of improvement. Criteria for improvement in disorders of affect in the aged are, in the main, the same as for younger persons. Notations of restoration to previous norms of sleep, appetite, and bowel function are of special importance because these are matters about which the patient, nursing personnel, and physician can make relatively objective determinations.

Like younger persons, the aged patient with depressive reactions is drowsy and falls asleep in the evening, wakes before bedtime, falls asleep without any trouble, and then tends to wake in the early morning hours. The patient yearns for sleep, looks forward to it, and may retreat to bed during the day. On waking in the early morning, he may ruminate and have feelings of anxiety, worry, and heaviness. In the aged, instead of worry there are frequently feelings of malaise, restlessness, empty concern over the depressed feelings, and a desire to feel well. Improvement can be measured by the patient's tendency to wake later in the morning until he finally wakes at the previous customary time. This improvement is facilitated by decreasing drowsiness in the evening, by elimination of evening naps, by decreased eagerness and yearning for night and the relief that comes with the unconsciousness of sleep. The lifting of depression is also signaled for some by the return of dreaming, which is reported as entirely absent during the depth of the depression.

Restoration of appetite to the previous norm is also an indicator of recovery. The usual pattern with depression is anorexia. As depression lifts, food, which was repellent or repulsive, can be better tolerated; people who could not eat become able to do so because they know they should. Later, they begin to feel a little interest in the food and begin to feel hunger. Lastly, appetite returns. Accompanying this there tends to be a restoration of weight lost with the anxiety, depression, and anorexia. A significant proportion of depressed aged women have bulimia and preoccupation with food; as their depression lifts, the compulsive overeating tends to decrease. As might be expected, the individual then eats in a less driven manner but with more enjoyment and, consequently, may even become capable of following a regimen helpful for the loss of the excess weight.

Bowel function is usually reduced with depression, and constipation may be severe. Spurious diarrhea may occur with fecal impaction. As the depression lifts, previous regularity of bowel function is restored. A

number of depressed persons have persistent or intermittent diarrhea. With lifting of the depression, this also tends to improve spontaneously.

The reports of subjective sadness or its equivalent in terms of malaise, somatic discomfort, or inertia also offer an index of change. With improvement, these symptoms decrease toward the end of the day and then are felt less intensely progressively earlier each day as recovery takes place. Before relatively complete recovery, only the early morning hours remain bad. The patient may describe the subjective sensations of depression in the morning simply as "heaviness" that tends to disappear or lessen after dressing or having breakfast. With the decrease in these symptoms, there is usually an observable decrease in psychomotor retardation or its equivalent, agitation. When a depression is communicated solely in terms of somatic complaints, which is very frequent in the aged, these are worse in the morning and tend to decrease in their intensity as the day wears on.

Decrease in rumination and change in paranoid complaints also occur as the depression lifts. Depressive complaints and paranoid trends may change inversely. With decreasing depression, attacks of a paranoid type on a mate or attendants may increase markedly. This leads to a paradoxical social situation. The quiet, meek, unobtrusive, or clinging depressed patient may be preferred by family or staff to the angry, accusing, complaining, aged patient seemingly free of depression. Conversely, the paranoid elaboration of the hypomanic or manic patient as he becomes more calm may give way to considerate, clinging, and somewhat depressed behavior with response to treatment. Alternating expression of this type is common. Commonly patients feel jealous of all persons who are not sick and may express this in an irritable, querulous fashion. Thus, an increase in irritability and querulousness may indicate improvement or worsening of depression. In some persons, paranoid ideation and expression of paranoid ideas become more marked as the depression lifts, appearing at first with greatest force toward the end of the day; they may increase to take in more of the day and eventually, especially if the person moves into a hypomanic or manic state, be continuously present. Paranoid complaints may take the form of angry verbal attacks on the environment or may be somatically expressed in terms of great suffering with implicit or explicit accusations about the neglect or the faults of others. Or, as is most often the case, they may take the form of accusing and obvious diatribes and remarks about mates, children, relatives, and friends.

In institutionalized persons, such accusations invariably include members of the nursing and attending staff. Such paranoid ruminations or conversations are often complicated by belligerent behavior in the recovery stage. Many patients do not move from this stage of high nuisance value into relative normality but return to depressive reaction. Thus, the improve-

ment of depressed patients often converts a meek, mild, ingratiating or retarded, docile, manageable individual into a vociferous, annoying, accusing, and troublesome individual.

Somewhat similar to diurnal variations are changes in the week. For some individuals, such as housewives, the weekends may be the worst if they mean involvement with otherwise absent family or the absence of individuals they especially turn to. For some workers, such as teachers, weekends may be best because they mean relief from tasks that emphasize their poor concentration.

Improvement in concentration and concomitant capacity to do things, which are lost with depression, are useful measures. Ability to attend to the conversation of others, to follow radio or television programs, to read with understanding, in that order, improve with the lifting of depression. The capacity to concentrate on tasks follows increase of capacity to receive and process communications. At first, the person is merely able to do simple manual work of a mechanical or stereotyped nature; then he becomes able to do tasks of increasing complexity. Eventually, appetite for pursuits of various types returns, and initiative, previously strikingly absent, is restored to its former level.

In general, symptomatic and behavioral changes do not mean that the condition or process of affective disorder has been permanently arrested. Relapse or recurrence is common. This is true whether the treatment has been solely or predominantly psychotherapeutic, pharmacological, electroconvulsant, or inclusive of environmental change and education.

Prognosis

Affective disorders tend to be self-limited, and spontaneous recovery can be expected in the preponderant number of afflicted persons. The duration of the illness is always problematic, suffering can be intense, and physical or social complications can be serious. Therefore, active as compared to expectant treatment is always preferable. Prompt and effective treatment to decrease the suffering and shorten the course of the disorder is especially important in the aged because of their increased vulnerability to exhaustion, physical damage, and death. Even when brain syndrome is simultaneously present, treatment to improve mood, thinking, and behavior can be effective and may decrease the severity of disorientation, memory loss, and intellectual deficit.

As in younger persons, the aged patient's outlook for improvement in behavior and for social adjustment appears to be related to his past performance and personal characteristics; the present circumstances, including the availability of family members; and the rapidity of onset and floridity of symptoms. Some specific characteristics of the patient when he comes to medical attention permit fairly reliable prediction of outcome for the immediate illness.

For aged patients with affective disorders, the outlook is best when they are under 70 years of age, are in good physical health, have a history of good recovery from prior attacks in middle age, and have no signs of brain syndrome. A history of mood-cyclic disorder in parents or siblings is also favorable. Relatively acute onset of the disorder and seemingly clear precipitating events, such as a surgical operation or financial reverses; florid symptoms; and a rapid response to the initiation of treatment are further favorable signs. Despite favorable outlook for immediate recovery, the outlook for affective reactions in the aged is poor under optimal circumstances because recurrence is the rule. Advanced age at onset of the first attack; the presence of debility or incurable physical illness; and the coexistence of brain syndrome, especially if it is severe, are especially unfavorable signs. Also unfavorable is a history of prolonged, insidious onset or long standing illness—2 years or more—prior to initiation of treatment.

The good prognosis of hypomanic or manic persons may be obscured because they often present a superficial picture of dementia. However, a careful examination will reveal that their errors are due to poor attention, distractibility, and circumstantiality. The outlook for recovery of such persons is usually good, and their improvement may astound those who have mistaken the affective disorder for the disorganization of behavior that occurs with severe brain damage. Doubtful cases should, therefore, be treated as affective disorders, since neglect may lead to exhaustion or physical illness and provoke the condition for which it has been mistaken.

Rapid response to electroshock therapy should be interpreted with caution. With this treatment, depression, elation, or excitement may be controlled before the underlying condition has substantially improved because of the effect on memory or because the patient is rendered relatively inert and unable to express emotion. If treatment is prematurely interrupted, apparent relapse may occur when memory is recovered or is restored. Because many of the aged have slim cortical resources and may become confused by relatively few electroshock treatments, there may be early spurious improvement. Furthermore, electroshock therapy may yield early symptomatic improvement but not lasting improvement because it interrupts or stalls the disease process before the necessary time has elapsed to achieve a physiological shift. Thus, there appears to be a relapse 3 to 6 weeks after apparent recovery with electroshock therapy. Resumption of treatment, either electroshock therapy or pharmacological therapy, is then usually helpful in decreasing intensity of symptoms and hastening more lasting recovery. Electroshock therapy appears to be most effective if begun when the disorder appears to have reached its peak intensity. Conversely, the provocation of an organic mental syndrome by electroshock therapy may mask improvement in the aged, and their disorganization of

thought and behavior may be mistaken for agitation, manic behavior, or psychomotor retardation.

Paranoid trends in the presence of depressive affect or manic behavior were in the past considered ominous and predictive of a long permanent illness. It is true that paranoid conditions in which little affect is displayed usually have a relatively poor prognosis. However, current personal, pharmacological, and physical treatments have improved the outlook for paranoid conditions. This may be attributed in part to the helpfulness of phenothiazines in decreasing anxiety and clarifying thought in such patients and also to the beneficial use of group meetings in which they are tactfully helped to be less fearful and more friendly.

Prevention

The incidence and prevalence of mental disorder in old age are high. With advancing age, there is increasing likelihood of losses in familial, financial, physical, and mental resources. The prevention of medical crises and meticulous attention to supportive regimens are prophylactic against disabling mental diseases of the aged. Thus, comprehensive medical care for this age group is of prime importance.

Families, community agencies, hospitals, clinics, and private physicians play important roles in providing for the many medical and psychiatric needs of the aged ill. Few families can provide, unassisted, the comprehensive care an aged ill person needs; consequently, he is usually undertreated at home. Families may ask for assistance later than is desirable for their good or the patient's welfare. Psychiatrists, physicians, and welfare agencies may mistakenly minimize the burden that the geriatric patient places on his family; worse, they may resist the admission of aged patients to their services and generate guilt by implying that families who appeal to them for aid want to avoid responsibility for their aged relatives' care. Many professionals share a popular misconception that families are eager to dump their aged kin; in actuality, the sick aged often have no families or have families who are themselves aged, ill, or struggling for survival, so that assistance must be provided by way of social organization. Basic services, the provision of adequate board and lodging, good general medical care, intelligently pursued efforts toward encouraging interest and activity, and psychiatrically supervised pharmacotherapy are unquestionably helpful in decreasing the intensity of long term reactions and in preventing the emergence of new depressive episodes.

Prevention of mental disorders in the aged is not yet possible, but the severity of prevalent disorders may be ameliorated and their incidence decreased. Vulnerability to affective disorder or brain damage leading to brain syndrome appears to be genetically determined in many persons. Nevertheless, the importance of inherited constitutional type and of incidental illness is suggested by the frequent association of arterial hypertension, atherosclerosis, arteriosclerotic car-

diovascular renal disease, diabetes, glaucoma, hyperthyroidism, and exaggerated adrenal cortical function with affective disorders. Not only do these conditions appear to evoke depressive reactions over and beyond the depressing effect of severe or long term illness, but persons in whom these conditions develop appear to be especially prone to mood-cyclic or depressive reactions and may have displayed this propensity even before appearance of the somatic disorder. Other conditions, such as peptic ulcers or asthma, are also seen in close association with depressive reactions, sometimes accompanying the disorder and at other times masking it and appearing to be depressive equivalents.

Laudable measures likely to help avert mental illness in old age for even the constitutionally susceptible include environmental advantages in early life conducive to optimal growth, development, education, choice of occupation, and economic security; minimal exposure to noxious substances, trauma, and disease; and maximal timely use of prophylactic and remedial medical services.

Anticipation of failure and actual failures that accompany decline of functional capacity and the loss of resources can lead to rational rather than irrational pleas and search for aid. Willingness to seek and accept socially organized and governmentally supervised assistance requires as a necessary complement the ready availability of protective, supportive, and rehabilitative services.

Ideally, the individual should be so well integrated that socioeconomic reverses, changed personal relationships, and stressful experiences would be handled without serious decrease in self-esteem, loss of self-confidence, or the emergence of serious doubts as to his purpose and sense of identity; he should feel challenged rather than defeated by adversity and should retain his desire to act and to do, within the limits of his capacity, despite loss of vigor and functional capacity. He should wish to maintain pleasurable personal relationships yet be able to tolerate the absence of congenial, companionable persons and not become desolate when he loses family members and friends. The sense of worth, dignity, and self-confidence should be preserved by social institutions and by the behavior of surrounding persons, which encourage feelings of personal control, of influence on others, and the belief that one has the capacity to contribute personally to the mastering of daily problems. Such social influences appear to favor the development of persons capable of social integration in old age who are also capable of tolerating isolation. However, most persons in our society do not achieve this ideal.

Although aging persons may fear death as an ultimate helplessness, they appear to be more afraid of humiliation, pain, mental suffering, and the loss of those for whom they feel affection or need. Most of all, they fear the loss of control over their own behavior or destiny. Consequently, in the very old and impaired, small victories that appear to win them a

place in the sun, protective attentions from a child, or the self-attained relief from tensions, as from bowel distress, may yield pleasures such as might be expected from a guarantee of everlasting fame. The belief that their will or wishes will be followed after death may elicit more joy than that which in the past might have followed on the attainment of riches. Because pleasure appears to accrue from a sense of effectiveness in personal action, whatever contributes to the aged person's belief that he is effective and efficient, as measured according to his own values, helps to preserve his emotional equilibrium and his psychological aplomb. It appears that the adaptive organism maintains its social poise, even in the face of obvious decline, when it feels its change is governed by choice; he who feels in command may die with little pain and small grief—even with joy.

Psychiatrists who can contribute to the understanding of aged persons are needed to consult, supervise, and teach in old age homes, nursing homes, general hospitals, state hospitals, old age centers and clubs, as well as to see and treat patients and their families in their offices, the homes of patients, and hospitals and clinics. They can exercise an important function by sustaining the morale of those who are concerned with the day-to-day care of the aged.

Suggested Cross References

Further information regarding specific psychiatric disorders may be found in the sections and chapters devoted to schizophrenia (Chapter 15), manic-depressive psychosis (Section 17.1), involutional depressive reaction (Section 17.3), paranoid reaction (Chapter 16), the organic brain disorders (Chapters 18 to 21), alcoholism (Section 27.3), suicide (Section 33.1), the neurotic disorders (Chapters 23 and 24), psychosomatic disorders (Chapters 29 and 30), and the borderline states (Section 14.2)—all in Area F, on the psychiatric syndromes. More detailed information regarding the various treatment modalities mentioned in this chapter is presented in Area G, on psychiatric treatment. Preventive measures in psychiatry are discussed in Area I, on community and social psychiatry, and fundamental concepts concerning social and cultural determinants of behavior are presented in Sections 4.2 and 4.1, respectively.

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Chapter 48

Forensic Psychiatry

48.1 • • •

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Introduction

At various stages in their historical development, psychiatry and law have converged. There are further similarities in the problems with which they are now faced. Neither discipline can therefore be understood without some knowledge of the development and orientations of the other, for their influence is reciprocal and complementary. Both psychiatry and law are concerned with the social deviant, the person who has violated the "rules" of society and whose behavior presents a problem, not only because his deviance diminishes his ability to function effectively, but because it affects the functioning of the community adversely. Traditionally, the psychiatrist's efforts are directed toward elucidation of the causes and, through prevention and treatment, reduction of the self-destructive elements of harmful behavior. The lawyer, as the agent of society, is concerned with the fact that the social deviant represents a potential threat to the safety and security of other people in his environment. Both psychiatry and law seek to implement their respective goals through the application of pragmatic techniques, based on empirical observations.

History. A comprehensive account of the history of psychiatry has been presented elsewhere in this volume. However, many of the unresolved conflicts between psychiatry and law are legacies of their common background. A brief summary of those historical events which relate specifically to the evolution of psychiatry in its relationship to law provides an appropriate framework for this discussion.

Among the first acknowledgements of the relationship between psychiatry and law were the sacred writings of the Jews. These instructed the priest on the treatment of the mad and the sinful, as well as the sick. When Christ adjured his followers to cast out the devils within them, his words were directed to the mad and to those who were "evil," no less than the

lame and the blind. The first monasteries typically sheltered the physically ill, the psychically and spiritually possessed, the insane, and the impoverished under the same roof. This failure to differentiate between the various types of social misfits has persisted up to the present. Identical facilities for the bad and the mad may still be seen in psychiatric state hospitals and prisons throughout this country. One of the first attempts by a physician to influence legal process was the effort of Johannes Weyer, in the 16th century, to bring the persecution of "witches" to a halt, clinically observing that this peculiar behavior reflected the natural processes of disease, rather than supernatural intervention by devilish forces. But diabolism dies hard. A century later, Weyer's clinical demonstrations were declared legally invalid, on the grounds that he was a physician, rather than a lawyer.

Italy. During the Age of Enlightenment, the leaders of the Renaissance concerned themselves with the mentally ill and the criminally deviant. The experiments of Italian humanists with rehabilitative penology preceded the establishment of the famous Quaker penitentiary in Philadelphia by almost a century. Lombroso's classic studies of criminals were anthropometrically precise and rich in clinical detail. He reported that criminals shared specific traits such as impulsiveness, relative moral insensitivity to harm done to others, and distorted social values. His anthropometric methods resembled phrenology. Lombroso seemed to have proven that criminals could be distinguished from noncriminals by specific physical characteristics of their face and head as well as their criminal acts and personality. He believed that the criminals he studied had not progressed beyond an early stage in human evolution or had regressed genetically to a more primitive state. He, like many others of his scientific generation, was influenced by Darwinian theory. These anatomical speculations have since been rejected on statistical grounds; but psychiatric investigators continue to correlate physical characteristics with antisocial behavior. The issue is not yet entirely resolved.

Ferri, a contemporary of Lombroso, argued that the primary goal of the law was to abolish the social ills which give rise to crime, rather than to assign blame

for specific criminal acts or to affix moral guilt. The careers of juvenile offenders, he maintained, as have so many others since, provided no empirical justification for the belief that punitive methods, detection, conviction, and detention, could prevent later adult criminal behavior. Such punitive methods could not reduce the social cost of delinquency, for they contributed nothing to the rehabilitation of the delinquent. They failed to enable him to fulfill his constructive potentialities and live a more useful life. Ferri held that in a rational society basic satisfactions would be ensured to the youngster. Through such fundamental gratification, rather than punishment, the likelihood of repeated delinquency would be kept at a minimal level. Once a child or man has been convicted of an offense, society should act to rehabilitate, to restore him to the company of law-observant citizens before an irreversible recidivism has become fixed. His theory begins with the axiom that kindly social responses are more effective in the prevention of criminal behavior than harsh retaliation. Understanding and compassion would, if tried, prove more effective than punitive measures even in dealing with chronic criminals. Law enforcement officers have begun to acknowledge the validity of Ferri's arguments only very recently. With rare exceptions, the punishments for criminal behavior have been unrelievedly unimaginative and inadequate.

From Italy, too, came the first efforts to reform court procedure. Previously, the presiding judge had borne the responsibility for differentiating between truth and falsehood in the evidence presented. His decisions had been based primarily on his intuition. Judicial procedural reforms ensured a more objective, and hence more reliable and valid, assessment of the evidence.

France. The emancipation of the peasants by the French Revolution was followed by Citizen Pinel's efforts to free the inmates of Bicêtre from their chains. This event has been described as the first step toward the goal of voluntary hospitalization for the psychiatrically disabled, a goal which is still unrealized.

Pinel and his successor Esquirol played a major role in initiating other reforms in the treatment of the mentally ill. They maintained scrupulous and comprehensive clinical records, providing systematic description of various psychiatric disabilities, and assayed classifications of specific clinical syndromes. Through the years, psychiatric nosology has had a significant effect on the judicial response to the plea that criminal behavior be excused or its consequences minimized on grounds of irresponsibility due to mental illness. Esquirol's description of "monomania" as a mental disorder in which the patient's preoccupation with a single idea was associated with a tendency to discharge irrepressible impulses has played a very important legal role. The tendency to act on one's impulses may take the form of kleptomania, the repetitive compulsion to steal. Esquirol also described the clinical entity of *manie sans délire* (mania without delirium). The

psychiatric and sociological descendants of this psychiatric syndrome, which are variously described as the "neurotic character," the "sociopathic personality," and the "psychopathic personality," have become increasingly prominent as focal areas of concern for forensic psychiatry.

The pioneer investigations of hypnotism undertaken in France served to point up other possible areas in which the concerns of psychiatry and law may converge. Hypnotism became a legitimate therapeutic procedure only after it had been used for this purpose by men with medical training and stature, Charcot, Liébault, and Bernheim. Previously, the original dramatic demonstrations of "animal magnetism" by Mesmer had been discounted and ridiculed, first in Vienna, later in Paris where he fled. The checkered history of hypnotism exemplifies the dilemma, not yet resolved, of how effective legal controls can be imposed on charlatanism without penalizing or inhibiting legitimate scientific investigation, however unorthodox.

The practice of hypnotism also evoked the question of defining professional competence. It anticipated the contemporary debate as to whether a medical degree should be a prerequisite for the practice of psychotherapy in cases which do not require physical intervention. The potential value of contributions derived from nonmedical disciplines and the consequent importance of interdisciplinary collaboration would seem to be self-evident. In France, early in its development, criminology was recognized as the province of sociology, which Comte had established as the "queen discipline." Durkheim's classic contributions to our understanding of suicide and his construct of anomie have their roots in sociological theory. They parallel, to a remarkable degree, those clinical models of Freud which are of special interest to psychiatry and law.

England. Tuke's attempts to foster more humane treatment of the mentally ill have been described in the literature, as have the deplorable conditions at institutions, such as the Bethlehem Hospital, which inspired such efforts. Less emphasis has been placed on the fact that Bethlehem housed criminals as well as psychotics. These conditions were considered similar in that they aroused public anxiety. There is no indication of awareness of the possible role of psychiatric illness as a precipitating factor in criminal behavior until 1835, when Prichard, influenced by Esquirol's concept of *manie sans délire*, described the psychopathic personality as an amoral man who behaved impulsively and sometimes criminally to satisfy his immediate, overwhelming desire. He described the psychopathic personality as a person who had failed to learn from experience; who could not postpone immediate gratification of his desires, even when he was assured that his ability to endure such frustration for only a short time might produce greater but later rewards; and who, in order to fulfill his immediate needs, was willing to take risks and expose himself to

dangers which far exceeded the impulsive gratifications he might attain. The degree to which the psychopathic or sociopathic personality can be considered legally responsible for his criminal behavior has remained a crucial area of disagreement between jurists and psychiatrists.

Maudsley postulated that the mind was the instrument of the brain. Therefore a deranged mind was symptomatic of a diseased brain. He conceded that it was impossible to detect the presence of any anatomical defect by the techniques which were then available. Today, a hundred years later, we are still unable to validate hypotheses concerning the neurophysiological basis of the criminal behavior of the mentally ill.

German-speaking countries. In Germany and the German-speaking countries, an intimate and important relationship existed between psychiatry and law, especially in the 19th century. Krafft-Ebing described the clinical symptoms of sexual aberrations with encyclopedic thoroughness. Wagner-Jauregg's malaria treatment and Ehrlich's salvarsan injections began the assault on general paresis, then a major medico-legal problem. Kraepelin's classification of the varieties of mental disease was so comprehensive that it had unexpected and possibly undesirable consequences. The severe psychiatric syndromes, which he called dementia praecox and manic-depressive psychoses, became equated with legal irresponsibility. Bleuler refined Kraepelin's concept of dementia praecox to include the various schizophrenias. These diagnoses, too, have frequently, but incorrectly, been accepted as the equivalent of legal insanity. Forel, the superintendent of the great Swiss mental hospital, Burghölzli, led the fight against alcoholism and other social and legal ills. He relied primarily on moral suasion. Most recently, Piaget conducted important investigations of the development of a moral sense in the child. In Austria, Freud's investigations of the unconscious led him to delineate the psychiatric defense mechanisms in the developing child and to assess their influence on the character structure of the adult. He proposed a tripartite model of personality, comprising an instinctual id, a reality-testing ego, and a self-judging superego. On the basis of his intensive clinical studies, Freud hypothesized that in some cases the sense of guilt preceded rather than followed the commission of a crime. For such men, the prospect of punishment predisposed rather than deterred the illegal behavior. This theory added a fourth dimension, the need for punishment, to the three traditional legal rationales for punishment, the triumvirate of deterrence, retaliation, and rehabilitation.

Subsequently, Aichhorn applied psychoanalytic principles to "wayward boys." The mode of punishment in each case was determined by the boy's psychological needs.

Alexander, a psychoanalyst, and Staub, a jurist, wrote the first text in which legal and psychoanalytic insights were applied to the criminal. Persons whose il-

legal acts were in harmony with the distorted values of their environment and their ego structure were described as "normal criminals." Those whose crimes sprang from deeply repressed conflicts of which they themselves were unaware were labeled "alloplastic characters." There is a crucial difference between the autoplasic psychoneurotic commonly encountered in clinical practice and the alloplastic character. The psychoneurotic suffers from the symptoms of his conflict. The alloplastic personality "acts out" his conflicts. When he violates the rules of society in the process, he may become a criminal.

The United States. Of particular significance for forensic psychiatry was the publication in 1832 by Dr. Isaac Ray, a young general practitioner in Eastport, Maine, of a remarkable volume, entitled *Insanity and Jurisprudence*. Dr. Ray's work is probably the most important single contribution to medical jurisprudence published in English. A decade later it was cited in the crucial McNaughten case, which has influenced the concept of legal responsibility in this country and Great Britain up to the present.

The Psychiatrist and the Law

Psychiatric practice: Legal requirements. The license to practice medicine and surgery which is required in every state throughout the United States carries with it legal authorization to engage in the practice of psychiatry without prior specialized training. Consequently, the impetus to acquire further training, which in fact is a prerequisite for competence in this field, must stem primarily from the physician's sense of professional ethics. Moreover, in contrast to every other medical specialty, in most states persons without medical training, indeed persons who have had no formal training whatsoever, may practice psychotherapy. In a few states, laws have recently been enacted which make training and certification mandatory for clinical psychologists. For the most part, however, the psychiatrist engaged in the practice of psychotherapy is carrying out a treatment for which no formal training or licensing is required by law.

Confidentiality and privileged communication. Medical ethics, as well as therapeutic considerations, demand that the psychiatrist hold anything his patient may tell him in strict confidence. In other words, confidentiality is an ethical imperative for the psychiatrist. Privileged communication refers to the patient's legal right to refuse to divulge the nature of his transactions with his psychiatrist during therapeutic sessions. The claim of privileged communication is an accepted tradition in client-lawyer relationships, but it is rarely granted for patient-psychiatrist confidences. In recent years, a few states have enacted statutes providing for privileged communication in psychiatric treatment.

The clinical interview and the accused. The psychiatrist has no formal role in criminal investigation.

He is under no legal or ethical obligation to use his skills to elicit confessions from criminal suspects. To do so is usually inconsistent with his professional code of ethics. If he were to reveal information obtained in a clinical setting, the psychiatrist would rob the psychiatric interview of its essential ingredient: confidentiality.

Two devices of psychiatric interest used to elicit confessions from those suspected of crime are popularly referred to as the "lie detector" and "truth serum." The first, a polygraphic instrument, is designed to measure changes in cardiac rate and output, respiratory rate, skin perspiration, and other physiological responses which are significantly affected by the autonomic nervous system. Deviations from the subject's mean according to these parameters, in response to verbal cues betraying "guilty knowledge," are regarded as putative evidence of his guilt or indications of his knowledge of the crime. "Truth serum" is usually some form of sedative, most often a barbiturate, which lowers the suspect's conscious self-censoring defenses and is presumed to predispose him to disclosing the "truth."

The polygraph has been employed more widely than the drug, not only in police investigations but for government security clearance and screening for industrial pilferage. It is true that autonomic hyperactivity can be detected by polygraphs; and it is true that deep sedation may lower protective barriers against self-disclosure. Neither technique is infallible. Muscular hypotonus, hypertonus, malingering, and psychic states of which the subject may be unaware can affect autonomic excitability. Moreover, lowered cognitive thresholds may release private fantasy as well as "truth." The psychiatrist's use of drugs, hypnosis, or the potent ancillaries of the clinical interview (transference, empathy, dependence, and suggestion) to elicit confessions, if they are to be used ultimately to bring about legal sanctions, is undesirable.

The psychiatrist as expert. Any psychiatrist may become involved in legal proceedings as an expert, a medical specialist on mental disorders. His participation might arise from the request of a defendant whose competence to handle his own affairs, to enter into contracts or to execute legal documents has been challenged. The psychiatrist sometimes acts at the request of one or more persons who have made such claims against the defendant. He also participates in court proceedings in response to the invitation of an appropriate agent of government, usually the presiding judge. As a medical specialist on medical disorders, the psychiatrist may serve federal, state, or local government as a medical officer or staff member of an administrative or institutional unit.

Psychiatrists retained as experts for the defense in a criminal trial may declare a man "insane" and "not responsible," while opposing experts testify on behalf of the prosecution with equal conviction that the defendant was "sane" and "responsible." In a contest over a will, a psychiatrist testifying for one group of

relatives may assert that the man who had made the will was "incompetent" to do so. Almost invariably, however, the beneficiaries of the will are able to produce another, equally prominent expert, who insists that the deceased was entirely "competent" to dispose of his property by writing and signing a legally binding will. There are six possible explanations for such disparities: (1) Honest differences of opinion are inevitable in any effort to formulate complex judgments. (2) Our knowledge of the human personality in its normal and abnormal manifestations is imperfect, at best. (3) The fact that complex problems must be resolved with imperfect tools and incomplete knowledge tends to enhance the unconscious bias and partisanship which are likely to arise. (4) Frequently, medical experts are not fully conversant with the language, practices, and objectives of the legal procedure in which they are participating. (5) There is a common misapprehension among medical experts that in offering testimony they must use legal language as their own. (6) Finally, although this occurs only very infrequently, occasionally the venality of a medical expert may induce him to present testimony which is favorable to the individual or group which has retained him.

Honest differences of opinion may be minimized, but they can never be eliminated entirely. Research in the behavioral sciences is on the threshold of a major breakthrough which, within the next generation or two, will certainly bring our understanding of psychopathology up to a level comparable to that achieved by most other medical specialists within the last several generations. With regard to the possibility that unconscious bias and partnership may influence the expert's testimony, since, for the most part, this occurs when the data available to him are ambiguous, it follows that the lessened ignorance and confusion which can be expected as a result of scientific advance will be accompanied by a concomitant decrease in bias.

There is no need to perpetuate the most common cause of the frequently conflicting, sometimes chaotic, testimony of the psychiatrist during legal proceedings, which results primarily from the fact that he does not fully understand his role and function in the courtroom. When his actions and testimony are appropriate to the medical specialist who, by virtue of his training and experience, is an acknowledged expert in the field of mental and emotional disorder, much of this confusion is eliminated. The psychiatrist's task is to present such facts and opinions as lie within his professional competence. His language should be clear, and he should avoid technical terms whenever possible. When the use of specialized terms is essential, he should define them with as much lucidity as his verbal facility and the circumstances permit. When giving testimony, his answers should be relevant and succinct. The psychiatrist must remember that he is neither a legal agent nor a legal expert. The responsibility for the resolution of questions of law belongs to the judge, the jury, and the contending attorneys. The psychiatrist can present

pertinent facts which fall within his professional knowledge and offer his opinion as to their significance. However, he is an expert and not a judge and jury. The legal decision makers will ultimately base their judgment on the testimony, impressions, and reports of other experts and witnesses as well as his.

Problems of communication. The interpretation of legal language and psychiatric language may differ radically, even when the same words are used in both instances. Some classic examples of problems which typically arise in communication between these disciplines and represent a major source of misunderstanding are cited below.

Commitment. In psychiatry and law alike, by definition, commitment of the psychiatric patient refers to one of several legally implemented, psychiatrically inspired procedures designed to permit involuntary hospitalization of certain categories of the patient population. In fact, however, for the lawyer, a commitment is a *mittimus*, a warrant for imprisonment. On the other hand, for the psychiatrist, the term denotes a "helpful" procedure, in that it facilitates the hospitalization and appropriate treatment of a patient who is mentally ill. The difficulty may be attributed, perhaps, to the fact that the word has historic, and still viable, punitive associations, in contrast to its therapeutic significance for psychiatrists. But, whatever the explanation, it has been the source of frequent misunderstandings.

Insanity. Although the word "insanity" is no longer used in more recent legislation and judicial decisions, it appears in the legal decisions and legislation which were based on the concepts of the alienists of the 19th century. It was then used as a generic term, which referred to a group of severe mental disorders which persisted over a relatively long period of time. In contemporary psychiatry, the term has been abandoned; nevertheless, it remains a legal legacy. It connotes a degree of mental disturbance so severe, menacing, or disabling that the law may rule the patient immune from certain legal responsibilities or disallow certain privileges which require a degree of competence, such as the power to marry or to enter into business contracts. In some states, "insanity" is the relevant criterion for compulsory hospitalization. Thus, what was once an anachronism in psychiatry is fast becoming one in the law.

The legal interpretation of the word "insanity" presents a problem in communication primarily because it has never been clearly defined, although it is generally recognized that insanity is not the equivalent of psychosis. Professor Henry Weihofen's comments are particularly appropriate in this connection:

For a branch of learning which consists largely of definition, the law is strangely lax in the use of the word 'insanity.' Unfortunately, the word has no technical meaning either in law or in medicine, and it is used by courts and legislators indiscriminately to convey either of two meanings: (1) any type or degree of mental defect or disease, or (2) such a degree of

mental defect or disease as to entail legal consequences (i.e., as to require commitment to a mental institution, or the appointment of a guardian, or to avoid a contract or relieve from responsibility for crime).

Mental competence. The legal connotation of the phrase "mental competence" is easily confused with, but not identical to, its current psychiatric interpretation. In the legal sense, mental competence refers to a degree of mental soundness consistent with the ability to carry out certain civil acts of a juridical nature, e.g., writing a will or signing a contract. When it is applied to the criminal, it refers to whether he demonstrates a degree of mental soundness compatible with standing trial. If he is competent, then he must also be proven responsible for the illegal act of which he stands accused.

Laws governing hospitalization. It is preferable to have a patient enter a mental hospital or the psychiatric in-patient service of a general hospital voluntarily, for the same reasons that his prognosis is better if he enters psychotherapy as an out-patient through his own decision, because he wants to help himself. Some states specifically forbid commitment to a general hospital. The official policy in many such hospitals is to accept only voluntary patients. Most city, county, and state hospitals in this country recognize legal commitment procedures. The experience of government hospitals in such countries as Holland and England, where voluntary admissions are the rule, indicates that such legal formalities are neither necessary nor desirable. Moreover, it is the current consensus of opinion that involuntary commitment is and should be a minor problem, involving a very small fraction of the psychiatric patient population. Certainly it should not continue to dominate our practice.

All of the states provide for some form of involuntary hospitalization. Such action is usually taken when the psychiatric patient presents a danger to himself and to others in his environment, to the degree that his urgent need for treatment in a closed institution is evident.

Hospital admission procedures

Voluntary admission. The procedure followed in the voluntary hospital admission of psychiatric patients does not differ significantly from the admission of patients for other forms of medical treatment. The patient, who is usually referred to the hospital by his private physician, simply indicates his desire to be admitted. Following psychiatric examination by a member of the staff, he enters to remain as long as he wishes or the doctors consider necessary.

A similar procedure is followed in cases of voluntary commitment with one exception: the patient must sign a written statement in which he agrees to remain in the hospital for a specified minimum period of time. However, the importance of this agreement lies in its psychological, rather than its legal, significance.

Involuntary hospitalization. The various categories

of involuntary hospitalizations may be graded on a continuum, beginning with emergency or observational admissions. These admissions usually require the certification of two physicians who are not associated with the hospital to which the patient is sent. In such cases, the period of hospitalization is relatively brief in duration, ranging from 48 hours to 1 month. Involuntary long term hospitalization, which is commonly referred to as probate commitment, involves some form of court procedure and judicial decision. The differences between emergency or observational commitment and probate commitment are more apparent than real. While the psychiatric patient may be hospitalized for a very brief period without legal sanction, all involuntary hospital admissions are subject to judicial control. Judicial action is based on the clinical reports of reputable physicians and psychiatrists.

An emergency admission implies the sudden onset of acute psychiatric disturbance. Not surprisingly, hospitalization under such circumstances does not require the consent of the patient; emergency commitment can rarely be invoked without the cooperation of the family. This form of hospitalization is limited in duration, and it is equally limited in terms of therapeutic effectiveness. Its social value lies in the fact that the patient, who is considered to represent a source of danger to himself and others, is removed from his environment and confined to a psychiatric facility for a specified period of time. During this period, diagnostic studies can be undertaken to determine the extent and nature of the patient's disorder and, on the basis of such considerations, whether he should be hospitalized for a longer period of time, in which event legal action must be taken in probate court.

Hospital records. Once he has been admitted to the hospital, the success of treatment will depend in part on the degree to which the patient's dignity is respected by the staff, as evidenced, in turn, by their efforts to keep the details of his treatment confidential. It should be emphasized that, even when the patient is admitted to the medical or surgical service of the general hospital initially and referred for psychiatric treatment later, the voluminous psychiatric case record, with its detailed account of the patient's intimate fantasies and hidden feelings need not become part of his general medical record. This can remain part of the psychiatric unit's own record system, which is inaccessible to other staff members. Instead, the psychiatrist should prepare a précis of the patient's current mental status. The data contained therein can serve as a guide which will determine the quality of the physician's relationship with the patient and alert him to the signs of recurrent psychiatric crises.

Reports should be sent to outside agencies only when they serve the therapeutic needs of the patient and, in that event, should contain only those data which are essential for the agency's effective functioning on his behalf. When information which was obtained by

promising the patient confidentiality is requested for purposes which may be inimical to his interests, both the psychiatrist and the hospital are under a moral obligation to maintain that pledge. Psychiatric records must be made available if they are subpoenaed for legal purposes. However, even under these circumstances, the records usually remain in the custody of a representative of the hospital.

Hospital discharge. In most states no special provision is made for the commitment of psychiatric patients to general hospitals. The law specifically prohibits any attempt to restrain those patients who wish to leave the hospital. A voluntary patient in either a private or a public hospital may leave whenever he wishes, with or without the approval of the staff. When his action does not meet with the approval of the staff, the patient or a member of his family is requested to sign a statement to the effect that the patient is leaving the hospital against professional advice. In fact, the patient is not required by law to sign such a statement. Psychiatrists as well as patients seem to share the misconception that it is obligatory; it has considerable suggestive power and may prove an effective deterrent to discharge. In rare instances where the patient is considered to represent a serious potential danger to the environment, the hospital, usually in cooperation with the family, may obtain a probate court order to hold the patient for further treatment.

The situation is more complex with regard to involuntary hospitalization. The underlying legal philosophy remains the same: any person in this country who is restrained against his will, for whatever reason, may seek his release through the ancient Anglo-Saxon petition of habeas corpus. A psychiatric patient or responsible persons acting in his behalf may, through the writ of habeas corpus, require the superintendent of the hospital to which he has been sent against his will to appear before a judge. The superintendent is obliged to demonstrate to the judge's satisfaction that the patient has been deprived of his freedom for just and lawful cause. If the superintendent is unable to provide adequate evidence to justify the involuntary hospitalization of the patient, the court may order his immediate discharge.

Barton has formulated what might be called a patient's Bill of Rights. Any person has the right to seek hospital admission for psychiatric care without public humiliation; and his freedom shall be restored when such care is no longer required. During the period of hospitalization, he shall have the right to communicate and the right to protection and privacy. He shall be considered competent to conduct his own affairs and to exercise his rights as a citizen unless he has been proven incompetent, and the preservation of his civil rights shall be assured.

Malpractice. The psychiatrist may be sued or even criminally prosecuted if his patient suffers unnecessarily as a result of his incompetence or negligence

The number of malpractice suits in psychiatry, as in medicine in general, has increased somewhat in recent years. As a general rule, however, the psychiatrist is protected from civil or criminal sanctions if he exercises a level of competence and caution consistent with that of other medical practitioners. No procedure which involves a physical or mental risk should be undertaken without the patient's prior written consent, and the patient should know what he is signing. No somatic treatment should be undertaken without the express consent of the patient, or, if the patient is seriously incapacitated, of his guardian or a responsible member of the family. When such minimal precautions are taken, the threat of legal action, while sufficiently realistic to warrant malpractice insurance, is not a matter for serious concern.

The Psychiatric Patient and the Law

Psychiatrists point out that legal disputes frequently have their roots in psychiatric problems, however rational such conflicts may appear once they have been translated into the language of our legal system. Psychiatrists have further suggested that the rituals of law may themselves give symbolic expression to unconscious desires, fears, and impulses which are quite far afield from the ideal of rational jurisprudence. However, they frequently fail to realize the degree to which the guilt-apportioning and punishing operations of the law affect the guilt feelings and self-punishing tendencies of our patients. Certainly, it is not rare for a psychiatrist to hear manifestly "socially impeccable" patients describe illegal acquisitions, aggressions, and sexual adventures which are condemned by society or even legally prohibited. Although such activities are actually carried out only infrequently, every psychiatric patient has talked about his thoughts, or fantasies, or desires to carry out illegal sexual or aggressive acts at some point in his treatment.

A sense of guilt without legal cause is probably encountered more frequently among psychiatric patients than it is among legal clients, in whom, by virtue of their criminal behavior, there is ample justification for such guilt feelings. One of the basic shibboleths of democracy is that whatever the individual may think privately, he is not considered to have committed a crime unless he acts on his thoughts. The determination of legal guilt depends on proof of the *actus reus*, illegal act, as well as the *mens rea*, illegal intention.

The clinician cannot fail to be impressed by the formidable number of illegal acts which are committed by middle and upper class patients, and remain undetected. Under similar circumstances, the lower class patient is less likely to remain unapprehended. Psychiatric treatment may be a consequence of his illegal act. It is reasonable to assume that the psychiatric patient from an economically depressed area, or a socially or ethnically disadvantaged group, has been

referred for treatment by an official law enforcement agency, the courts or the prisons.

A study of the neurotic patient population in a medium-sized New England city showed that 20 per cent of the subjects investigated were in treatment as a direct consequence of their legal difficulties. In patients at the lowest socioeconomic level, in 42 per cent of the cases studied, psychopathology had manifested itself initially in the patient's provocative interaction with the community, for which he had been arrested, tried, and convicted.

With respect to the middle and upper middle class patients in the population studied, findings supported hypotheses previously advanced in this connection: criminal fantasies and impulses occurred with at least equal frequency among patients in these socioeconomic categories. Typically, however, their psychopathology found overt expression in feelings of subjective discomfort and general malaise, rather than difficulties in social adaptation. (When difficulties in social adaptation had occurred, they had not come to the attention of the authorities.) Nevertheless, over the long term, the often unconscious antisocial tendencies of this group of "socially favored" patients, which included the power elite, represented a greater potential danger to the community than the more capricious conduct of the lower class patients.

The criminal patient population. Psychiatrists concerned with offenders may treat sexual and aggressive deviates. These clinical entities continue to present a major psychiatric and social challenge. Since sexuality and aggression play a crucial role in personality development, the psychiatrist's efforts on behalf of this segment of the patient population are of obvious significance. Those individuals whose criminal behavior involves the illegal acquisition of goods, i.e., run-of-the-mill thieves, are rarely encountered in psychiatric practice. It is true, of course, that occasionally compulsive embezzlers or shoplifters come for therapy, and useful clinical generalizations may be drawn from their treatment. However, these cases are not representative of the mass of acquisitive offenses which account for the major share of socially and legally disruptive behavior in our society.

The "profile" of the adult criminal. Epithets such as "murderer," "thief," and "pervert" express the feelings of revulsion and acute anxiety which typify the reactions of the average law-abiding citizens to persons who frighten, anger, annoy, or disgust them. Concomitantly, their evaluation of the personality of an offender will depend primarily on the nature of his "crime," even though this offense may represent a single isolated event in a lifetime. Certain types of criminal behavior evoke a particularly intense reaction among the general population. Yet the ubiquity of criminal impulses and fantasies, both aggressive and sexual, as revealed in psychiatric clinical practice as well as in sociological field studies, clearly demonstrates that

the criminal cannot be sharply distinguished from the general population. He is the crystallized expression of certain aspects of normal functioning, on the one hand, and personality disturbance, on the other. As such, he is as much the concern of psychiatry and the behavioral sciences as of the law.

Clinical experience has also shown that the criminal's personality structure is the product of a remarkably consistent intrapsychic organization, which permits reliable prediction of his characteristic behavior patterns. Thus, the criminal may manifest transient variations in emotion, behavior, ideation, and affect if there is some modification of the external milieu; but, unless a significant intrapsychic change occurs, the ultimate recurrence of his habitual behavioral patterns is inevitable. Nor is this surprising when one considers that a compulsion to repeat, which imperiously asserts itself, adjusting to environmental factors rather than being deterred by such variables, is characteristic of normal, as well as neurotic and psychotic functioning. Under the circumstances, it is reasonable to assume that repetition compulsion must play a crucial role in the etiology of provocative antisocial activity.

It has been established that convicted and imprisoned criminals usually come from disadvantaged socioeconomic groups. The percentage of minority groups members from deprived environments in our prison population far exceeds their proportion in our general population. Therefore, in addition to the consequences resulting from his conviction, the criminal suffers from a social vulnerability imposed by his environment. The ease with which these vulnerable criminals are repeatedly detected and imprisoned seems to indicate a self-imposed amenability to punishment. These data correlate with the characteristic and clinically significant variations which have emerged in studies of the intrafamilial, peer, and community relationships within this group.

Social patterns of illegal behavior. Alcoholism is a frequent concomitant of every form of delinquent behavior and is associated with crimes of violence. The "evils" of alcohol have long been a subject for dispute. On the one hand, "social drinking" is a prevalent practice in our society and, as such, is accepted and expected. On the other hand, the secret drinker represents a potential psychosocial hazard. Furthermore, when it is consumed in excess, alcohol may lead to serious somatic pathology. Alcoholism was the focus of one of the most significant political experiments in American history, the use of legal measures to resolve a psychosocial problem. The Twenty-First Amendment to the Constitution, which outlawed the manufacture, distribution and consumption of intoxicating beverages, is acknowledged today as a failure. People continued to drink (and to demonstrate their lack of respect for the law), and a huge illegal industry was formed to satisfy their demand for liquor. Some govern-

ment officials, as well as previously law-abiding citizens, were corrupted. Although the Twenty-First Amendment was repealed several decades ago, its influence persists in current social patterns of illegal behavior. Well organized groups of racketeers have permeated and gained control of other aspects of business, industry, and government. The fact that these individuals are permitted to continue their illegal activities can be attributed, in turn, to a secondary effect of the Twenty-First Amendment, the widespread suspicion of law enforcement agencies. Both of these patterns are legacies of Prohibition.

Irrational legal attitudes regarding alcoholism persist as a concomitant of delinquent behavior. Environmental factors play a major role in the etiology of the disease, and onset is precipitated by specific personality factors. The range of contributing causes is matched by a wide spectrum of treatment procedures, ranging from the chemical to the inspirational, which are described in further detail elsewhere in this volume. Yet the rate of chronic alcoholism continues to rise among the general population, and, while psychotherapy would seem to be indicated in many such cases, alcoholics are still sent to jail when they become obstreperous.

Narcotic addiction resembles chronic alcoholism in that it represents another troubling amalgam of undetermined somatic and psychic pathology, together with unresolved sociolegal issues. The widespread preoccupation with narcotic abuse was demonstrated at the White House Conference on Narcotic Addiction. The report prepared by the Ad Hoc Committee for the Conference participants emphasized several important points. First, narcotic abuse is decreasing; however, the intake of psychoactive but non-narcotic drugs, such as barbiturates and dexedrine, is increasing. The report further stated that the members of certain marginal subcultures seek, through the use of narcotics, to breach their alienation and to achieve the sense of social cohesiveness and euphoria which the dominant community pursues through the use of alcohol, still the most widely used addictive drug.

The report concluded that the narcotic addict can be cured; however, long imprisonment or indefinite ambulatory maintenance dosages were rejected as suitable therapeutic measures. Instead, the report recommended the view of the American Medical Association as well as the National Research Council of the National Academy of Sciences that the addict can be treated most effectively in an institutional setting, where drug consumption can be controlled. The medical professional is generally agreed that the view of addiction as a crime is irrational and self-defeating.

The psychological implications of imprisonment. The individual who is a recognized criminal, whatever the precipitating factors or the nature of his crime, will not necessarily be imprisoned. Imprisonment is, in itself, a special experience of such traumatic pro-

portions that the ex-prisoner is least likely to respond favorably to rehabilitative efforts.

The psychiatrist must be alerted to the special problems presented by this segment of the patient population. The prisoner lives in a tension-ridden totalitarian community. Dominated by other men, he becomes resentful and rebellious. Without women, he faces the challenge of an endemic homoerotic and homosexual environment. His isolation from and rejection by the community at large lowers his self-esteem, and he becomes reactively assertive. He is constantly preoccupied with fantasies of escape and the frustrations of his impulses toward self-expression. As might be expected, his attitudes toward prison personnel are highly ambivalent. The noninmate is feared, suspected, and rejected as a potential danger. As a representative of punitive society, he might inflict an injury on the prisoner. But for the prisoner the noninmate is his only possible ally in his unceasing quest for freedom.

The Concept of Legal Responsibility

Definition. The word "responsibility" is commonly used to denote trustworthiness and dependability. These subjective characteristics are not identical with legal responsibility, however. In law, responsibility signifies culpability, and hence punishability. According to criminal law, a socially harmful act does not represent the sole criterion of a crime. The objectionable act must have been perpetrated deliberately. The criminal must have had a *mens rea*, an evil intent. There cannot be a *mens rea* if the offender's mental status is so deficient, so abnormal, so diseased, as to have deprived him of the capacity for rational intent. The law can be invoked only when an illegal intent is implemented or attempted. Neither behavior, however harmful, nor the intent to do harm is, in itself, grounds for criminal action.

History. The precedent for determining legal responsibility was established in the British courts in 1834. A deluded young man, McNaughten, killed the secretary to the English Prime Minister, Sir Robert Peel, but was later acquitted by reason of insanity. After the trial, fifteen English judges were asked to answer five questions posed by the English House of Lords, in the hope that their answers might serve as a future guide in defining the limits of legal responsibility in similar cases. The responses to four of these five queries comprise the so-called McNaughten rule, which has, until recently, determined legal responsibility in England and in most of the states in this country.

The relevance of these questions and answers may best be understood if they are divided into two separate categories, namely, those relating to delusions and those concerning appropriate procedures and general criteria for determining responsibility. Concerning the effect of delusions, the exchange was as follows:

Question I: "What is the law respecting alleged crimes com-

mitted by persons afflicted with insane delusions in respect of one or more particular subject or subjects; as for instance where at the time of the commission of the alleged crime, the accused knew he was acting contrary to law, but did the act complained of with a view, under the influence of insane delusion, of redressing some supposed injury or grievance?"

Answer I: "Assuming that your Lordship's inquiries are confined to those persons who labor under partial delusion only, and are not in other respects insane, we are of the opinion that notwithstanding the party did the act under the influence of insane delusion, he is nevertheless punishable if he knew at the time of committing such crime that he was acting contrary to law; by which expression we understand your Lordship to mean the law of the land."

Question IV: "If a person under an insane delusion as to existing facts commits an offense in consequence thereof is he excused?"

Answer IV: "The answer of course must depend upon the nature of the delusion; but making the same assumption as before, namely, that he labors under such partial delusion only, and is not in other respects insane, he must be considered in the same situation as to responsibility as if the facts with which the delusion exists... were real."

The following dialogue has, since 1834, been the basis of our laws governing criminal responsibility:

Question II: "What are the proper questions to be submitted to the jury when a person alleged to be afflicted with insane delusions... is charged with the committing of the crime, and insanity is set up as a defense?"

Question III: "In what terms ought the questions to be left to the jury, as to the prisoners' state of mind at the time when the act was committed?"

Answers II and III: "...every man is presumed to be sane and to possess a sufficient degree of reason to be responsible for his crimes.... To establish a defense of insanity, it must be proved that at the time of committing the act the party accused was laboring under such a defective reason from disease of the mind, as not to know the nature and quality of the act he was doing, or if he did know it, that he did not know that he was doing what was wrong. The mode of putting the latter to the jury has generally been whether, at the time of the act he knew right from wrong, which mode is not as accurate when put generally and in the abstract as when put with reference to the party's knowledge with the respect to the very act with which he is charged. If the questions were to be put as to the knowledge of the accused solely with reference to the law of the land, it might confound the jury to believe that an actual knowledge of the law of the land was essential to lead to a conviction; whereas the law is administered on the principle that every man must be taken to conclusively know it, and the usual course is to leave the question to the jury whether the accused had a sufficient degree of reason to know he was doing an act that was wrong, accompanied with such observations and explanations as the circumstances of each case may require."

Thus, the answers to the questions stimulated by the McNaughten case define specific criteria which the court, judge, and jury could apply to exculpate a person accused of a crime by declaring him irresponsible. In summary, a man should be considered irresponsible, the Legal Lords said, if he was unaware of the nature and consequences of his act, or if he was incapable of realizing that his act was wrong. The Lords also declared that a delusion, to absolve a man from punishment, had to be one which, if true, would be an adequate defense. If the deluded idea did not justify the

crime, then presumably the man was to be held responsible, guilty, and punishable.

Current concepts. Alienists protested immediately and have ever since that these criteria are exclusively intellectual; that emphasis on intellectual capacity alone is misleading. They complained that they could not testify competently under such arbitrary legal restrictions. The lawyers replied that these were not medical standards of insanity but legal standards of responsibility. And so it has gone for over a century.

In 1869, New Hampshire adopted a rule of responsibility which placed psychopathology in the same category as physical pathology and other scientific and technical problems which required expert assessment and diagnosis. Psychiatric experts were to testify to the best of their ability, in accordance with their highest standards of professional competence, concerning the mental state of the person they had investigated clinically. Their data and opinions, like all information obtained from experts on technical questions, then became part of the complete summary of facts available to the judge or jury. The psychiatric expert's testimony, treated as one set of facts among many, was then to be evaluated by the judge or jury to ascertain its proper relationship to the legal requirements of *mens rea* and responsibility. This straightforward, sensible solution, however, remained a single oasis of rationality in northern New England. Until recently, the rest of this country and England have continued to comply with the tortured and confusing requirements of the McNaughten rule (although the sensible Scots added the concept of an intermediate state of partial responsibility to the rigid dichotomy of all or none decisions on responsibility or irresponsibility).

Courts in some states have added equally ambiguous criteria of the "irresistible impulse" to the ill defined criteria of knowledge and awareness stated in the McNaughten rule. According to it, an accused person may not be held responsible for his crime if, at the time, he was overwhelmed by impulses so sudden, imperative, and powerful that they were, in fact, irresistible. Not surprisingly, these irresistible impulses have been generally unprovable or at least unpersuasive in our courts. Judges and juries alike have been unable to distinguish between the unresisted impulse where the culprit, possessing "free will," had chosen not to resist, and the irresistible impulse where the defendant's "free will" was unequal to the task of restraining his impulse. This skepticism was most explicitly and succinctly expressed in the comment of an Ontario judge who suggested that a rope be dangled in front of a defendant claiming irresistible impulse to determine whether his impulses were, in fact, irresistible.

The social philosophy underlying this cynical attitude may be traced back to British tests for responsibility which predated the McNaughten rule and were still applied during the 19th century. Before Mc-

Naughten, the "policeman at the elbow" test was one important test of responsibility. The judge or jury tried to ascertain whether the defendant would have carried out the criminal act of which he was accused within sight of a policeman. Presumably, if the immediate prospect of detection, arrest, and punishment failed as a deterrent, then the man was legally irresponsible, for he was incapable of controlling himself. The loopholes in this test are obvious. Alienists of the 19th century and psychiatrists of the 20th century pointed out that even deteriorated patients in psychiatric institutions were often secretive concerning acts which they knew to be forbidden. Their argument that the dangerous paranoiac might be the most cunning of all in effecting harmful behavior so as to escape detection and punishment was equally ineffective.

In 1963, Oswald assassinated the President without witnesses; this secrecy does not, in itself, attest to his sanity. Nor is the fact that Jack Ruby shot Oswald in the midst of a host of policemen and before many millions of eye witnesses an adequate basis for psychiatric evaluation. This killing before a myriad of policing eyes was held to be the act of a legally responsible man although there was no evidence that dangling a rope before Ruby's eyes or the presence of a battalion of police "at his elbow" had any inhibiting effect. It is reasonable psychological conjecture that, for Ruby, public exposure may have contributed toward rather than mitigated against his tragic act. By his publicly rectifying a terrible wrong, he could openly display his courage and so could identify with the law enforcement officers whom he envied. Guiteau assassinated President Garfield in the presence of police but was found guilty and hanged in spite of psychiatric testimony which emphasized his emotional instability. Czolgosz killed President McKinley within inches of guards, and the assassin was whisked off to trial and execution before he could be adequately studied by alienists. The evidence indicated that he was a rootless, confused wanderer who was in all probability deeply disturbed emotionally, but nevertheless was able, perhaps encouraged, to commit homicide with many policemen at his elbow.

In 1954 the Federal Appellate Court in Washington, D.C., held, in the case of Monte Durham, that a man should not be held responsible for an otherwise criminal act when his behavior was the "product of mental disease or deficiency." This decision resembled the New Hampshire policy promulgated a century earlier. More recently, the American Law Institute included a formula for determining legal responsibility in its monumental Model Penal Code, prepared by leading American scholars and legal authorities over a 10-year period. The Code would free from responsibility anyone who, because of mental defect or deficiency, was incapable of appreciating the criminal nature of his act or, if he did appreciate its criminal nature, was nevertheless unable to control his behavior. However, the Code cautions that mere repetition of harmful

antisocial behavior would not, in itself, free a law-breaker from responsibility for his act. This point was explicitly stated to prevent the habitual criminal from escaping punishment.

Another Federal Appellate Court decision handed down in the Currens Case freed from responsibility those offenders who are unable to control their behavior. The ability to control one's behavior is the crucial criterion of legal culpability, rather than perceptual, intellectual, or emotional traits. The decision in the Gorshen case in California introduced into American jurisprudence a concept resembling in some respects the century-old Scot notion of partial responsibility. Mental disability might serve as a mitigating circumstance; therefore, it could determine the nature and duration of the punishment of the convicted criminal (whether penal incarceration or therapeutic treatment as an out-patient or in-patient), rather than simply the guilt or innocence of the accused. California also instituted two separate trials in criminal cases involving the question of mental illness. The first trial seeks to ascertain whether the defendant did carry out the illegal act of which he is accused. If he is found guilty, the second trial seeks to determine his state of mind at the time, in relation to the established criteria for legal responsibility.

These variations in legal procedure throughout this country affect only a small fraction of the criminally accused. Several efforts have been made to pass legislation with wider applicability. A few states have followed the legislative example set down in the American Law Institute's Model Penal Code.

In 1959, for example, the Vermont legislature enacted a law governing the determination of criminal responsibility which is a direct outgrowth of the Model Penal Code:

(1) A person is not responsible for criminal conduct if at the time of such conduct as a result of mental disease or defect he lacks adequate capacity either to appreciate the criminality of his conduct or to conform his conduct to the requirements of law.

(2) The terms 'mental disease or defect' do not include an abnormality manifested only by repeated criminal or otherwise antisocial conduct. The terms 'mental disease or defect' shall include congenital and traumatic mental conditions as well as disease.

Similar provisions have been incorporated into the laws of New York State and Illinois. The impact of the Durham, Currens, and Gorshen decisions has so far been confined mainly to the jurisdictions of the courts in which they originated. The concept of criminal responsibility has remained essentially unchanged since its initial delineation by the Legal Lords during the reign of Queen Victoria. Clearly, these defections from the McNaughten rule, coming as they do within a single decade after a century of neglect, reflect widespread dissatisfaction and presage a legal consensus certain to be more in harmony with contemporary social values and scientific concepts than are the century-old answers of the English Lords. Despite this more optimistic out-

look, the fact remains that certain crucial issues are unresolved.

The official legal formulas are probably less important per se in determining criminal responsibility than is commonly believed. The nature of the offense, the defendant's personality, the competence of the attorneys, and the emotional reaction of the jurors will affect the outcome of a criminal trial more effectively than the complexities of the legal interpretation of responsibility. This implies certain inevitable inequities which our legal system has not yet taken sufficiently into account.

An adequate psychiatric examination is an essential prerequisite for a valid psychiatric judgment. In fact, however, the great majority of those persons who have been accused of criminal behavior are too poor to afford prolonged and intensive psychiatric study. Three decades ago, Massachusetts introduced the pioneering Briggs Law, which authorized the state to provide psychiatric examination of all men indicted for criminal felonies. This procedure has not been universally adopted throughout the United States, although trends in this direction have become increasingly evident. Massachusetts has continued to develop the psychiatric branch of its legal structure. California, New York, Illinois, Ohio, Wisconsin, and New Jersey have improved their techniques for ascertaining the presence of mental illness in those individuals who have been accused of antisocial behavior under their respective criminal codes, and these states have modified their pre- and post-trial psychiatric examinations for this population.

There has been an excessive emphasis on topics relating to responsibility for criminal behavior as a point of interaction between law and psychiatry. For many, it has become an emotion-charged *idée fixe*; others are preoccupied with its moral implications. All this leaves too little time or energy for other equally significant joint problems of law and psychiatry. But we cannot escape this redundant dialogue until we resolve it. This repetitious colloquy will end only when there is individualization in imprisonment, probation, and parole; when the psychiatrist becomes the diagnostician before the trial and the therapist afterward, rather than the instrument of social arbitration during the trial; when prevention by punishment and amenability to treatment are sensibly assessed in individual cases and human beings are no longer treated as hypothetical statistical entities.

Legal Procedure

Competence to stand trial. In the Anglo-American jurisprudential system, an accused person has the right to consult with counsel to ensure fair treatment under possibly hostile conditions. Recent decisions handed down by the Supreme Court, reversing the convictions of men who were unable to afford the services of an attorney and whose rights, therefore, were not adequately protected, reflect increasing concern with

this issue. However, even when a competent defense attorney is available, he cannot provide an adequate defense unless the defendant is intellectually and emotionally capable of cooperating with him by providing relevant information and by discussing alternative courses of action, in order to determine an optimal legal defense. When an accused man, because of intellectual deficiency or serious psychopathology, cannot advise, inform, discuss, and consult with his attorney, he is deprived of his day in court, according to Anglo-American tenets. For justice is presumed to be the legal outcome of a conflict between opponents of equal capacity; only then can the same rules of legal combat be sensibly applied to both.

Ironically, this crucial pretrial determination of competency to stand trial is least understood by psychiatrists. This issue has probably been the cause of more hardship and injustice than the more dramatic and acrimoniously disputed issue of legal responsibility. The judge usually has greater latitude in determining competence to stand trial, as opposed to the hotly challenged and highly articulated issues of responsibility, which are resolved in court proceedings, before spectators or reporters. The judge's instructions to the examining psychiatrist tend to be diffuse and ambiguous. Most psychiatrists and not a few judges confuse the defendant's competence to consult with counsel with his legal responsibility.

But even when such pretrial decisions do not suffer from these artificial impediments, their effects are unpredictable. Although the accused has been arrested and may have been indicted, he has not been found guilty of any crime. The pretrial decision relates to the fact that presumably one day the offender will stand trial to determine whether he actually did carry out the illegal act of which he has been accused, and to his ability to protect his rights adequately under such circumstances. In addition, the trial will ascertain whether, at the time of the alleged crime, the defendant's psychological state satisfied the legal criteria of intent and *mens rea*, which would make him responsible, culpable, and punishable in the eyes of the law. Obviously, there is no justification for a trial if the answers to these questions are obviously negative. The severely disturbed defendant is likely to be sent to a state mental institution without trial, until the superintendent of that institution is able to testify in court that, in his expert opinion, the defendant has recovered from his mental disability to the degree that he is competent to consult with counsel in his own defense. Although the law requires that he must be considered innocent until proven guilty, such a person is imprisoned in institutions for the criminally insane despite the fact that he may not have been brought to trial to determine his guilt. In most states, the public mental hospitals have a special subdivision where such persons are confined, and where they are frequently exposed to more stringent restrictions than

would be the case if they were actual prisoners or committed psychiatric patients.

Moreover, the reward for getting "cured" is a criminal trial. If a patient has been accused of a serious crime, the superintendent usually does not allow the patient to leave the grounds without court permission. The patient is thus deprived of the opportunity for graduated experiments in using his freedom which are an integral and essential part of meaningful psychiatric care. Often, he is simply lost in the twilight zone, as yet undefined, between the rites of punishment and the rituals of therapy. And there he is likely to remain. It is improbable that either the district attorney's office or the judge's chambers will initiate inquiries concerning his mental status. Thus, with the passage of time, under the pressure of more immediate concerns, his dossier will move further back in the government files.

Juvenile Delinquency

Socioeconomic determinants. Slums have long been considered a malignant factor in the etiology of delinquency. In fact, however, the gangs which are characteristic of such slums offer the slum youngster a simpler and cruder, but more manageable, social organization than the vast and impersonal structure of the dominant community. These smaller, loosely knit groups, with their tough leaders and fairly obvious goals and rewards, provide a welcome alternative to the disorganized and apparently aimless public chaos of community life and the private dangers of inadequate intrafamily relationships. Many of these youngsters are at war; they are soldiers in the ranks of their culture, their class, and their caste, at war against the dominant culture of the elite.

These adolescents have been called rebels without a cause, but they do have a cause, even if most adults deny it and they themselves are unaware of it. In part, that cause is the classic precondition of all revolutions: the glaring inequities between those who rule and those who are ruled. It is a concomitant of a sincere struggle to achieve a democratic society, to realize the ideal or the myth that, in a free enterprise economy, everybody has an equal chance. For it is characteristic of our society that success, wealth, and fame are held to be attainable by all men and are depicted as the highest goals to which man can aspire. Yet under our present social system it is impossible for large segments of our population to achieve these goals through socially and legally acceptable channels. This circumstance, which Durkheim labeled anomie, is a precondition for the precipitation of despair of achieving the social status associated with these goals in some, and for desperate attempts to acquire them in others. For still others, the alternative solutions are emotional disturbance or delinquent activities.

The social causes of psychopathology and social offense are real. Only a small minority of the population who are socially and economically deprived enlist

in the delinquent army of rebellion or withdraw into psychic alienation. Because the community in which these subjects live is a common ocean of despair, only by close observation of the family interaction and the individual can we explain why this minority succumbs, while the majority do not. Certain associations cannot be avoided. The child who comes from a family which has somehow preserved its cohesiveness, and in which both the mother and father have maintained a reasonable balance of affection and of discipline, is less likely to become delinquent than the youngster who is raised in a home in which relationships are loose and distant, and in which punishment is too severe and unpredictable or affectionate overindulgence is the rule. The physiological status of the youngster, whether he is robust and active, for example, or relatively inactive, may affect his prognosis. The existing evidence would indicate that in socially deteriorated areas the vigorous boy with an athletic, mesomorphic body build is more likely to get into trouble with the law.

Delinquency is not associated only with slum environments and low socioeconomic status. It is not unknown among middle class families from "respectable" neighborhoods. Such middle class delinquency has recently received more attention. There are wide differences in the explanations of delinquent behavior in such an environment. There is reason to suspect that in some of these cases the youngsters are carrying out socially deviant or offensive acts because they have been unwittingly encouraged to do so by their fathers and mothers, who are shocked and ashamed when the delinquency comes to light. Most of these parents are solid, conforming citizens. They have unconscious psychopathological tendencies toward delinquency, which they transmit to their youngsters in a variety of ways of which they are unaware. These are the fathers who flex their muscles conventionally and openly when their sons make varsity; these are the fading mothers who preen a bit when their adolescent daughters are deluged by invitations to the prom; but, on another level, through the underworld of the unconscious, they may be sending hidden but potent affirmative signals to their children to carry out acts which titillate them, even though they consciously reject such acts, and even while they send loud but ineffective negative signals.

Legal and social offenses, then, are acts of specific people who live in particular environments, who respond to and arouse punitive responses among powerful elements in the community. Community response to delinquency merits our special consideration. A process of social selection is operative in the determination of criminality which is of crucial importance. An adult who has committed an illegal act must be detected, selected, and go through a complicated social and legal ritual before he is labeled "criminal." We were interested in exploring the crucial implications of this process with respect to children.

We started with two groups of children between the ages of 5 and 10, who were comparable to each other in every possible way, including the fact that each had behaved in a particularly naughty and socially undesirable manner. Mainly, they had stolen things, broken windows, stayed away from school, or set fires. They differed only in that the first group had been referred to child guidance clinics for treatment, and the remaining half, the second group, had been hailed before juvenile court. How had this happened? We found that this difference in disposition had very little to do with their backgrounds, acts, or personalities. These were all lower class children. (It is very rare for middle class children to be sent to a juvenile court.) In these cases, this crucial variable depended on which institutional affiliation was most congenial to the referring adult. Policemen always sent children to the juvenile court; indeed, most policemen did not even know that a child guidance clinic existed in the community. Those few who did had no idea what it did. Conversely, social workers referred children to the clinics. They knew about the juvenile court but preferred not to acknowledge it. Generally, teachers sent troublesome children to the clinic, but occasionally they referred them to the court.

As far as the child was concerned, although his behavior was a factor, chance was the primary determinant in referral and therefore in whether he would go to a doctor, who would treat him as though he were sick, or to a court, which would, however progressive, tend to identify him as *bad*. This lesson, learned so early and under such adventitious circumstances, was likely to have far reaching implications. As far as the delinquent was concerned, the sociolegal response to his acts had an arbitrary quality. The adult values which these decisions reflected were mysteries to the child. They were generally alien to the expressed intent of the law, which is to promote equal justice.

Juvenile delinquency and mass media. Of those factors which are most frequently cited as the cause of juvenile delinquency, inadequacies in family relationships are most commonly invoked. However, juvenile delinquency has also been attributed to the community environment, including the content and form of the mass media. In one investigation of adolescent, young adult, and mature delinquents, we studied the newspaper accounts of their cases during the trial as well as the trial records when available to determine whether there had been any consistent variations in the way the communication media and the courts reacted to different sorts of crimes and to personality differences among the alleged offenders. There was ample evidence that responses did differ, and these differences were reflected in the discrepancy in the amount of space allotted to reports of the case in the newspapers, in the size of headlines, and in the moral tone adopted in articles devoted to one type of crime as compared to another. These differences affected community attitudes toward the delinquent and contributed to or deterred rehabilitative efforts on his behalf. The "publicity" given a particular crime is sometimes so attractive that the vulnerable youngster may be motivated to emulate the "hero-criminal."

Television has come under stringent censure if not

scrutiny. Certainly, any imaginative production may provide models and perhaps serve as the precipitating factor in the delinquent behavior of certain children. Psychopathic youngsters, for example, whose identifications with meaningful adult figures have been seriously impaired, whose self-censoring and self-governing mechanisms are defective, and whose object relationships are shallow and transitory are likely candidates. Unsure of their own image, distant in their relationships, but poised for rebellion, they may use the television criminal as their model and be guided by his example into delinquency. However, for the average youngster whose environment is not pathogenic, there is little evidence that television content is an important causative factor in childhood delinquency.

The psychiatrist in juvenile court. The psychiatrist who deals with juveniles in any sort of legal difficulty must develop perspectives appropriate to these special conditions. It is generally recognized that the traditional use of conventional child guidance techniques is inadequate under these circumstances, although they have not yet been replaced.

Children may be referred to juvenile court, not only because of harmful acts which they have carried out but ostensibly to protect them from harm. For example, the psychiatrist might be called upon to advise in cases in which a child has been sexually accosted. In that event, he must be alert to the possibility that the child's description of sexual seduction or assault by an adult may be a product of misinterpretation, misunderstanding, or projected day-dreams. If it is reasonably certain that physical erotic interaction did in fact occur, he must assess not only the activity of the adult, but the child's seductiveness, as well as his participation, enjoyment, and efforts to continue the relationship. The emotional cost to a child must be the primary consideration. A child who has been sexually excited prematurely may be burdened in his later psychosexual maturation. However, interrogating the child for the purpose of obtaining evidence, through court procedures or even in the privacy of the judge's chambers; undue publicity; and punishment of the adult for acts which the child actually found gratifying or had exaggerated in the retelling may superimpose additional burdens of anxiety, guilt, and shame on the already existent difficulties. These may be more potent precursors of psychopathology than the original traumatic incident. Ignored, or treated adequately within the child's world, such an experience may be successfully repressed, sublimated, or integrated into the conscious ego. If the experience is set within a hyperbolic, public and semipublic legal, punitive, retributive ritual, the child's capacity for developing adaptive defenses may be significantly lessened.

In any juvenile court cases, the psychiatrist should become familiar with the world of his young patient. Frequently, the psychiatrist will be called upon to assist a child whose environment, background, and rela-

tionships lie outside his experience and which, therefore, may be more difficult to understand.

Civil Competence

Definition and criteria. Although problems of criminal responsibility and competence to stand trial are the center of a continuing dialogue between the professions of psychiatry and law, the determination of responsibility and competence in civil cases is qualitatively greater in scope. Every juristic act presumes that the participants are mentally competent to make appropriate decisions. Just as persons under a certain age are not responsible for any criminal acts they may commit, the law denies this segment of the population the power to make certain contracts, to marry, and to enter into other civil-legal relationships, on the grounds that their age is inconsistent with the presumption of mental competence, and hence civil responsibility.

Adults are generally presumed competent to handle their own affairs unless evidence is produced to the contrary. Unlike criminal responsibility, which uses identical criteria without regard to the nature of the offense, civil responsibility is adjudged in terms of the degree of mental competence appropriate to the particular act in question. The criteria to ascertain whether an adult is competent to be the guardian of a child are different and more demanding than the criteria to determine whether he can dispose of his own possessions by making a will.

Some states require medical tests to ascertain the possible presence of venereal disease in couples who wish to marry. Some consider a history of epilepsy relevant to the question of marriageability and refer them to neuropsychiatrists for diagnosis and advice. Therapeutic abortion may be carried out in some jurisdictions if, in the opinion of one or two psychiatrists, there is a possibility that the pregnancy might result in serious psychical or physical harm to the parturient woman. Some 27 states now have laws permitting sterilization of certain classes of persons, either because they have been adjudged socially dangerous sexual psychopaths or because they have serious pathological conditions which are considered to be genetically transmitted.

Testamentary capacity. The ownership of property is a basic right under our system of government. By extension, we are granted the right to dispose of that property as we wish, as long as the rights of others are not violated in the process. Wills are, of course, the main instruments for controlling such allocation after death. Frequently, wills give rise to family conflicts and the capacity of the deceased to have executed a will may be challenged. Court action of this nature may even be taken during the lifetime of the person whose testamentary capacity is being questioned. Most commonly such suits are allegations of senile deterioration, chronic intractable psychosis, mental retardation, or incapacitating chronic alcoholism. However, the psychiatric assessment of such patients raises

complex problems. Since senile changes may fluctuate, for example, the individual's state of awareness and alertness may be different at the time of examination than it was at the time he wrote his will.

Cases in which the psychiatrist is asked to make a retrospective assessment of the mental state of the testator after his death, which are more common, present problems of another nature. In such cases, it should be borne in mind that the psychiatrist's function is not to evaluate the decedent's general mental condition, for the severity of his mental illness or deficiency is relevant only to the degree that it may have impeded his ability to recall the extent of his property or his awareness of the natural objects of his bounty.

In questions of civil competence, social policy favors the individual. In a society organized around family patterns and private ownership and in which social stability is fostered by transmission of property within the family, an inquiry into the testamentary capacity of a man whose will includes such a provision is directed not only at the author of the will; such an inquiry also challenges this powerful sociolegal tradition.

In general, however, whether the "competence" relates to wills, contracts, or the making or breaking of marriages, the fundamental concern is the person's state of awareness and his capacity to comprehend the significance of the specific subject of the particular commitment he was making—at the time he made it. In other words, the two most relevant questions are, first, whether the participant understood the nature of a specific act and, second, whether he was aware of his duties and obligations in connection with that act. A marriage can be annulled if, according to these criteria, one of the participants was incompetent at the time they entered into the marriage contract. Competence to initiate divorce proceedings may be similarly assessed on the basis of cognition and awareness. In many states, severe, incurable mental illness of one of the partners is considered grounds for divorce.

Civil issues involving questions of mental competence reflect the congruence of legal and psychiatric concerns and the range of such concerns far more effectively than more dramatic criminal issues. Evaluation of mental states may be necessary for purposes ranging from the execution of contracts, deeds, and wills, to marriage, divorce, annulment, and guardianship of minors, from citizenship to military service. Because the question of competence relates to every phase of normal existence, the law wisely guards its precedents zealously: such competence is always presumed unless there is strong evidence not only of incapacity, but that this incapacity affects the particular issue and is potentially harmful to the individual.

Psychiatry and Law: An Overview

The phrase, "forensic psychiatry," is an old one, and it connotes the rhetorical tactics of the courtroom. But, as we have seen, psychiatry's concern with the law

extends far beyond these limits, for every psychiatrist is constantly dealing with patients whose feelings of guilt, shame, dependence, or unresolved conflict have been influenced, to a significant degree, by the legal environment in which he lives and in which he grew up. The law's concern with the mental status of those individuals accused of offenses against society has preoccupied jurists for centuries. No final solution is yet in sight; moreover, it seems self-evident that there can be no ultimate resolution to this question. Just as human anatomy is the product of biological evolution, human social organization is the product of cultural evolution. The legal codes are part of this cultural evolution, which is a never ending process. In time, the legal attitude toward the criminal may undergo basic changes, and, concomitantly, the psychiatrist's function at a criminal trial may become less significant than his efforts to prevent the psychosocial maladjustments which lead to criminal behavior.

There is no forensic psychiatry as such; psychiatry is not concerned with legal rhetoric or courtroom debate. Psychiatry's sole concern, in relation to the law, is the mentally ill (or healthy) individual whose behavior has aroused the anxiety, anger, and revenge of the community, which, in turn, has reacted through the rituals of the law. There is an urgent need for this kind of psychiatric concern, but this sense of urgency does not arise from the common misconception that there has been an increase in man's destructive, aggressive, and polymorphous promiscuous tendencies. Modern man is no more erotic, brutal, or unscrupulous than were his ancestors. Rather, the disturbed individual now has the capacity to extend his range of activity beyond the boundaries of his family and community and has thereby extended his spheres of human impact. His biosphere has been expanded. And, concomitantly, the expansion of our sociosphere has made us more vulnerable to his influence.

It follows that social contagion of delinquency and the epidemiology of mental illness are appropriate areas for psychiatric concern. Disorganized communities and fragmented families predispose to emotional distress. An environment in turmoil will find its chaos reflected in the inner conflicts and delinquent acts of its inhabitants. Of greater potential value than his role in ascertaining the mental state of offenders is the psychiatrist's contribution toward the prevention of the overt manifestations of personal conflict which may damage the life of the delinquent, as well as the community in which he lives. By the same token, positive changes in the law can serve to promote not only social stability, but psychic health as well, because a sense of justice is an essential prerequisite for both. It is an axiom that harmful legal experiments degrade politics and government and the personal psychological integrity of its citizens as well.

This discussion has been based on concepts derived mainly from psychiatry. However, this need not imply a restricted viewpoint. The goals of psychiatry are

therapeutic, but psychiatry is biological in origin, scientific in method, and individual in its concern. Some of these criteria apply to other specialties as well, but in combination all apply only to psychiatry. Like religion, psychiatry has values; like politics, it is concerned with the role of power and the management of men; like law, it concerns itself with structure, rituals, and functions relating to serious dislocations between the individual and the group; like psychology and sociology, it has developed methods of study; and, finally, like education, its goals are growth, change, individuation of personality, and generalization of major values. Psychiatry combines the humanistic and healing traditions of medicine and the disciplined empiricism of biology. It shares the awareness of both that the anatomy and physiology of the human animal comprise the primary data of his being, whether he is viewed as an individually reacting organism or as part of social patterns of interactions.

In recent years, the pattern of diverse and often discrepant studies of "crime in the mass" by sociologists, comparative law by lawyers, and the relationship between individual psychodynamics and genetic and somatic factors by psychiatrists has shifted somewhat toward hopeful advances in interdisciplinary collaborative efforts. We seem to be moving away from separate and disparate studies of sociology, of comparative law, and of individual psychodynamics. During the past decade there has been an increased rapprochement among these disciplines with respect to the causes and consequences of socially deviant behavior. Institutes have been established in academic settings in which social scientists, lawyers, and psychiatrists are attempting to solve sociopsychological problems in which they share an interest.

American universities have also initiated rapidly expanding programs of collaborative undertakings between psychiatry and law. The psychiatrist is being called upon to play an increasingly important part in every phase of community deliberation and action. A National Institute of Social and Behavioral Pathology, dedicated to the comprehensive attack on all phases of the strategic problems common to psychiatry and law, might be a practical and effective response to the social problems with which we are confronted. Many of the techniques and areas of psychiatric and behavioral science research lend themselves to investigation of compelling legal problems, as well as psychopathological questions. These include studies of the participants in the legal process, of the sanctioning methods employed by the community to accomplish its objectives, of the factors which affect the degree of popular conformity (or nonconformity) to legislative policies, of the process of struggle and agreement in the community, of professional education and development. Detailed knowledge of the formal and effective decision institutions of the community has an essential bearing on the relationship between legal procedures and the

increase or decrease in mental disease, as well as its form and content.

In 1959, the British Parliament passed a Mental Health Act which surpasses all but the most advanced legislation enacted in this country, in that it removed the residual stigmata of centuries from the mentally ill person. In Great Britain such patients are treated with the same concern for their welfare, and with the same emphasis on their resuming, as soon as practicable, an appropriate role in the community, as has long been the accepted medical goal for the physically ill. Local health administrators are empowered to provide hostels for patients whose illness does not require hospitalization, and for recently discharged patients who are not yet ready to assume full autonomy. Sheltered workshops employ persons who are unable to work effectively in private industry or business but who can contribute useful skills in a less competitive milieu. Other local community centers are equipped to train disturbed youngsters, to provide homes for aged incompetents, and to give counseling and psychiatric supervision to patients during their transition from hospital to home. Treatment of the mentally ill, by this act, need no longer be confined to special "asylums" but may be carried out in any properly equipped general hospital. Although certain classes of psychiatric patients may still be compulsorily certified or committed, such certification is based on the medical opinion of two physicians, one of whom must be trained and experienced in psychiatry.

In 1952, in the United States, the Public Health Service and the National Institute of Mental Health prepared a similar "Draft Act Governing Hospitalization of the Mentally Ill." Unlike England, because of our Federal system, such an act cannot be enforced throughout the entire country, of course. However, a law derived from the Draft Act was passed by Alaska while it was still a federal territory, and several states have used it as a model for their mental health legislation. Clearly, it represents a major advance; yet the basic objectives of the Draft Act were stated as early as 1869 by the pioneer of American medical jurisprudence, Isaac Ray:

In the first place, the law should put no hindrance in the way to the prompt use of those instrumentalities which are regarded as most effectual in promoting the comfort and restoration of the patient. Secondly it should spare all unnecessary exposure of private troubles, and all unnecessary conflict with popular prejudices. Thirdly, it should protect individuals from wrongful imprisonment. It would be objection enough to any legal provision that it failed to secure these objects in the completest possible manner.

The Draft Act comes as close to fulfilling these objectives as possible at this stage of our knowledge: it provides for a more medically based approach to the mentally ill while increasing the protection of such persons from violation of their civil and constitutional rights and liberties.

There are other indications of progress. The Ameri-

can Medical Association has recommended increased interdisciplinary training in law and medical schools, and in governmental facilities, as one of several efforts toward improved medicolegal communication. And, as mentioned earlier, it urged that the psychiatric offender, specifically the alcoholic and the drug addict, be treated medically rather than punitively. It has emphasized the need to free psychiatric patients from legal restrictions. Neither voluntary procedures nor those which require temporary commitment need rob the patient of his civil rights, any more than hospitalization for the treatment of infectious and contagious disease. The American Medical Association has also recommended that the criteria of legal responsibility and the psychiatrist's courtroom testimony be more responsive to contemporary knowledge.

The Model Penal Code, sponsored by the American Law Institute, ranks with Action for Mental Health, the Report of the Joint Commission on Mental Illness and Health, as a major document for those concerned with the mental health of the community. However, these plans are models for action and, as yet, lack the force of official power. Their effectiveness depends upon their implementation: if they are carried out, the psychiatric, medical, and ethical level in this country will be elevated.

Suggested Cross References

See Chapter 1 for a more detailed discussion of the history of the legal aspects of psychiatry. The psychiatric conditions mentioned in this section in connection with their legal implications are discussed in greater detail in Area F, on the psychiatric disorders. More information on juvenile delinquency may be found in Sections 41.4 and 41.5.

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Chapter 49

Military Psychiatry

49.1 • • •

JOHN M. CALDWELL, M.D.

Introduction

The problem of emotional disorders has plagued the military since the beginning of recorded history. In the Seventh Chapter of Judges, a procedure for the selection of men "fit" for combat is described: Israel and Midian were preparing for battle, and the Lord said to Gideon, "The people that are with thee are too many. . . . whosoever is fearful and afraid, let him return and depart." Twenty-two thousand men departed, and 10,000 remained. And the Lord said, "The people are yet too many." Thus, the 10,000 men who remained were finally reduced to 300, who defeated the Midianites. On the basis of military experience in World War II, i.e., the percentage of draftees who were rejected by the Armed Services on psychiatric grounds, psychiatric casualties during and immediately following combat, and, finally, the number of men who developed psychoneuroses after their return to civilian life, the number of men who were deemed suitable for military life by the Lord and Gideon, namely, 300 out of a total of 32,000, does not seem out of line. However, modern wars are not fought by a select few, but by large numbers of men.

Current concepts. Progress and changes in military psychiatry were reported during World War II and have been reported since by Menninger, Caldwell, and others. There is no question that in the past mental and emotional problems have interfered with the success of crucial military engagements. In fact, it has been suggested that emotional and mental problems have been the greatest single cause of military ineffectiveness and loss of manpower. This is no longer true today; moreover, owing to the increasingly effective methods employed for the control of psychiatric disorders, it is not likely that military efficiency will be impaired by psychiatric factors in the future. A report issued by the Group for the Ad-

vancement of Psychiatry on preventive psychiatry in the Armed Forces is relevant in this connection:

It may be stated that concurrent with the institution of a broad program of preventive psychiatry in the Armed Forces the following has occurred:

1. There has been a decrease in the hospitalization of identifiable psychiatric disorders both in war and peace.
2. There has been a continuing decline in medical separations for psychiatric illness.
3. There has been no corresponding increase in loss of manpower through administrative channels, or through medical separation for nonpsychotic illness when corresponding periods of time are involved.
4. There has been a decrease in the number and rate of disciplinary confinements.

Data accumulated from other sources confirm these findings. Thus, the prediction that, following the Korean War, the Veterans Administration would be required to care for an increased number of psychiatric cases has not been fulfilled.

Preventive Psychiatry in the Armed Forces

Definition. Logically, a discussion of preventive psychiatry should begin with a delineation of just what is being prevented. Is it the aim of a preventive program to produce mentally healthy individuals, and, if so, what is mental health, or ill health? In one definition, mental health is described as the capacity to live harmoniously in a changing environment. The World Health Organization has defined health as the individual's positive sense of physical, mental, and social well-being, rather than the mere absence of disease or infirmity. And it is to this goal (i.e., to the physical, mental, and social well-being of the personnel under their care) that the preventive efforts of military psychiatrists have been directed. (On the other hand, presumably, ill health would be the converse of the definitions given by the World Health Organization.) Depending on the definition of health and ill health, it may well be that a preventive program would consist of the promotion of those factors which are considered to contribute to the health of a specific group of individuals and, concomitantly, to the prevention or elimination of various factors which are conducive to ill health, if these factors can be identified.

Inevitably, such efforts will be complicated by the ambiguity of such criteria as "normal," "median," "average," "customary," and "culturally determined." By definition, the behavior of the "normal" individual is consciously determined, for the most part; in addition, such an individual is flexible enough to adapt to a changing environment and life situation; and, finally, his behavior can be modified by experience. Should this concept of "normal" behavior determine the structure and goals of a preventive program? Or should such a program be based on the concept of the "adjusted" individual, i.e., one who is reasonably well adjusted to his environment and its demands? Or will a preventive program be most effective if it is conceived of in pragmatic terms, i.e., if it derives from the concept of the "effective" individual who, while he may or may not be "well adjusted" or "normal," is able to fulfill his stated purposes and goals? "Normal," "adjusted," and "effective" are not necessarily equivalents, of course. Clearly, however, they are all related, in varying degrees, to the presence or absence of mental health. Accordingly, indices of the noneffectiveness of military personnel, such as the number of men who go AWOL, the rate and frequency of hospitalization, court martials, and various service discharges, do reflect the effectiveness of military commands; similarly, the effectiveness of the command as a social unit may be evaluated in terms of individual adjustment. Such indices have been used by the military to evaluate various preventive measures and programs.

Precipitating factors in psychiatric illness. Under the leadership of Brigadier General William C. Menninger, who was attached to the office of the Surgeon General as Chief of the Neuropsychiatry Consultants Division during World War II, a new approach was attempted to the problem of psychiatric disability in the Armed Forces. The efforts of Dr. Menninger and his staff were based, in part, on recommendations made by Appel and Beebe, following a field study initiated in Italy in 1944. These authors discussed many of the findings derived from this study in a paper entitled "Preventive Psychiatry, an Epidemiologic Approach." The precipitating factors enumerated therein were persistent realistic danger, duration of exposure to combat, length of tour of combat duty, lack of incentives and rewards, leaks in evacuation screening, the replacement system, inadequacies in training and leadership, the role of command in the prevention of loss of manpower. In general, emotional breakdown was considered to be the result of an imbalance between environmental stress and emotional supports. Based on this impressive analysis, there were gradual changes in administrative policy, directives, and operations, but these changes were not generally accepted and instituted until the Korean War.

The functions of military command. As pointed out above, the majority of factors which de-

termine the mental health of military personnel are functions of command. In other words, the major responsibility for implementation of the principles of preventive psychiatry is borne by commanding officers. Military command can fulfill the obligation to ensure maximum utilization of manpower by providing, among other things, proper leadership, training, incentive and motivation, and such reclassification, reassignment, rest, recreation, and relaxation as are permitted by the exigencies of military service.

It is the duty of the staff psychiatrists who are attached to training centers, disciplinary barracks, divisions, armies, theaters of war, and higher echelons to be alert to policies, situations, and other factors which may predispose to, precipitate, or perpetuate neuropsychiatric disorders and to recommend appropriate measures for the alleviation or elimination of these factors. In brief, the officer in the front lines is concerned primarily with the effective performance of personnel under his supervision, inasmuch as it may be crucial to the success or failure of his mission. The average medical officer is usually concerned with the man only when he is physically ill. Thus it becomes the task of the psychiatrist to be ever cognizant of the total man, his personality, crises in his life situation, his job, his assets and liabilities, evidence of the effects of stress, and his need for additional support.

The Influence of Psychiatry on Current Military Policy

In future wars, different factors may be operative. But, based on cumulative experience through World War II, in the years from 1946 to 1950, numerous changes in Army policies and operations were instituted. Those changes which have special relevance for this discussion are described below.

Selection. In World War I, the rejection on psychiatric grounds was approximately 2 per cent, which would indicate that only those who were grossly unfit mentally and emotionally were rejected from service. As might be expected, large numbers of the individuals who were inducted into the Army subsequently became disabled by reason of psychiatric disorders.

In preparing for World War II, it was thought that it might be possible to prevent a recurrence of this situation by rejecting those draftees who were predisposed to psychiatric disorders (as well as those with demonstrable emotional illness). After this policy had been officially established, approximately 7 per cent of all draftees were rejected for psychiatric reasons alone; and an additional 5 per cent were rejected because their low scores on psychological tests were considered to indicate an inability to learn. Yet, despite this high rejection rate, at one point in 1943, more individuals were discharged from the service for emotional and personality disorders than were inducted.

A major policy reorientation was clearly called for. It was pointed out that the history of ability to function in civilian life could be presumed to indicate a capacity to function at some level within the military service. Accordingly, there was a major shift in emphasis from selection of individuals for service (i.e., combat duty), to the proper utilization of military personnel, depending on evaluation of their adaptive capacity, after they were in the service. In brief, rejection by reason of specific disease or named disabilities was deemphasized. And, during the Korean War, once again approximately 2 per cent of the draftees were rejected for psychiatric reasons.

Prediction of performance. The fact that a selection procedure based on a portended predisposition to psychiatric illness ultimately proved unworkable was due, in large measure, to the inability of psychiatry to make a significant contribution to predictive techniques. For obvious reasons, it was difficult, if not impossible, to establish criteria for future performance, when it was necessary to take into account an unknown training period, in an unknown situation, under unknown situational stress, with unknown emotional supports, for an unknown length of time. On the one hand, a lack of military effectiveness was found to be related to situational stress and interpersonal relationships, rather than individual psychopathology. On the other hand, obviously, individual psychopathology can, in itself, create situational stress and difficult interpersonal relationships. The issue was further compounded by the knowledge that many individuals with overt psychoneuroses or even a history of psychotic episodes performed in an outstanding manner under combat. These diverse considerations resulted in a shift, whereby military psychiatrists no longer focused on the identification of those abnormal personality components which caused military ineffectiveness. Their efforts were focused instead on making it possible for the "normal" man to adjust to an abnormal situation.

Hospitalization. At one time, according to military policy, a soldier had only two alternatives. He could be either on full duty status or in a hospital. In time, it became apparent that while a temporary emotional crisis might interfere with a soldier's ability to perform with maximum effectiveness on full duty status, in general, the aggravation of neurotic symptoms or personality conflicts did not require hospitalization. In fact, in such cases, hospitalization could contribute to further ineffectiveness. Therefore, the maximal use of out-patient treatment facilities in army posts, camps, stations, and during field training and combat was advocated instead. Ideally, the widespread availability of psychiatric facilities and personnel would enable the soldier who was undergoing a transient, mild emotional disturbance to remain on full duty status. The development and widespread use of Military Mental Hygiene Clinics has been well described by Perkins. Finally, it is true that the per-

centage of beds required for psychotic patients has remained relatively constant. Increases can be attributed to the increased number of servicemen, rather than to more unfavorable environmental situations or stress.

Discharge. Military discharge is justified only when the soldier's inability to perform any military assignment has been clearly demonstrated. A medical discharge is processed only after maximum treatment and rehabilitative measures have been fully utilized. Those individuals who incur a disability in the course of their army service which will restrict their civilian activities will, of course, receive a medical discharge. But applications for discharge because of an inability to adapt to situational or environmental factors or because of "unfitness" for service due to the presence of undesirable personality traits are processed through administrative channels.

Combat. Assignment to combat is probably the one assignment for which there is no comparable civilian occupational specialty. However, there is no aspect of military duty that does not contribute in some way to ultimate combat effectiveness. Nevertheless, it was recognized that special emotional supports must be provided, as delineated below.

Training. Men must be adequately trained in the use of their weapons and must have confidence in their ability to perform effectively in combat. However, the former training policy of "kill or be killed" has been discarded as both ineffective and psychologically damaging.

Assignment. The effective utilization of men requires that assignment be based on training and aptitude, not only on military need. Just as World War I demonstrated the importance of considering aptitudes for the effective utilization of manpower, World War II demonstrated that the consideration of attitudes was equally important as a means of ensuring adequate performance.

Replacement. Replacement in combat is made on a group, rather than an individual basis. In other words, a "buddy" system of assignment to combat areas has been instituted. Before he goes into combat, each man is given an opportunity to familiarize himself with his new unit. The fact is that men do not fight well in strange units or under unfamiliar officers. Individuals are also rotated from combat at periodic intervals for rest and recreation.

Personnel policies. Personnel policies must reflect an awareness of the dignity and importance of the individual. The individual is the most important single asset in any army; consistent with his capabilities and the needs of the service, his desires will be given primary consideration. There has also been increasing recognition of the need for measures to facilitate and enhance communication, not only through the chain of command from the top downward, but from the lowest ranking soldier upward to those empowered to make decisions.

Domestic problems. The impact of crises on the homefront, such as death, illness, marital desertion, divorce, and the devastating effects of "Dear John" letters, is recognized; and efforts are made to deal appropriately with the effects of such crises.

Identifiable emotional supports

Leadership. As mentioned above, the ineffectiveness of military personnel is often related to inept or inefficient leadership, as well as other environmental factors. Unfortunately, techniques for the selection, control, and relief of officers still leave much to be desired.

Group identification. The importance of group identification has long been recognized; nevertheless, it is sometimes ignored. Yet it is the support of the group and the sense of belonging to a group which often sustains the soldier in combat after other supports have fallen away. Obviously, it is more difficult to identify with a unit that is designated only by number.

Orientation. Since the Revolutionary War, military leaders have identified certain characteristics unique to the American soldier. For example, typically, he wants to know why such and such is necessary before he is willing to take orders or perform assigned tasks. Therefore, adequate orientation to immediate and long range objectives is necessary.

Motivation. The importance of motivation cannot be overestimated. The factors which produce motivation include rewards and incentives, and various conscious and unconscious factors which determine underlying attitudes and morale. There is no question but that underlying attitudes influence nonverbal behavior. This has been demonstrated conclusively by Stouffer, who evaluated a unit's attitude toward combat while in training a year before D-Day and again immediately prior to D-Day. In the investigations he conducted 60 days after D-Day in the European Theater, Stouffer found that units which had previously manifested good attitudes toward combat suffered 30 per cent to 60 per cent fewer nonbattle casualties than did those units whose attitudes toward combat had not been so good.

Education in mental health. An important emotional support for everyone is education in mental health, including mental hygiene and the dissemination of information regarding the psychodynamics of fear, panic, rage, etc.

Religion. Facilities for religious services and the aid, counseling, and comfort provided by chaplains constitute another essential emotional support.

Prevention

In essence, military psychiatry is the practice of preventive psychiatry to the maximum extent possible in the military community. Moreover, the principles and practices of preventive psychiatry are applicable, to a greater or lesser extent, throughout

the Department of Defense, and in other governmental agencies as well.

Primary prevention. The goal of primary prevention is to reduce the incidence of a given disorder in a community or population or, more specifically, the rate of occurrence of new cases. With specific reference to psychiatry, the concept of prevention presumes the view of emotional and mental disorders as "reactions," which do not represent an organ illness but a person illness which occurs in a social and interpersonal setting. An example of the application of the principles of primary prevention in the military community is summarized below.

As part of a field study currently under way, emotionally "vulnerable" individuals are interviewed in an effort to identify specific external stresses and ascertain the presence or absence of emotional supports operative in the stress-provoking situation.

The psychiatrist's particular competence in this area stems from his knowledge of human motivation, of the unconscious determinants of behavior, and from his understanding of the importance of maintaining a balance between external stresses and supporting factors in human adjustment.

Concomitantly, attempts are made to introduce changes, through administrative channels, with the aid and collaboration of personnel at other levels, which will alleviate the previously identified external stresses and/or provide necessary emotional supports.

The final step involves the translation into general military policy and directives of the knowledge gained from individual specific studies and situations and from the demonstrated effects of the modification of specific external stresses and the promotion of specific supports. (It is understood, however, that in any area characterized as a locus of mental disorder, field studies would still be necessary to identify the presence of specific stresses and attest to the absence of required emotional supports.)

As mentioned earlier, the effectiveness of preventive efforts can be measured by statistics reflecting the incidence of atypical behavior among noneffective personnel. During World War II, for example, a "morale index" was developed consisting of the rates for AWOL, venereal disease, sick call or hospitalization, and court martials (see Figure 1).

Principles of primary prevention

Epidemiological considerations. It is essential, of course, that a program of primary prevention take cognizance of the fact that a psychiatric disorder, like a nutritional deficiency disease, has epidemiological characteristics.

Emotional needs. If certain needs are not supplied by the environment or culture, then the individual may become mentally or emotionally ill. These needs will vary, depending on the individual's stage of development. Erikson has listed the characteristic nu-

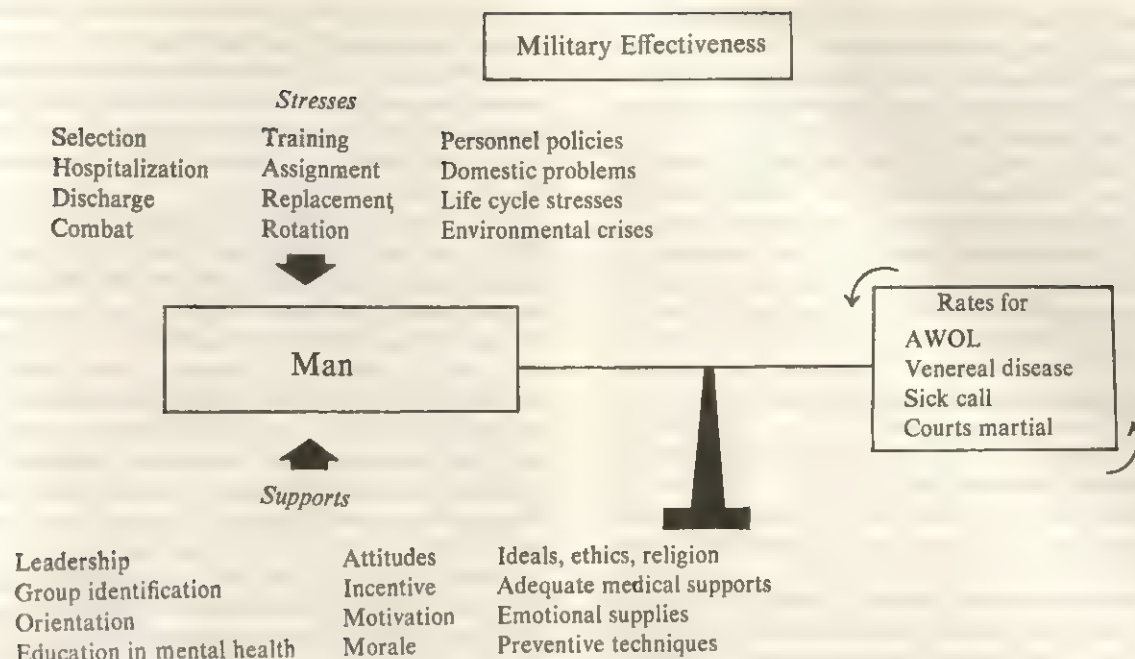


FIGURE 1. Preventive psychiatry. An individual's adjustment or effectiveness may be related to a balance between various stresses and emotional supports, as reflected in rates or indices measuring inadequate performance. Health is a state of physical, mental, and social well-being and not merely the absence of disease or infirmity.

clear conflicts for each stage of psychosexual development as follows: (1) trust versus basic mistrust, (2) autonomy versus shame and doubt, (3) initiative versus guilt, (4) industry versus inferiority, (5) identity versus role diffusion, (6) intimacy versus isolation, (7) generativity versus stagnation, and (8) integrity versus disgust and despair. Parenthetically, nuclear conflicts in the serviceman might be stated as (1) fear and cowardice versus courage and bravery, (2) guilt and shame versus pride and self-esteem, and, according to Bushard, (3) anger, frustration, and hostility versus "commitment" and "concurrence."

Maslow has enumerated a hierarchy of needs essential for human adjustment. They include (1) physiological needs for water, food, etc.; (2) needs for security and stability of expectation; (3) the need to give, as well as receive affection, to have a place in the group; (4) needs for self-esteem, prestige, etc.; and (5) the need for an opportunity to achieve or fulfill one's potentialities.

And, finally, in his recent volume on preventive psychiatry, Caplan has described emotional needs in still another framework: (1) Physical needs: food, shelter, sensory stimulation, exercise, protection against infection, trauma, chemical poisons. (2) Psychosocial needs: personal interaction and continuing relationships with significant people in the environment for the exchange of love and affection, asserting or submitting to authority, participation in joint activity, or independence in dealing with a task. Unfilled needs may be due to excessive manipulation by others or the interruption of a significant relation-

ship by illness, departure, death, or disillusionment. In this connection, Caplan has also emphasized the importance of providing help during periods of crisis, i.e., short term periods of stress related to death, illness, loss of a job or job change, accidents, surgery, admission to college, marriage, divorce, birth, parenthood, etc. (3) Sociocultural needs: customs and values, expectations of others. Conversely, Caplan stressed the negative effects of belonging to an unstable society, a minority group, or a deprived group.

Secondary prevention. Secondary prevention is designed to decrease the prevalence of a given illness in a population or community and/or prevent the progression of more serious manifestations of the illness by timely and effective treatment.

Apart from his duties as a staff officer, the activities of the military psychiatrist do not differ from those of his civilian counterpart. In his relationship to the psychiatrically ill patient, he employs the usual therapies as indicated, including individual and group psychotherapy, chemotherapy, organic therapies such as electroconvulsive treatment, work therapy, milieu therapy; and he utilizes the team approach of the psychiatrist, the psychiatric social worker, the clinical psychologist, the psychiatric nurse, occupational and recreational therapists, etc. Thus, the entire therapeutic armamentarium is at the disposal of the military psychiatrist and is made available where needed, either in hospital, mental hygiene clinics, or through the efforts of specific psychiatric treatment teams and units. The knowledge

that prompt and effective aid is available may also play a part in primary prevention.

Tertiary prevention. Tertiary prevention focuses on the rehabilitation of the ex-patient and on minimizing the residual defects of the illness or disorder. In a military setting, military personnel should be restored to maximum effectiveness before they are discharged from the service. If this is not possible, then the job must be taken over by the Veterans Administration. Depending upon the situation, convalescent hospitals may be useful for continuing therapy, retraining, and reeducation.

Special Problems of Military Psychiatry

Some situations, unique to the military situation, require special consideration.

Combat psychiatry. The success in handling emotional disorders in the combat area was due, in part at least, to the following:

1. A neuropsychiatric combat treatment plan has been accepted as official Army doctrine. This plan outlines the duties and responsibilities of theater, division, and hospital psychiatrists, as well as the establishment of a special combat neuropsychiatric treatment team to function in a neuropsychiatric treatment center. Under the provisions of the plan, the center was to be placed as far forward in the combat area as possible. Consequently, all patients suspected of an emotional disorder were funneled through the center before they were evacuated to the rear, and the center operated in other than the traditional hospital setting. Concepts, principles, and treatment procedures were all enunciated in appropriate army regulations, field manuals, technical manuals, bulletins, tables of organization and equipment, etc.

2. Individual treatment was directed to situational factors, with special focus on uncovering the individual's recent experiences involving fear, guilt, and anger. General measures included rest, food, explanation and reassurance, reliance on group loyalty, and environmental manipulation. Once he had acquired some experience, the front line psychiatrist was able to dispense with hypnosis, narcosynthesis, etc., with the result that he found that a direct psychotherapeutic approach was easier and more effective.

3. During the Korean War the concept of limited duty was revised. A personality profile was used in the psychiatric section of the physical profile and a grade of 3 indicated limited duty. However, individuals who had been judged unfit for combat by reason of an emotional disorder were not put on permanent limited duty but on temporary limited duty, with the expectation of their eventual return to combat duty. Reexamination at intervals of 30, 60, 90 days, etc., permitted the prompt return of a large percentage of these individuals to combat status, thus preventing the accumulation of numbers of unusable men. This procedure helped to preserve the individuals' self-

respect, as well. Men who returned to combat performed as well as did the new troops.

4. With the aid and collaboration of personnel officers, reassignments to combat duty were made as individual specific assignments, and, insofar as possible, the individual was reassigned to his former unit.

5. The combat psychiatrist himself was given specific indoctrination before a forward duty assignment in methods of rapid treatment; he was also reoriented to the greater importance of the group as opposed to the individual, and to the possibility of overidentification with the patient. It should be mentioned, in this connection, that the psychiatrist's feelings of guilt about returning his patient to combat—and potential danger—have been a persistent problem. It was apparent that the psychiatrist himself needed support from and communication with his superiors; yet often he was forced to work in relative isolation.

6. An educational program was initiated for front-line personnel to familiarize them with the manifestations of emotional disturbance and to enlist their cooperation in the management of such problems.

Apart from the use of these specific methods in combat situations, modifications have been introduced in training procedures, in methods of indoctrinating new personnel before they go into combat, in replacement and rotation policies, etc.

Brainwashing. During and after the Korean War, there was much discussion about the effects of brainwashing. According to those who have investigated such methods, the techniques used in brainwashing are reminiscent of Nazi police systems and Communist practices. The essential features of this method are isolation, deprivation, repetitive interrogation, threats, self-criticism, and group criticism. Prolonged exposure to such measures may result in mental dulling, depression, or even delirium, hallucinations, and delusions. According to Hinkle, as reported in the symposium on methods of forceful indoctrination, published by the Group for the Advancement of Psychiatry, these methods produce variable changes in attitudes and behavior, rather than detectable changes in brain function. Furthermore, these changes in attitude and behavior are only transient. In a period of months following his release, the individual subjected to such procedures tends to revert to his former personality. As a general rule, however, the individual's reaction will depend on many factors relating to personality, character, and the immediate situation.

Isolation. The experience of the Navy can be helpful in selecting men for isolated assignments. All personnel assigned to duty in the Antarctic were given a psychiatric interview and a Rorschach test, as a means of evaluating their (1) motivation, (2) past personal effectiveness, (3) ego strength, and (4) interpersonal relationships.

The criteria on which final assessment was based also included peer nominations, performance ratings by supervisors, medical symptoms, and debriefing interviews with those who had completed a tour of duty in the Antarctic. Over a period of 5 years there were no cases of psychotic illness among these personnel; accordingly, it was felt that the program accurately identified and eliminated individuals who might have developed psychiatric illness under the stress of isolation. Recently, "vocational effectiveness" was added to the list of variables which have a bearing on the individual's eligibility for such an assignment.

The human reliability program. Of particular interest for military psychiatry was the development in 1962 of the Air Force Human Reliability Program, which was subsequently adopted by all branches of the Armed Forces. This program is directed toward maintaining a high level of human reliability among those who have access to nuclear weapons. According to pamphlets 160-55 and 35-9, issued by the Department of the Air Force, the presence of the following traits or patterns would contraindicate such an assignment: (1) excessive worry or apprehension concerning nuclear weapons; (2) a record of court martial or unit punishment; (3) overindulgence in alcohol; (4) negligence or delinquency in performance of duty; (5) a prior record of serious or repeated involvement with civil authorities; (6) financial or family irresponsibility; (7) a poor attitude toward duty with nuclear weapons or lack of motivation with regard to the Air Force.

Information is also elicited to facilitate the detection of concealed mental disorders, as characterized by a tendency to be oversuspicious and over-impulsive and by evidence of alterations in the state of consciousness. Among the clues which help to identify the impulse-ridden personality are lack of or immaturity of judgment and glib rationalizations; boredom and irritability or emotional lability; a history of frequent job changes; and passive-aggressive or sociopathic behavior.

Actually, the classic psychoneuroses have been practically nonexistent among military personnel, although conversion reactions occur at times, under conditions of severe stress. Similarly, hebephrenia and catatonic schizophrenia are seen only rarely. Most of the schizophrenic disorders are acute undifferentiated or paranoid. Depressions accompanied by vegetative and physiological changes are quite rare, but manic reactions are encountered occasionally. The prevalent reactions are those characterized by anxiety, "feelings of depression," or personality difficulties.

As mentioned above, the purpose of the Human Reliability Program was to identify and remove unreliable individuals from critical assignments. Unfortunately, to some extent the program has been misused, for it has resulted in the removal of in-

dividuals from the service as unadaptable whereas in reality they are unadaptable only insofar as a highly critical assignment is concerned. Once again, it should be pointed out that today selection for military service must exceed the proportion of 300 out of 32,000 men who fulfilled the rigid requirements of the Lord and Gideon.

Space medicine. The advent of the atomic bomb and the era of space flight have brought with them new problems of individual and group adjustment, many of which are still unknown. The psychophysiological aspects of space flight require consideration of problems of prolonged weightlessness, eating and breathing conditions aboard spacecraft, psychological stability in a completely alien environment, the effect of variations in gravity, the effect of changes in circadian rhythms, the problems of sensory deprivation and sensory overloading, cosmic radiation, and the neuroendocrine aspects of stress, as described in Selye's general adaptation syndrome.

The selection of suitable astronauts raises other problems. The psychiatric aspects of this phase of selection have been described by Flinn:

During the 1920's a clinical psychiatric interview was introduced in the Air Corps as part of the pilot selection procedure, and it has continued in use, with modifications and refinements, until the present. Despite widely held doubts concerning its validity, no more objective substitute has yet appeared which seems able to assess complex personality characteristics such as motivation, attitudes, flexibility, maturity, and level of adjustment The current USAF selection battery predicts success or failure in primary flight training with a high level of accuracy. However, long-term adaptability to flying depends not only upon technical aptitude, but also upon complex factors such as basic emotional stability, motivation, and chance experiences in the life of the individual. Objective testing aimed at measuring predisposition to maladaptive responses to the stresses of military flying have shown some promise, but it is doubtful if a level of accuracy comparable to that achieved in aptitude testing can ever be expected. At present there is no substitute for the clinical psychiatric or psychological evaluation in judging over-all adaptability.

While it is possible that some of the stresses of space flight have been overestimated, methods to reduce this stress have been studied extensively. Thus, consideration has been given to the utilization of such esoteric methods as hypnosis, conditioning by yoga exercises, the use of psychic energizers, hypothermia, prolonged sleep or hibernation, and the introduction of substitute homeostatic mechanisms by both chemical and electronic means.

A Unified Concept of Preventive Psychiatry

As mentioned elsewhere in this volume, with respect to most psychiatric disorders, no specific etiological agent has been identified and universally accepted to date. Rather, it is generally felt that these disorders are multicausal in origin. It follows, then, that preventive measures may be reasonably directed at diverse points or levels of the unstable system which produces psychiatric disorder.

In the military community, primary prevention has focused on maintaining a balance between environmental stresses and emotional supports, utilizing the military criteria of ineffectiveness described earlier as measures of the success or failure of preventive efforts. Secondary and tertiary prevention have been accomplished by providing a continuum of psychiatric care, employing all available modalities of treatment and rehabilitative techniques.

Howe has defined a "community" as that dimension of human interaction (existing on a symbolic level) which is characterized by a sense of common destiny. Thus a community may be a geographic area, an industry, a social institution, a professional group, or, in fact, any discrete group of human beings which can be viewed collectively as distinct from other groups of human beings. The health or ineffectiveness of such a group might be measured by such yardsticks as rates for marriage, divorce, birth, suicide, accident, delinquency, addiction, unemployment, absenteeism, "dropouts," morbidity, production indices, etc. The specific stresses to which such a group is subjected may be peculiar to specific stages of psychosexual development, as suggested by Erikson; they may arise from a deficiency of the environmental supplies listed by Maslow and Caplan. And they may stem from factors which emerge clearly in connection with military life, e.g., intergroup tensions, economic factors, disciplinary controls, the quality of public and other leadership, group identification, religious practices, ideals and ethics, inadequate mental health education, and a lack of incentive and motivation.

Suggested Cross References

For further discussions of primary, secondary, and tertiary prevention in psychiatry see Sections 46.1, 46.2, and 46.3, respectively, in Area I, on community psy-

chiatry. Also, see Section 28.1 for a detailed discussion of the gross stress reactions and Section 28.2 for information regarding traumatic war neurosis.

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Chapter 50

Occupational (Industrial) Psychiatry

50.1 • • •

W. DONALD ROSS, M.D.

Definition

By definition, the term "industrial psychiatry" refers to certain elements within the broader framework of occupational psychiatry, and, as such, it may well become obsolete eventually. In the meantime, however, it has been retained in the interests of conceptual clarity: for example, there is a tendency to confuse occupational psychiatry with occupational therapy, despite the fact that these concepts are entirely unrelated. Obviously, the use of the word "industrial" (rather than "occupational") would serve to eliminate this source of confusion. Yet, although it offers certain semantic advantages, the use of the term "industrial psychiatry" in this context, i.e., as a substitute for occupational psychiatry, is clearly inaccurate. The field of occupational psychiatry extends well beyond those occupations and work settings which would be labeled "industrial"; it encompasses business, agriculture, government, hospitals, and similar institutions. On the other hand, occupational psychiatry is not concerned with military life; nor do its principles apply in the classroom. The unique aspects of military psychiatry and educational psychiatry warrant their status as separate subspecialties.

Historically, occupational psychiatry antedated community psychiatry; actually, it represents another side of the same coin. More specifically, community psychiatry addresses itself to the mental health needs of individuals within a prescribed geographic area; occupational psychiatry, in turn, focuses on the mental health needs of individuals within a specific functional area. The adult's functional area is his office, or the factory or field in which he works, and where he spends more than half his waking hours. The functional area is not the exclusive province of occupational psychiatry, of course; it is also the concern of environmental medicine which subsumes occupational or industrial medicine. The

occupational psychiatrist must work closely with other occupational physicians and hygienists, and with personnel workers who bear the responsibility for either job assignments or management-labor relations.

Patterns of Practice

The occupational psychiatrist does not treat mental disorders which are not directly related to the patient's occupation. Thus, while he will focus on the early diagnosis of such disorders as part of his diagnostic assessment, he must discriminate between the role of occupational and nonoccupational factors in precipitating and maintaining the patient's illness. In any event, the occupational psychiatrist is rarely involved, directly or indirectly, in the treatment of this patient population, even when the crucial role of occupational factors has been clearly established. Rather, he uses the findings derived from various diagnostic techniques primarily for teaching purposes. The scope and nature of the occupational psychiatrist's teaching activities are described in further detail below. In general, once the occupational psychiatrist gains sufficient insight into the psychodynamics of a single "patient," or a group of "patients," he is expected to share this knowledge with his medical and administrative colleagues. Hopefully, these personnel will then modify their relationships with their co-workers to reflect this newly acquired psychological understanding. The occupational psychiatrist may also use diagnostic findings to support his recommendations that various preventive measures be implemented within the occupational environment. And, finally, these diagnostic findings are an important source of information when patients must be referred to other physicians and psychiatrists for treatment or to health or welfare agencies in the community.

In light of their limited therapeutic function, it is not surprising to find that occupational psychiatrists are rarely employed on a full time basis. The great majority serve, for a few hours each week, as consultants to the medical department of an industrial or business corporation, or a nonprofit organization. The

advantages of this pattern are self-evident. Certainly, a full time occupational psychiatrist could devote more attention to the preventive aspects of the field. To date, however, psychiatrists have primarily demonstrated their reluctance to give up private practice completely. And, in fact, this pattern has other, equally important advantages. Financial independence, or, more accurately, the fact that the psychiatrist need not depend on a single employer for his livelihood, ensures his professional objectivity. The occupational psychiatrist is then better prepared to accept the fact that the corporation (and its management) as well as its employees may be the patient, and to deal with both appropriately.

The Functions of the Occupational Psychiatrist

Consultation and teaching. Caplan has pointed out that attempts on the part of psychiatrists to monopolize community mental health programs may have unfavorable repercussions. He has suggested that psychiatrists concentrate instead on those activities in which they can utilize their unique skills to their advantage. In the occupational setting, the psychiatrist can function most effectively as a consultant whose services are available to occupational physicians and nurses, corporation executives, personnel executives, foremen, supervisors, union stewards, and union executives.

In his role as consultant, the psychiatrist will have ample opportunity for didactic teaching, and his efforts in this connection may serve to promote understanding of personality and behavior dynamics among the laymen and nonpsychiatrist physicians with whom he comes into contact. In fact, however, the most effective teaching is rarely formally labeled as such. More specifically, those personnel (professional and nonprofessional alike) who meet with the psychiatrist to discuss an individual employee who presents a psychiatric problem will be most responsive to his efforts and best able to absorb—and apply—the “teachings.” This does not mean that didactic teaching, through group discussion, for example, can have no useful purpose; on the contrary, the group discussion method represents a legitimate educational technique. Nevertheless, the use of this method carries with it certain pitfalls which merit careful consideration. Usually, the goals of these discussion groups are not defined with sufficient clarity. As a result, group teaching soon gives way to group psychotherapy, or, at best, the discussion group represents an admixture of both procedures. Quite apart from the fact that neither procedure can be successfully implemented under such circumstances, group psychotherapy in this setting may have serious adverse effects. Presumably, these individuals have been assembled for educational purposes. The leader of such a group need not possess specific therapeutic skills; nor would he be expected to possess prior

knowledge of the psychiatric status of individual group members. On the other hand, however, these deficiencies represent a serious handicap in a leader who may have to deal with a group of captive patients.

The prevention of mental illness due to occupational factors

Primary prevention. In his role as consultant, the occupational psychiatrist learns at first hand of those factors in the working environment which contribute to maladjustment and emotional illness. At the same time, the psychiatrist is aware, of course, that employees and executives alike may rationalize their failures in other areas of life by attributing them to unfavorable working conditions. Nevertheless, the psychiatrist can use such information, while safeguarding the confidentiality of the individual, as the basis for recommendations which pertain to groups of persons. Typically, these recommendations will refer to methods of leadership and supervision or to working conditions, including those specified in union-management contracts.

Secondary prevention. Information available in the personnel and medical departments, on employee absenteeism, accidents, inefficiency, interpersonal friction, garnishments, and the frequency of visits to the medical dispensary, facilitates early case finding. However, a recent study, conducted by a Cincinnati industrial mental health team must be cited in this connection. Specifically, these workers found early case finding was more effective, that is, employees were more strongly motivated to seek further medical or psychiatric help or to enlist the help of social agencies, when such referrals were arranged by physicians or personnel executives in their own plant. On the other hand, they were less likely to follow through on recommendations made by psychiatrists who had been called in from outside to investigate the causes of job disruption if the indigenous professionals or semiprofessionals were not participating in the referral process.

Tertiary prevention. Occupational psychiatrists seek to prevent chronic invalidism by emphasizing the rehabilitation of those employees who have been unable to work for prolonged periods of time because of mental or emotional illness. It should be mentioned here that most business corporations are quite willing to rehire employees, especially if a psychiatrist who is familiar with the working environment is able to attest to the employee's readiness to return to work; this usually successfully dispels any existing doubts. Inevitably, however, some ex-patients will be denied access to their former place of employment. In such cases, sheltered workshops and halfway houses, which are described elsewhere in this volume, are of particular value.

Finally, the efforts of the occupational psychiatrist

in the area of tertiary prevention will also apply to those employees who have suffered some disability as a result of an occupational injury or disease, and for whom this disability provides important secondary gains. The psychodynamics of this reaction are discussed in detail below.

Clinical Aspects of Occupational Psychiatry

“Occupational syndromes.” Syndromes which are commonly attributed to occupational factors, such as writer’s cramp or miner’s nystagmus often turn out to originate from other causes, although they may include some occupational components: for example, a disability pension may provide secondary gains. On the other hand, attention to certain symptoms which are most likely to appear first in the occupational setting, (e.g., absenteeism, accident syndrome, moonlighting, neurocirculatory asthenia, problem drinking, retirement concerns, and traumatic neurosis) may prevent more serious disability.

Secondary sequelae. “Compensation neurosis” refers to the tendency to maintain those symptoms which arose in the occupational setting originally, as a defense against losing the secondary gains derived from disability “benefits” or hospitalization. The diagnostic label in such cases should reflect the patient’s underlying neurosis or personality disorder, regardless of the precipitating factors. However, if they are to be effective, plans for the patient’s treatment and rehabilitation must take such factors as secondary gains and the precipitating role of the occupational setting into consideration. For prognostic purposes, it is useful to classify such patients as “has beens” or “never wases.” Those patients who had a prior history of responsible adjustment to work and family life, before they regressed to a state of dependency, have a better prognosis with individual or group psychotherapy. The prospects are much less favorable for those patients whose previous life pattern suggests that their occupational accident or illness was just another incident in a downhill course. Both groups of patients typically demonstrate a strong tendency to rationalize, on a conscious or unconscious level. It is important, therefore, that the diagnostic assessment reflects information solicited from other family members or from the patient’s co-workers and supervisors in his previous working environment.

Clinically, a history of recurrent catastrophic dreams and other features of traumatic anxiety following an occupational injury are considered indicative of the regression or ego distortion which accompanies a true traumatic neurosis. The secondary gains provided by compensation then serve to maintain the neurosis. It has been hypothesized that neuroses maintained by secondary gains have their etiological roots in the fact that compensation pay-

ments, pensions, or reduced responsibilities gratify dependent or aggressive impulses. It follows, then, that tertiary prevention in this type of disability will be most effective if legal action is taken to provide the patient with funds only to cover treatment and rehabilitation; clearly, to provide continuing financial support outside of a treatment plan would not be in the patient’s best interests.

Primary and secondary prevention in the occupational setting require prompt intervention when psychiatric manifestations follow accidental injuries and exposure to occupational health hazards. A traumatic neurosis following an overwhelming threat and accompanied by typical features of traumatic anxiety should be diagnosed as a gross stress reaction and treated before prolonged regression and ego distortion have occurred and have been reinforced by secondary gains. Toxic disorders involving the skin or nervous system which were due to an industrial environmental agent originally may follow a similar pattern; that is, such disorders can be maintained by psychophysiological factors induced by changed life circumstances, which would include the inactivity made possible by a disability pension.

Research in Occupational Psychiatry

Occupational settings which provide detailed records on a relatively nonshifting population under fairly close observation provide a fertile field for research. To date, however, this field has been tilled more extensively by social scientists than psychiatrists.

Suggested Cross References

See Sections 46.1, 46.2, and 46.3, respectively, for more detailed discussions of primary, secondary, and tertiary prevention in psychiatry.

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A R E A

K

FIELDS RELATED TO PSYCHIATRY

FIELDS RELATED TO PSYCHIATRY

Chapter 51

Clinical Psychology

51.1 • • •

FRED BROWN, Ph.D.

History

Clinical psychology is one of the newest of the mental health specialties, but in point of time its accelerated growth and proliferation have established it as a significant component in all planned or operating mental health programs. The first psychological clinic was established in 1896 at the University of Pennsylvania by Lightner Witmer and grew out of the then current interest in individual differences that had already been stimulated by McKeen Cattell's work in psychometrics begun in 1886. Guy Whipple's *Manual of Mental and Physical Tests* appeared in 1910, and in 1911 the Goddard revision of the Binet-Simon intelligence test made its appearance in America, to be superseded by Louis M. Terman's Stanford Revision in 1916. These beginnings, motivated by the urge to objectify psychology by emphasizing measurement of mental processes and thus to sever all bonds with its subjectivist-philosophical antecedents, were oriented more toward research than toward what are now known as service functions.

In 1918, R. S. Woodworth developed his "Personal Data Sheet" for screening potential military psychiatric casualties, and this instrument, the grandfather of all personality inventories, was later used in civilian clinics. The Rorschach method, which now dominates the field of projective techniques, was created in 1921 and spurred the development of the projective approach to personality analysis and evaluation. Finally, the demands for psychological personnel and techniques in two world wars focused attention on the contributions of the clinical psychologist to the expanding field of mental health, brought him into close contact with psychiatrists and other medical personnel, and established him as a member of the mental health team. The significance of the functions and roles of the clinical psychologist has broadened and deepened as a consequence of the Joint Commission Report,

Action for Mental Health, and the growing emphasis on comprehensive community mental health programs.

Scope

The 1963 Directory of the American Psychological Association lists 2,899 clinical psychologists of which number 1,300 are diplomates of the American Board of Examiners in Professional Psychology. Not all clinical psychologists are accounted for in this figure, a fact evident in the results of the National Scientific Register survey of psychologists conducted in 1962, which revealed that of 9,348 questionnaires returned by psychologists, 3,441 identified themselves as clinical psychologists. George Albee reported to the Joint Commission on Mental Illness and Health that there are more than 18,000 psychologists in the American Psychological Association, with only one third of that number engaging in clinical services involving the mentally ill. Albee's estimate of approximately 6,000 psychologists in the United States who constitute a pool of mental health workers would probably be increased to 7,830 if the total 1965 roster of 23,500 fellows, members, and associates of the American Psychological Association is taken into account and if all persons in clinical, counseling, school, educational, and personality psychology are included.

There is considerable overlapping of interests and functions among these subfields. Individual diagnosis and therapy are major specialties of the clinical and school psychologists and supplementary ones for counseling and personality psychologists. Other areas of overlap include educational counseling and measurement, school and personal adjustment, management of behavior problems, vocational counseling, and utilization of objective tests. Only clinical psychologists make extensive use of projective techniques.

At present, clinical psychologists play an important role as psychodiagnosticians, therapists, teachers, and research workers in the psychiatric units of general hospitals, community and private mental health clinics, medical schools, and social agencies. Although there has been a slow increase in the number of training facilities for clinical psychologists, professional progress is uneven because of conflicts with psychia-

trists over role and function autonomy, a lack of uniformity in training content and objectives, and unremitting struggles of this relatively new profession to define itself. As a consequence of these and other factors, training and competence levels among clinical psychologists in the areas of psychodiagnostics and therapy vary considerably and have aroused continuing concern on the part of responsible leaders in the field who are devoting themselves to the task of improving education and training. A very important aspect of the American Psychological Association's work in this area is the activities of its Education and Training Board and the Committee on Evaluation concerning approval of doctoral programs in clinical psychology and counseling psychology and of internships for doctoral training in clinical psychology. These activities are supplemented by state and regional psychological associations that concern themselves with the improvement of training and service by establishing licensure and certification standards.

Activities of Clinical Psychologists

Research. This is undoubtedly the most important general contribution of the psychologist and the most valuable one offered to psychiatry by the clinical psychologist. In commenting on William F. Soskin's study for the Joint Commission, *Research Resources in Mental Health*, the Joint Commission Report stated:

Currently, the major share of systematic investigation on mental health programs is being conducted by psychologists. Dr. Soskin reports that over 50 per cent of all N.I.M.H. grants go to investigators from this discipline. . . . While many of the fundamental concepts and hypotheses of modern psychiatry derive originally from clinical observations and from *what now appear to have been* poorly designed studies, emphasis today is placed increasingly on sophisticated research designs, on highly specialized research techniques and instruments, and on complex statistical procedures for data analysis. Psychologists are likely to have had the requisite training and experience for this type of research and this fact helps to account for their prominent position in this field.

Psychologists contribute theoretical and experimental papers to over 20 basic psychological journals in addition to psychiatric and other journals. A few of the areas covered by this spate of research activity include psychopharmacology, developmental problems, geriatrics, test construction and validation, personality diagnosis and adjustment, psychoanalytic theory, therapeutic processes, brain damage and mental retardation, behavior and habit problems, psychosis, psychoneurosis, psychosomatics, mental health and rehabilitation, and marriage and family problems. The psychologist's special training and competence in the research area make him a valuable consultant and co-worker in hospitals, clinics, and other agencies engaged in mental health research. A good source of condensed information regarding psychological research relevant to the interests of

psychiatrists is *Psychological Abstracts*, a monthly publication of the American Psychological Association.

Psychodiagnosis. The clinical psychologist in his psychodiagnostic role uses a battery of appropriate tests and measures, both projective and objective, for the purpose of clarifying the dimensions of the patient's illness. Depending on the reason for referral and the nature of the particular case, a competent clinician can, through the use of such tests, appraise a patient's ego strength, the degree and nature of underlying malignant processes, and his capacity for change.

Very often, covert malignant psychopathological potentialities are not detected in the ordinary psychiatric examination but come into focus through the psychological examination. It may be possible to evaluate the patient's type and mode of thinking; the type and psychoeconomics of his defenses, whether entrenched or resilient; the quality of his affect vis-à-vis object relations; and the diagnostic picture, for example, depression, schizoaffective reaction, psychotic decompensation, or anxiety state. The psychological examination may contribute data useful for the differential diagnosis of organic brain syndromes, neurotic disturbances, and psychotic reactions. The psychodiagnostic test battery has proved useful in delineating focal conflicts that may not have been seen in total perspective in the clinical situation. Psychodiagnostic tests aid also in formulating a therapeutic plan, evaluating the progress and outcome of therapy in longitudinal appraisals, and contributing to an understanding of the patient's reaction to shock, pharmacotherapy, and other therapeutic modalities.

Although it is not imperative that every patient seen by the psychiatrist be referred for psychological evaluation, a comprehensive psychodiagnostic assessment of the patient's resources and liabilities prior to initiation of treatment can, in many instances, prove valuable in helping determine therapeutic approach.

Psychotherapy. This is the most controversial area involving both the clinical psychologist and the psychiatrist. In an early Group for the Advancement of Psychiatry report, the statement was made that psychiatrists should continue to refer some patients to clinical psychologists for such special treatments as vocational guidance, remedial reading, retraining procedures, speech training, and psychotherapy. In addition, it was stated that the type of psychotherapy performed by the clinician is conditioned by his training and competence, by the type of patient, and by the circumstances under which treatment is conducted. It was emphasized that the clinical psychologist must work in close association with the psychiatrist, since independent operation by the clinical psychologist may incur diagnostic error or result in either the failure to detect and treat the

early stages of serious psychiatric conditions or the failure to recognize some physical disorder that may be the basis for the maladjustment. The Joint Commission Report of 1961 pointed out:

A narrow enforcement of psychiatric conviction that 'nobody should do psychotherapy except psychiatrists' would effectively deny its benefits to patients now receiving it from non-medical therapists with or without supervision of psychiatrists. Such enforcement would also raise questions regarding the psychotherapeutic nature of other interactions of patient and therapist carried out in the name of 'group therapy,' 'drama therapy,' and so on.

Conversely, however, to deny the patient access to a doctor trained in medicine opens up the possibility that a physiological, as opposed to a psychological or social, basis for the illness may be overlooked—unless the psychotherapist has access to and uses medical consultation.

Recognizing the acute shortage of mental health workers and noting that criteria of competence apply equally to psychiatrists and psychologists, the commission recommended the practice of psychoanalysis by professional psychoanalysts and any other professionals who, although lacking a medical education, possess aptitude for and competence and training in techniques of psychotherapy. The commission further recommended that nonmedical mental health workers with such qualifications be allowed to perform short term psychotherapy "by objective, permissive, nondirective techniques." The report by the commission emphasized that such treatment should be carried on "within the framework of their hospitals and other professional service agencies" and "in all cases should be undertaken under the auspices of recognized mental health agencies."

In reaction, clinical psychologists have taken a more aggressive view in defense of their professional autonomy, rejecting in principle and often in practice the concept of medical supervision. In pursuit of professional independence, many clinicians are establishing their own training centers and clinics. Although some psychologists are not enthusiastic about the prominence given psychotherapy by their clinical colleagues and feel that this may diminish research motivation by overemphasizing the practitioner role, others concur with this relatively new activity. Shakow has said with regard to psychotherapy that particular professional identification need not necessarily be involved, particularly in areas concerned with human psychology and motivation. He further questioned whether, in certain circumstances, conventional medical training may not hinder rather than aid in preparation for psychotherapy. Some clinical psychologists opposed to the perpetuation of current medical and disease-oriented conceptions of pathological processes have rallied to the view of Szasz that the concept of mental illness is "a logically highly dubious proposition." This view is strongly advocated by George Albee, who stated:

The plain fact is that nearly all of the people seen in psychologists' offices or on the wards of 'mental hospitals' are *not* sick. While the concept of mental illness had a sort of temporary usefulness in counteracting the older explanations of sinfulness and taint, it is now a millstone around our neck.

This intemperate statement represents an extremist view, which is the more significant when propounded by an acknowledged leader in the field.

More cautious opinions, however, suggest a more conservative view and emphasize the need for upgrading the quality of work being done by private practitioners in the field. It should be noted that in 1961 less than 5 per cent of clinical psychologists were in full time private practice.

In considering the relation of the clinical psychologist to psychotherapy, the crucial, interprofessional issue is whether the clinician is competent to treat psychiatric patients in private practice and, above and beyond professional rivalries, what is best for the patient. Apart from situational difficulties, mild character disturbances, and those conditions listed by the Joint Commission report as capable of being treated by the competent psychologist in his office, close collaboration between psychologists and competent psychiatrists would be in the best interest of the patient, regardless of the particular setting in which therapy is conducted. Direct psychiatric supervision of psychologists engaged in psychotherapy should be provided as a service in relation to the needs of the psychologist and his patient rather than as an inflexible institutional policy.

Although a conscientious psychologist is generally very discriminating in the choice of patients he accepts for treatment, in his private practice with mentally ill persons he is unable to avail himself of anti-psychotic medication and other psychochemical agents, to the serious detriment of those patients for whom such medication is indicated. This is especially significant in view of the expanded use of this therapeutic modality by psychiatrists. The clinical psychologist lacks hospitalization privileges, cannot shift to electroconvulsive therapy if this is indicated, and thus lacks the resources available to the psychiatrist for continuing diagnosis and treatment. In addition, he is not trained in the diagnosis and management of psychophysiological reactions. The psychiatrist is a member of a profession that has within itself all the necessary therapeutic modalities. He can prescribe what is best for the patient, whereas the psychologist, when such modalities are required—and one hopes for the patient's sake that recognition of such a need is forthcoming and not belated—must send the patient to members of another profession.

Full and realistic recognition must be given to the clinical psychologist's contribution as a therapist in the collaborative setting of institutions and agencies, where his experience as therapist and psychodiagnos-

tician deepens his understanding of psychodynamics and psychopathology and increases his worth as a teacher in a variety of training programs. However, the role of the clinical psychologist as an independent colleague and as a member of a team where he carries primarily psychodiagnostic and research responsibilities is more clearly defined and less subject, at present, to inherent professional restrictions than is true of his role as a practitioner of psychotherapy, private or otherwise.

Suggested Cross References

For further discussions of the clinical psychologist's contribution to psychiatric assessment and for more complete descriptions of the tests mentioned in this section, see Sections 12.1, 12.2, and 39.3, which deal, respectively, with tests of personality and intelligence, tests useful for the assessment of organic brain damage, and tests employed for the evaluation of children. For an example of clinical psychology research that has direct relevance to psychiatry, see Cattell's Section 9.1 on personality theory derived from quantitative studies. Sections 34.2 and 34.3 describe therapeutic techniques, behavioral therapy, and nondirective therapy that derive from psychology.

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Chapter 52

Psychiatric Social Work

52.1 • • •

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Although the profession of social work is relatively new, it has become in many ways the profession outside medicine that is most closely allied with psychiatry. Social workers who are employed in psychiatric hospitals or clinics traditionally have been called psychiatric social workers, but even those who are employed in other capacities encounter problems that have much in common with psychiatry.

History

Social work evolved out of the private dispensing of charity. Early charitable organizations required simple differentiation of the deserving or unfortunate poor from the undeserving or indolent poor. During the late 19th century, the validity of this arbitrary and moralistic system of differentiation came to be questioned; attributing poverty and its associated troubles either to inborn moral weakness or to simple bad luck was no longer considered an adequate basis for its understanding. The explanations for these problems were next sought in society's failure to provide the means of avoiding misfortune or of coping with misfortune, and so the first more sophisticated efforts to counteract social problems emphasized social welfare. A primary concern with the effect of the immediate social environment on human suffering, therefore, characterized the therapeutic approach of the social workers who, around 1905, were recruited for the first time to work with patients in medical settings.

One of these settings was the Massachusetts General Hospital, where, under the guidance of Richard Cabot and J. J. Putnam, a clinic was established in which psychoneurotic patients were treated by social workers. At about the same time, social workers began to be employed in Boston, Chicago, and Baltimore in institutes for the study and care of disturbed children. The third setting was the Manhattan State

Hospital, where, inspired by Adolf Meyer and his wife, a social worker was employed as an after-care agent to help discharged psychiatric patients resume their responsibilities in the community and, indirectly, to reduce the financial burden of such persons on charities.

The worker's appraisal of a client's social problem depends on accurate communication, and the significance of interviewing as the social worker's main technique for understanding the impact of social forces on the individual was underscored by Richmond in 1917 in her book, *Social Diagnosis*. In this book, which had perhaps more influence on the development of social work than any other document written by a social worker, Richmond recognized not only the importance of social pressures but also the importance of interpersonal relationships in the genesis of social problems. At about the same time, the contributions of Freud and other psychoanalysts began to provide a framework for understanding interpersonal relationships, and much psychoanalytic theory has consequently become integrated into the training of psychiatric social workers.

Beginning in the 1920's, many psychiatric social workers found employment in child guidance clinics. Initially, they worked exclusively with parents, in close collaboration with child psychiatrists, who treated the children. In recent years, the roles of the two professions have become less rigid, and now social workers are often directly involved in the treatment of children. The early collaborative experience in the children's field proved so satisfactory for both the psychiatrist and the social worker that a similar collaboration has been extended to the adult field, particularly in out-patient clinics. Another example of this collaboration is evident in the development of interdisciplinary research, to which the social worker has made substantial contributions in family and follow-up studies.

Education and Training

Collaboration between psychiatrists and social workers extends to the area of training. Psychiatrists teach in most schools of social work; and, conversely,

in many medical schools and training centers, psychiatric social workers participate actively in the teaching of medical students and psychiatric residents.

Although the direct influence of psychoanalysis in social work training was at first restricted for the most part to special sequences for psychiatric social workers, the relevance of psychoanalytic theory in preparation for casework in family agencies and in other settings soon became apparent. With this recognition and with analogous developments in related fields, the policy in social work schools of requiring individualized course sequences in preparation for employment in medical, welfare, and other settings has been replaced by a policy of requiring the same basic or generic program for all social workers. This program in American schools ordinarily lasts 2 years, leads to a master's degree, and consists of didactic courses and field work.

The didactic sequence includes basic courses in human behavior, personality development, and psychopathology, in which psychiatrists often share teaching responsibility. These courses are balanced by courses in the family and the community, as well as by instruction in social organization, welfare, and reform; in all these courses, social scientists participate.

Although the didactic training of all social workers is approximately the same and includes information about the whole range of social work settings, each student's field work—supervised practice that corresponds roughly to the clerkships or externships of the medical student—is usually restricted to two settings: social agencies or hospitals and clinics. The types of field work placement that are selected by and for the student reflect his specific interests and capabilities.

Throughout training and practice, the work of the social worker is carefully supervised by senior workers, with consultation from psychiatrists and others when needed. The social work tradition of supervision and consultation thus provides assurance of a high standard of competence.

The supply of professionally trained social workers does not come close to meeting the current demand in the United States. In 1965, considerably fewer than half of the more than 100,000 social workers were fully qualified by training; and a job description of social worker was by no means a guarantee that the person was capable of high quality professional service. The proportion of trained workers in psychiatric settings is considerably higher than in other areas, but the number of open positions is increasing at a rate faster than the increase in trained candidates.

Methods of Social Work

There are three major social work methods: casework, which has been by far the most commonly

used; group work; and community organization. Interviewing skill is needed in all three methods; in fact, casework relies primarily on interviewing for both assessment and therapy.

The goal of casework therapy is the maintenance or modification of the client's adaptive patterns. The goal is achieved by various ego-supportive measures that have a great deal in common with the measures used in supportive psychotherapy. By both training and experience, the caseworker is usually better equipped than most psychotherapists for the individualized application of environmental modification and the use of community resources and concrete services to supplement treatment by interview. On the other hand, he is not so well equipped as the psychoanalyst in the understanding of the unconscious. Nevertheless, for many cases there seem to be few technical differences between the casework practiced by the well trained social worker and the supportive psychotherapy practiced by the dynamically oriented psychiatrist.

In group work the social worker deals with groups of patients or with relatives of the mentally ill. In hospitals, groups are established with various purposes in mind: to provide orientation to the hospital and treatment, to aid in active treatment of patients, to facilitate discharge planning, to provide transitional and after-care assistance. Most group workers, however, practice outside of hospitals, usually with a primary focus on youth in community centers and settlement houses.

Community organization as a social work method is concerned with the administration, planning, and development, as well as with the organization, of the whole spectrum of the community's efforts to meet social needs.

Scope of Social Work

In many psychiatric clinics, the social worker makes a substantial contribution to diagnosis. He obtains background information from the prospective patient, appraises the social situation, and enlists the help of family members, significant relatives, and other informants, such as physicians and clergy, in overcoming the patient's unrealistic or exaggerated fears of psychiatric care. To a somewhat lesser extent, the social worker prepares patients for hospitalization.

In the psychiatric hospital, the social worker's major function is casework with members of the patient's family, beginning with an interpretation of the nature of the hospital or other facility, of the details of psychiatric treatment, and of the patient's prognosis. Throughout the patient's hospitalization, the worker continues to maintain contact with the family, carrying out casework as indicated, with particular concern for their potential contributions to the patient's easy transition from hospital to home. Casework may also be carried out with hospital pa-

tients, usually with emphasis on their eventual return to the family and to the community. In some psychiatric hospitals certain social work functions are carried out by group workers.

Casework is almost always indicated in rehabilitation, as in establishing liaison with potential employers or in finding and arranging for foster homes when family care is appropriate. Casework is extensively used in after-care clinics for the treatment of discharged mental hospital patients and in psychiatric out-patient clinics for the treatment of both the patient and his relatives.

For many psychiatric patients, alternatives either to hospitalization or to psychiatric clinic care may be considered at the time of intake, and other community resources may be helpful to the families of psychiatric patients. The social worker's knowledge of community resources can also help in providing temporary delaying actions until a patient is prepared for psychiatric care. Some of the community resources administered by social workers include: (1) public assistance or public welfare agencies administering direct relief, aid to families with dependent children, old age assistance, etc.; (2) family agencies, which traditionally focus on marital problems and problems of child care or child management; (3) agencies devoted primarily to child welfare, with concern for the protection of dependent children, for adoption, or for providing children with foster home care or residential treatment; and (4) homemaker agencies, often closely associated with child welfare agencies, which provide supervised home assistants to preserve the integrity of homes where the mother of young or adolescent children is absent or disabled or where aged or physically ill patients are unable to carry out homemaking functions.

Social work is also extensively carried out in agencies not administered by social workers, including: (1) medical settings such as hospitals, rehabilitation and public health agencies, and visiting nurse associations; (2) schools in which, beginning in 1907, visiting teachers carried out social work activities (in

many communities, professionally trained school social workers have now replaced visiting teachers); and (3) correctional institutions such as family and juvenile courts, the psychiatric clinics of other types of courts, and probation offices.

Future Trends

In recent years, social work education has focused somewhat more on the social sciences and proportionately less on psychiatry. At the same time, it has concentrated more on functions and agencies uniquely identified specifically with social work. It is not likely, however, that the collaboration in practice between social work and psychiatry will substantially diminish. Instead, particularly as the demand for out-patient care of emotional problems increases and as greater emphasis is placed on comprehensive patient care, the professional collaboration between psychiatrists and social workers is likely to increase and expand.

Suggested Cross References

See Section 12.3 for information regarding the contributions of the social worker to psychiatric assessment and Section 39.4 on the role of the social worker in diagnosis in child psychiatry.

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Chapter 53

Psychiatric Nursing

53.1 • • •

HILDEGARD PEPLAU, R.N., Ed.D.

History

Nurses have been employed in psychiatric settings for less than a century. It was at McClean Hospital in 1882, 10 years after the opening in America of nurse training schools, that nurses began to develop a role in psychiatric facilities. The greatest impetus to this development came with the passage of the Mental Health Act in 1946. Funds were then provided to enable professional nurses to develop psychiatric nursing as a major area of specialization.

The question of such specialization had been raised by a nurse as early as 1900. But the profession of nursing could not economically support pursuit of this idea, which today is recognized as the main source for continuously revitalizing both nursing services to psychiatric patients and basic nursing educational programs. Instead, nursing staked its claim first on the proposition that all registered nurses should be prepared for the sociopsychiatric aspects of all illness as part of their role as staff nurses. Accordingly, exposure to dominant psychiatric theories and to practices in psychiatric settings was established by 1917. Today all basic schools of nursing allocate a portion of the student experience to study and practical experience with psychiatric patients. In the last decade, with more rapid development of clinical specialization in psychiatric nursing and more widespread public interest in and support of psychiatric education and services, professional nurses have been enlarging and strengthening the scope of nursing practices in psychiatric settings.

Types of Nurses

In discussing the role of nursing in psychiatric services, one must make a clear distinction between registered nurses and psychiatric nurses. Differences in their educational qualifications lead to differences in

personal development and scope of professional competence.

Registered nurses. There are currently 850,000 registered nurses in the United States, of whom about 600,000 are actively employed. Of these, approximately 18,500 are employed in psychiatric settings: about 75 per cent are employed in public mental hospitals, 8 per cent in private hospitals, 10 per cent in institutions for the mentally retarded, and 766 nurses in out-patient psychiatric clinics. Additionally, nurses who work in such situations as public health agencies, industry, schools, and general hospitals are also concerned with early case finding, management of sociopsychiatric nursing problems brought to their attention, and follow-up nursing services to discharged psychiatric patients.

Psychiatric training. Recent reports indicate that nurses employed in mental health establishments, as a group, have substantially higher levels of education than other employed professional nurses. Three fourths of such nurses have a 3-year diploma or Associate in Arts degree; 20 per cent a baccalaureate degree; and 4 per cent a graduate degree.

The specific psychiatric preparation that nurses bring to their work varies. In all schools of nursing it is generally accepted that the total educational experience contributes to the individual's work as a staff nurse in general and in psychiatric hospitals. With only rare exceptions, this total experience includes a basic educational experience in theories and practices relating specifically to nursing of psychiatric patients.

Hospital schools of nursing usually have a 3-year program of study leading to a diploma in nursing. The psychiatric portion of the total program usually consists of 8 to 16 weeks of affiliation with a public mental hospital. Recently, many hospital schools have started to consider the feasibility of using psychiatric units in general hospitals for this purpose.

An affiliation program is generally conducted by nurse instructors employed by the hospital, though in some instances the school of nursing may provide the teachers. Often, there is a ratio of one teacher to 30 to 100 students. The students frequently come

from several diploma programs on a rotating basis for the period of study and usually live in a residence provided by the hospital. The content of the affiliation program typically includes rotation of the student through acute, intensive treatment and chronic male and female wards, although recently there is a tendency to concentrate the student's experience in just two wards. Classes in which psychiatric entities and explanatory theories are presented are conducted by nurses, hospital psychiatrists, and others. Traditionally, each student nurse completes a case study; recently, nurse-patient interaction studies have been undertaken together with seminars and readings designed to increase the student's understanding of her relationship with one patient. Students also participate in such available meetings as diagnostic and discharge staff meetings and ward team or ward government. Visits to occupational therapy, social work, and clinical psychology departments are designed to help the student see interrelationships between these disciplines and the role of staff nurse in that setting.

Affiliation programs have failed to capture the interest of student nurses and recruit them for work in psychiatric settings. Since 83 per cent of all nurses graduate from hospital schools of nursing, it would seem that the in-residence educational experience provided by the hospital would also serve as a major recruitment device. That this has not occurred cannot be explained simply. After graduation, the young nurse is eager to work in a viable center where there are enough qualified doctors and where recoveries are readily visible. In public mental hospitals, the work is fraught with shortages of all kinds—personnel, equipment, and know-how. Lack of adequate professional nurse supervision, low salaries, isolation of the hospital, en masse type of care, institutional rigidity, and entrenched personnel—all militate against the young nurse's choosing to work in a public mental hospital. And parents, who often reflect public attitudes toward mental illness, have been slow to encourage the young nurse to consider psychiatric work as a career choice.

Collegiate schools of nursing, which require 4 years of study leading to a baccalaureate degree, supply about 17 per cent of the nation's nurses at this time. Students in these programs also have a course entitled "Nursing in Psychiatry," which is generally 8 to 15 weeks in length. Faculty members employed by the college utilize psychiatric services in the university medical center or accompany the students to a psychiatric hospital for selected clinical experiences. An effort is made to draw on the basic sciences, humanities, and other academic subjects the student has completed prior to this course and to explore theories explaining the pathology the student encounters in her interactions with patients. A typical program includes orientation to the course and clinical facilities, a nurse-patient relationship study and

seminar, and lectures by nurses and faculty from other professional schools, such as the department of psychiatry and school of social work. Discussions and guided readings in behavioral science and psychiatric theories are utilized as these relate to patient behavior and to therapeutic nursing approaches. There is study and participant observation of typical categories of mental illness and of the terminology and concepts that other disciplines use in discussing these entities. Sociology of the mental hospital, legal and community aspects of mental illness and mental health, concepts and techniques of interviewing, and some exposure to interdisciplinary team concepts and functioning are also included. There is discussion of the role of staff nurse, including similarities and differences in the care of patients in psychiatric services as contrasted to other clinical services in the general hospital. There are also field trips to selected community agencies to discuss these resources for help in mental illness and mental retardation.

Collegiate schools have not contributed substantially to the numbers of staff nurses employed in psychiatric settings, but they have provided students immediately ready for graduate study in master's degree programs of psychiatric nursing.

Role in a psychiatric setting. A registered nurse who seeks a staff nurse position in a psychiatric setting expects competent clinical supervision by a qualified psychiatric nurse. Many institutions provide administrative supervisors but do not have qualified psychiatric nurses to whom the novice nurse can turn for review of clinical work and answers to complicated questions relating to daily nursing practices with patients.

A staff nurse usually works in a ward setting in an institution that provides treatment for psychiatric inpatients. Her first task is to guide nonprofessional nursing personnel in giving care, usually bathing, feeding, protection against bodily harm, and the like. The nurse also gives medication, carries out procedures, changes dressings, and the like. The staff nurse is also expected to be a sensitive observer of the interactions that go on between patients and between patients and staff. Since psychiatric patients tend to use patterns of behavior that replicate past experiences and that may reinforce pathology, the staff nurse is expected to observe recurring patterns and to plan and guide sustained nursing interventions that tend to promote favorable change in the patient. The staff nurse is aided in this task by observations of patient-visitor interactions, by recourse to case data, and by discussions with professional staff members who may be providing more direct psychotherapeutic treatment of a particular patient or his family.

The staff nurse also intervenes in various types of emergency situations that arise daily within the treatment milieu. For example, two patients may engage in a heated dispute, often replicating rivalrous situations between siblings that were ineptly handled in

their earlier life situations. She must arbitrate the dispute so that both patients save face and learn something from the incident. Stealing is also a common problem, especially in public mental hospitals; the staff nurse investigates reported incidents primarily by discussion with all patients reportedly involved, with the aim of promoting larger social awareness in these patients. The application of theories of personality development aid the staff nurse in recognizing lacks, gaps, and stalemates in personal development; the nurse provides concerned and competent help in providing useful experiences in the course of daily living on the ward. The staff nurse must be alert to increases in anxiety in particular patients and to its spread in groups of patients. Interventions to forestall panic are used to reduce the growth of more severe pathology.

Many staff nurses also function as recorders or co-leaders in organized group therapy sessions conducted by psychiatric nurses or by other professionals within psychiatric hospitals. Moreover, brief counseling of patients is being recognized as a function of staff nurses, particularly graduates of collegiate schools of nursing.

Where there are psychiatric teams, the nurse provides information to be used in preparing or revising a plan of treatment for each patient. For example, the nurse reports information having to do with medications, eating and sleeping patterns, and the like. She also describes her observations of a particular patient's interactions with others in the ward setting, the inferences she has drawn from patterns of behavior, and the actions taken by nursing personnel in response to these patterns. Furthermore, nursing notes on all patients are written by all nursing personnel; they provide an anecdotal record by which the entire staff can judge variation or change in the daily behavior of patients. The nurse also obtains observations from other team members. These data assist the staff nurse in noting differences in the patient's behavior in relationships with male and female workers, authority figures, peerlike figures, and the like. Such data provide a broader base for revising nursing services for particular patients.

The staff nurse engineers various diversional activities within the ward setting. She cooperates with such departments as occupational and recreational therapy in providing on-the-ward programs and in arranging for patients to work in these departments off the ward. There is a trend toward ward government, remotivation, and informal discussions among groups of patients; nurses sometimes organize these and sometimes are participants when the direction comes from the psychiatrist or other hospital staff member.

The staff nurse serves as a resource person to licensed practical nurses and attendants and gives direction to their work by encouraging review of incidents in which actions have been taken by these

workers. She sometimes conducts discharge conferences with patients, discussing the patient's reactions to going home and his anticipation of community reaction to him as an ex-mental patient. Staff nurses sometimes arrange referrals of patients to public health nursing agencies and to community resources.

In day care and clinic settings, the staff nurse is gradually relinquishing receptionist-type activities for a more direct role in treatment of patients. Particularly in day care settings, nurses are utilizing practices similar to those described for the in-patient unit. In clinics, staff nurses provide brief situational interviewing for selected patients and, particularly those who have had public health nursing experience, make home visits. On these visits, a nurse supervises medications, observes family interactions, and evaluates progress made by the patient. Reports of such home visits serve as a basis for evaluation and change in the clinic treatment plan.

Education of psychiatric nurses. A psychiatric nurse is a registered nurse who has completed a program of study in psychiatric nursing in a university setting and who therefore holds a master's or doctoral degree. Currently in this country, there are perhaps 1,500 such nurses; about 720 of these are employed in psychiatric services; the others are in instructional positions in colleges and universities. There are 33 university graduate programs, and a recent report indicates a trend toward increasing enrollment at the graduate level.

A master's program in psychiatric nursing varies in length from 12 to 19 months, with most of the programs being at least 15 months long. Such programs include advanced clinical training and academic course work in the behavioral sciences, statistics, and research. The graduate student chooses to specialize in psychiatric nursing of adults, of emotionally disturbed children, or of mental retardates. Many of these programs also include course work and practice in teaching and supervision in addition to preparation for clinical specialization in psychiatric nursing.

Psychiatric nurses are being encouraged to pursue studies at the doctoral level. Currently, one university offers the degree of Doctor in Nursing Science. Many universities accept nurses for study in doctor of philosophy or doctor of education programs in any basic science for which the nurse can qualify.

Role. The clinical specialist in psychiatric nursing provides direct nursing services to selected patients in any setting. These services include individual psychotherapy, group psychotherapy, sociological assessment of a milieu such as ward or home, and the more informal interventions described above for the staff nurse. The psychiatric nurse also participates in systematic clinical investigations and studies.

When employed within a hospital, the psychiatric nurse is not usually based in a particular ward; instead, together with other members of the psychiatric

team and frequently after discussion with the clinical director, she selects particular patients and schedules direct work with them. Summaries of the work are filed in the permanent record of the patient. The psychiatric nurse also presents her observations to the clinical staff in such meetings as diagnostic and discharge conferences. Moreover, the psychiatric nurse specialist often meets as a resource person with the ward team to interpret needs of patients with whom she works and to suggest nursing approaches the nursing staff would find useful.

Clinical specialty preparation in psychiatric nursing is being advocated for all teachers and supervisors of psychiatric nursing. Psychiatric nurse leaders believe that it has been demonstrated in the last decade or two that professional nursing can and must contribute direct services to people who are mentally ill or mentally retarded if the need for help of over one million in-patients is to be met through professional services.

Suggested Cross References

The nurse forms a crucial aspect of the psychiatric patient's milieu. For further information regarding

the effects of environment on the course of psychiatric disorders, see Chapter 36 on milieu therapy.

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